

CREI Summer School Offer 2023

Director: Alberto Martin	CREI - Macroeconomics (ME)
General Summer School Description	<p>The Barcelona CREI Macroeconomics Summer School offers an overview of the current state of research in key areas of macroeconomics.</p> <p>The courses are taught by leading experts in their fields. They cover recent developments in different areas of macroeconomics, including international macroeconomics, asset and credit bubbles, sovereign debt crises, numerical methods, firms and finance, and econometrics for policy evaluation.</p> <p>A key benefit of attending this summer school is that courses provide both technical tools and “big picture” ideas on macroeconomics and finance, so that they can be useful for advanced students and practitioners alike. Moreover, faculty are accessible to summer school participants for lively discussions on research and – more generally – on course contents.</p> <p>This Summer School is jointly organized by the Barcelona School of Economics and the Center for Research in International Economics (CREI), a research institute sponsored by the Generalitat de Catalunya and Universitat Pompeu Fabra, in fulfilment of its aim to promote the dissemination of research in macroeconomics and related areas.</p>
Participant Profile	<p>The courses are aimed at advanced undergraduate and graduate students, as well as more senior researchers and practitioners willing to brush up their knowledge and expose themselves to the latest advances in macroeconomics knowledge.</p>
Prerequisites or other specific criteria for this program	<p>Familiarity with basic modeling and econometric tools is recommended to take full advantage of course materials.</p>

Course list for 2023

Code	Course	Professor	Time	Start	End
23ME07	Sovereign Debt Crises: Theory, Evidence and Policy	Fernando Broner	9.00-11.00	26-Jun	30-Jun
	The Macroeconomics of Credit and Asset Bubble	Alberto Martin	11.30-13.30	26-Jun	30-Jun
23ME02	Numerical Methods for Fiscal and Monetary Policy Analysis	Davide Debortoli	14.30-16.30	26-Jun	30-Jun
23ME02P	<i>Numerical Methods: Computer Lab Practicals</i>	<i>Davide Debortoli</i>	17.00-18.00	26-Jun	30-Jun
23ME09	Macroeconomic Policy in the Global Economy	Luca Fornaro	9.00-11.00	3-Jul	7-Jul
23ME05	Firms in Macro-Finance: Tools and Applications	Andrea Caggese	11.30-13.30	3-Jul	7-Jul
23ME05P	<i>Firms in Macro-Finance: Tools and Applications: Lab Practicals</i>	<i>Andrea Caggese</i>	16.45-17.45	3-Jul	7-Jul
23ME12	Policy-Metrics: Econometrics for Macroeconomic Policy Making	Geert Mesters	14.30-16.30	3-Jul	7-Jul
23ME12P	<i>Policy-Metrics: Econometrics for Macroeconomic Policy Making</i>	<i>Geert Mesters</i>	18.00-19.00	3-Jul	7-Jul

Week of June 26 - 30, 2023 (Face-to-face)

- **Sovereign Debt Crises: Theory, Evidence and Policy**
Instructor: Fernando Broner
- **The Macroeconomics of Credit and Asset Bubble**
Instructor: Alberto Martin
- **Numerical Methods for Fiscal and Monetary Policy Analysis**
Instructor: Davide Debortoli

Week of July 3 - July 7, 2023 (Face-to-face)

- **Macroeconomic Policy in the Global Economy**
Instructor: Luca Fornaro
- **Firms in Macro-Finance: Tools and Applications**
Instructor: Andrea Caggese
- **Policy-Metrics: Econometrics for Macroeconomic Policy Making**
Instructor: Geert Mesters

Course Details in the Summer School:

COURSE TITLE	Firms in Macro-Finance: Tools and Applications
Overview and Objectives	<p>Firm behavior– the process of entry, innovation and growth – shapes aggregate productivity, employment, and output. This course presents a rigorous analysis on the mapping from firm level frictions and shocks, to firm decisions, to industry-level and aggregate outcomes. We will illustrate the analytical tools necessary to solve and analyze firm dynamics models with frictions and misallocation, and the empirical tools to test their predictions.</p> <p>A special emphasis will be placed on financial frictions, and the course will answer questions such as: How do we detect firm-level financial frictions? What are their real effects? Are they important to explain cross country differences in productivity and output? Do financial shocks drive business cycles? Do financial frictions amplify the cyclical effects of other shocks?</p> <p>Lab Practicals:</p> <p>Selected tools and applications (both simulating the models as well as some empirical applications) will be illustrated in detail during the practical sessions.</p>
Prerequisites to Enroll (Skills / Knowledge / Readings)*	NA
Course Outline	<p>Session 1: Stylised facts on firm dynamics and introduction to misallocation</p> <p>Lab practical session: Introducing Stata code to compute productivity and misallocation</p> <p>References:</p>

- Cabral, Luís M B, and José Mata. 2003. "On the Evolution of the Firm Size Distribution: Facts and Theory." *American Economic Review*, 93(4): 1075-1090.
- *R Decker, J Haltiwanger, R Jarmin, J Miranda, 2014, The secular decline in business dynamism in the US, Unpublished draft, University of Maryland.
- *John Haltiwanger, Ron S. Jarmin, Robert Kulick, Javier Miranda, High Growth Young Firms: Contribution to Job, Output, and Productivity Growth, Chapter in NBER book *Measuring Entrepreneurial Businesses: Current Knowledge and Challenges* (2017), John Haltiwanger, Erik Hurst, Javier Miranda, and Antoinette Schoar, editors (p. 11 - 62).
- Kehrig, M., "The Cyclical Nature of the Productivity Distribution", working paper, 2015
- *Hsieh, C. and P.J. Klenow (2009). "Misallocation and Manufacturing TFP in China and India", *The Quarterly Journal of Economics* 124, 1403-1448.
- Melitz, Marc J. "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity." *Econometrica*, vol. 71, no. 6, 2003, pp. 1695–725. *JSTOR*,
- Moreira, S. "Firm Dynamics, Persistent Effects of Entry Conditions, and Business Cycles", Working Paper.
- *Restuccia, Diego, and Richard Rogerson. 2017. "The Causes and Costs of Misallocation." *Journal of Economic Perspectives*, 31 (3): 151-74.
- Syverson, C. 2004, "Product Substitutability and Productivity Dispersion." *Review of Economics and Statistics*, 86(2): 534–50.
- Syverson, C., 2011, What Determines Productivity?, *Journal of Economic Literature* 2011, 49:2, 326–365.

Session 2: Dispersion in productivity, frictions, and misallocation of resources: theoretical framework and empirical evidence.

Lab Practical session: Stata code on misallocation, introducing Matlab code on firm dynamics.

References:

- *John Asker, Allan Collard-Wexler, and Jan De Loecker, Dynamic Inputs and Resource (Mis)Allocation, Journal of Political Economy 2014 122:5, 1013-1063
- *Mark Bilal, Peter J. Klenow, Cian Ruane, Misallocation or Mismeasurement?, Journal of Monetary Economics, Volume 124, Supplement, November 2021, Pages S39-S56
- *David, Joel M., and Venky Venkateswaran. 2019. "The Sources of Capital Misallocation." American Economic Review, 109 (7): 2531-67.
- Decker, Ryan A., John Haltiwanger, Ron S. Jarmin, and Javier Miranda. 2020. "Changing Business Dynamism and Productivity: Shocks versus Responsiveness." American Economic Review, 110 (12): 3952-90.
- Lucia Foster, Cheryl Grin, John C. Haltiwanger, Zoltan Wolf, 2018, Innovation, Productivity Dispersion and Productivity Growth. NBER Working Paper 24420
- Haltiwanger, John, Robert Kulick and Chad Syverson. 2018. "Misallocation Measures: The Distortion that Ate the Residual." NBER Working Paper No. 24199
- *Hopenhayn, Hugo A, 1992. "Entry, Exit, and Firm Dynamics in Long Run Equilibrium," Econometrica, Econometric Society, vol. 60(5), pages 1127-1150, September.

Session 3: Micro foundation and empirical testing of firm-level financial frictions, and of their aggregate implications.

Lab Practical session: Stata code on financial frictions and misallocation.

References:

- Almeida, H., Campello, M., Laranjeira, B., Weisbenner, S. 2012. Corporate Debt Maturity and the Real Effects of the 2007 Credit Crisis. *Critical Finance Review*, 1: 3-58
- Santiago Bzdresch, R. Jay Kahn, Toni M. Whited, Estimating and Testing Dynamic Corporate Finance Models, *The Review of Financial Studies*, Volume 31, Issue 1, January 2018, Pages 322–361
- Buehlmaier, M. M. M. and Whited, T. M.: 2018, Are Financial Constraints Priced? Evidence from Textual Analysis, *The Review of Financial Studies* 31(7), 2693-2728.
- *Andrea Caggese, Vicente Cuñat, Daniel Metzger, Firing the wrong workers: Financing constraints and labor misallocation, *Journal of Financial Economics*, Volume 133, Issue 3, 2019, Pages 589-607.
- *Chen Lian, Yueran Ma, Anatomy of Corporate Borrowing Constraints, *The Quarterly Journal of Economics*, Volume 136, Issue 1, February 2021, Pages 229–291, <https://doi.org/10.1093/qje/qjaa030>
- *Chodorow-Reich, G. (2014). The Employment Effects of Credit Market Disruptions: Firm-level Evidence from the 2008–9 Financial Crisis. *The Quarterly Journal of Economics*, 129(1), 1-59.
- Drechsel, T., 2022, Earnings-Based Borrowing Constraints and Macroeconomic Fluctuations, Working Paper.
- *Farre-Mensa, Joan, and Alexander Ljungqvist. "Do Measures of Financial Constraints Measure Financial Constraints?" *Review of Financial Studies* 29, no. 2 (February 2016): 271–308.
- Fazzari, Steven M., et al. "Financing Constraints and Corporate Investment." *Brookings Papers on Economic Activity*, vol. 1988, no. 1, 1988, pp. 141–206.

- Greenwald, D., 2019, Firm Debt Covenants and the Macroeconomy: The Interest Coverage Channel, Working Paper.
- Hadlock, Charles J., and Joshua R. Pierce, 2010, New evidence on measuring financial constraints: Moving beyond the KZ Index, *Review of Financial Studies* 23, 1909–1940.
- Hoberg, G. and Maksimovic, V.: 2014, Redefining Financial Constraints: A Text-Based Analysis, *The Review of Financial Studies* 28(5), 1312-1352.
- Kaplan, Steven N., and Luigi Zingales, 1997, Do investment-cash flow sensitivities provide useful measures of financing constraints?, *Quarterly Journal of Economics* 115, 707–712.
- Simon Gilchrist, Jae Sim and Egon Zakrajsek, 2013, "Misallocation and Financial Frictions: Some Direct Evidence from the Dispersion in Borrowing Costs", *Review of Economic Dynamics*, January 2013.
- * Boris Nikolov, Lukas Schmid, Roberto Steri, The Sources of Financing Constraints, *Journal of Financial Economics*, Volume 139, Issue 2, 2021, Pages 478-501.
- Rajan, Raghuram G., and Luigi Zingales. "Financial Dependence and Growth." *The American Economic Review*, vol. 88, no. 3, 1998, pp. 559–86.

Session 4: Firm dynamics and financial frictions: models and applications

Lab Practical session: Matlab code on firm dynamics with financial frictions.

References:

- Acemoglu, Daron, Ufuk Akcigit, Harun Alp, Nicholas Bloom, and William Kerr. 2018. "Innovation, Reallocation, and Growth." *American Economic Review*, 108 (11): 3450-91.

- Daron Acemoglu, Ufuk Akcigit, Murat Alp Celik, 2014, Young, Restless and Creative: Openness to Disruption and Creative Innovations, NBER Working Paper No. 19894
- Ufuk Akcigit, William R. Kerr, 2018, Growth Through Heterogeneous Innovations, Journal of Political Economy, Volume 126, Number 4, August 2018.
- Bento, Pedro and Danilo Restuccia. 2017. "Misallocation, Establishment Size, and Productivity." *American Economic Journal: Macroeconomics* 9 (3): 267-303.
- *Buera, Francisco J., Joseph P. Kaboski, and Yongseok Shin. 2011. "Finance and Development: A Tale of Two Sectors." *American Economic Review*, 101(5).
- Buera, Francisco J. and Benjamin Moll. 2015. "Aggregate Implications of a Credit Crunch: The Importance of Heterogeneity." *American Economic Journal: Macroeconomics*, 7(3): 1-42.
- Caggese, A., and V. Cuñat, 2013, "Financing Constraints, Firm Dynamics, Export Decisions, and Aggregate Productivity", *Review of Economic Dynamics*, Special Issue on Misallocation and Productivity, edited by Diego Restuccia & Richard Rogerson, vol. 16(1), pages 177-193, January 2013.
- *Caggese, Andrea. 2019. "Financing Constraints, Radical versus Incremental Innovation, and Aggregate Productivity." *American Economic Journal: Macroeconomics*, 11 (2): 275-309.
- G. Clementi, H. Hopenhayn, A Theory of Financing Constraints and Firm Dynamics, *Quarterly Journal of Economics*, Volume 121, Issue 1, February 2006, pages 229-265
- Crouzet, Nicolas, and Neil R. Mehrotra. 2020. "Small and Large Firms over the Business Cycle." *American Economic Review*, 110 (11): 3549-3601.
- Da Rocha, Jose Maria, Marina Mendes Tavares, and Diego Restuccia. 2017. "Policy distortions and aggregate productivity with endogenous establishment-level productivity." Working Paper, University of Toronto.

- Daniel Garcia-Macia, Chang-Tai Hsieh, Peter J. Klenow, 2019, How Destructive is Innovation?, *Econometrica*, 87(5), 1507–1541, September 2019
- Klette, T. J. and S. Kortum (2004). Innovating Firms and Aggregate Innovation. *Journal of Political Economy*, 112, 986-1018.
- Hsieh, Chang-Tai and Klenow, Peter J., 2014, The Life Cycle of Plants in India and Mexico, *Quarterly Journal of Economics*, Vol. 129, Issue 3
- Midrigan, Virgiliu, and Daniel Yi Xu. 2014. "Finance and Misallocation: Evidence from Plant-Level Data." *American Economic Review*, 104(2): 422-58
- Moll, Benjamin. 2014. "Productivity Losses from Financial Frictions: Can Self-Financing Undo Capital Misallocation?" *American Economic Review*, 104(10): 3186-3221.
- Oberfield, Ezra, 2013. Productivity and misallocation during a crisis: Evidence from the Chilean crisis of 1982. *Review of Economic Dynamics* 16 (1), 100–119
- Benjamin Pugsley, Sterk, Vincent, and Petr Sedláček, 2021. "The Nature of Firm Growth." *American Economic Review*, 111 (2): 547-79.

Session 5: Finance, firm dynamics and the business cycle.

Lab Practical session: Matlab code on firm dynamics with financial frictions.

References:

- *Albert, C., and A. Caggese, Cyclical Fluctuations, Financial Shocks, and the Entry of Fast Growing Entrepreneurial Startups, *The Review of Financial Studies*, Volume 34, Issue 5, May 2021, Pages 2508–2548.

- *Arellano, C., Yan, Bai, and Patrick Kehoe, 2019, Financial Frictions and Fluctuations in Volatility, *Journal of Political Economy*, Volume 127, Number 5
- Bernanke, B. S., M. Gertler, and S. Gilchrist, "The Financial Accelerators in a Quantitative Business Cycle Framework," in John B. Taylor and Michael Woodford, eds., *Handbook of Macroeconomics*, 1999, pp.1341-1393.
- Bigio, Saki (2015), "Endogenous Liquidity and the Business Cycle" *American Economic Review*, Volume 105, Issue 6, June 2015, Pages 1883-1927.
- Bloom, Nicholas. 2009. "The Impact of Uncertainty Shocks." *Econometrica* 77(3): 623-686.
- Bloom, Nicholas, Max Floetotto, Itay Saporta-Eksten, Nir Jaimovich, and Stephen Terry, Really Uncertain Business Cycles, *Econometrica*, Volume 86, Issue 3, May 2018, Pages 1031-1065.
- Braun, M, and B. Larrain, 2005, Finance and the Business Cycle: International, Inter-Industry Evidence, *The Journal of Finance*, Vol. 60, No. 3, pp. 1097-1128.
- Woon Gyu Choi, David Cook, Fire sales and the financial accelerator, *Journal of Monetary Economics*, Volume 59, Issue 4, May 2012, Pages 336-351
- Christiano, Lawrence J., Roberto Motto, and Massimo Rostagno. 2014. "Risk Shocks." *American Economic Review*, 104(1): 27-65.
- Juan-Carlos Cordoba & Marla Ripoll, 2004. "Credit Cycles Redux," *International Economic Review*, vol. 45(4), pages 1011-1046, November.
- Dell'Ariccia, Giovanni, Detragiache, Enrica, and Rajan, Raghuram, 2008, "The real effect of banking crises," *Journal of Financial Intermediation*, Elsevier, vol. 17(1), pages 89-112.
- Jermann, Urban J. and Quadrini, Vincenzo, Macroeconomic Effects of Financial Shocks, *American Economic Review*: Vol. 102 No. 1 (February 2012)

- Aubhik Khan, Julia K. Thomas, 2013, "Credit Shocks and Aggregate Fluctuations in an Economy with Production Heterogeneity," *Journal of Political Economy*, 121, no. 6 (2013): 1055-1107.
- Gauti B. Eggertsson and Paul Krugman, Debt, Deleveraging, and the Liquidity Trap: A Fisher-Minsky-Koo Approach, *The Quarterly Journal of Economics* (2012) 127(3): 1469-1513
- Gilchrist, S., Sim, J., and Zakrajsek, E., (2014). "Uncertainty, Financial Frictions and Investment Dynamics," Working Paper.
- Mark Gertler, Nobuhiro Kiyotaki, 2015, Banking, Liquidity and Bank Runs in an Infinite-Horizon Economy, *American Economic Review*.
- Kiyotaki, N., and J. Moore. "Credit Cycles." *Journal of Political Economy* 105 (1997): 211-248.
- Kiminori Matsuyama, Credit Traps and Credit Cycles," *American Economic Review*, 97, March 2007, 503-516
- Laeven, L., Valencia, F. Systemic Banking Crises Database. *IMF Econ Rev* **61**, 225–270 (2013). <https://doi.org/10.1057/imfer.2013.12>
- Mian, A., and Sufi, A. (2014). "What Explains the 2007-2009 Drop in Employment?" *Econometrica*, Vol. 82, No. 6, November, 2014, 2197-2223.
- Simon Gilchrist & Egon Zakrajsek, 2012. "Credit Spreads and Business Cycle Fluctuations," *American Economic Review*, American Economic Association, vol. 102(4), pages 1692-1720, June.
- Xavier Giroud, Holger M. Mueller, 2017, Firm Leverage, Consumer Demand, and Employment Losses during the Great Recession, *Quarterly Journal of Economics*.
- Veronica Guerrieri, Guido Lorenzoni, Credit Crises, Precautionary Savings, and the Liquidity Trap, *The Quarterly Journal of Economics*, Volume 132, Issue 3, August 2017, Pages 1427–1467, <https://doi.org/10.1093/qje/qjx005>.

	<ul style="list-style-type: none"> · Romer, Christina D., and David H. Romer. 2017. "New Evidence on the Aftermath of Financial Crises in Advanced Countries." <i>American Economic Review</i>, 107 (10): 3072-3118. · Morten O Ravn, Vincent Sterk, <i>Macroeconomic Fluctuations with HANK & SAM: an Analytical Approach</i>, <i>Journal of the European Economic Association</i>, Volume 19, Issue 2, April 2021, Pages 1162-1202, · Sedlacek, P., and V. Sterk, 2016, <i>The Growth Potential of Startups over the Business Cycle</i>, <i>American Economic Review</i>. · Michael Siemer, 2019. "Employment Effects of Financial Constraints during the Great Recession," <i>The Review of Economics and Statistics</i>, MIT Press, vol. 101(1), pages 16-29, March.
<p>List of References</p>	<ul style="list-style-type: none"> ● Cyclical Fluctuations, Financial Shocks, and the Entry of Fast Growing Entrepreneurial Startups, <i>The Review of Financial Studies</i>, Volume 34, Issue 5, May 2021, Pages 2508–2548 (With Christoph Albert). ● "Firing the Wrong Workers: Financing Constraints and Labor Misallocation", <i>Journal of Financial Economics</i>, Vol. 133, Issue 3, September 2019, Pages 589-607. (With Vicente Cuñat and Daniel Metzger). ● "Financing Constraints, Radical versus Incremental Innovation, and Aggregate productivity", 2019, <i>American Economic Journal: Macroeconomics</i> 11 (2), 275-309. ● "Financing Constraints, Firm Dynamics, Export Decisions, and Aggregate Productivity", <i>Review of Economic Dynamics</i>, Special Issue on Misallocation and Productivity, edited by Diego Restuccia & Richard Rogerson, vol. 16(1), pages 177-193, January 2013. (With Vicente Cuñat). ● "Entrepreneurial Risk, Investment and Innovation", <i>Journal of Financial Economics</i>, Volume 106, Issue 2, November 2012, Pages 287-307.

	<ul style="list-style-type: none"> ● “Financing Constraints and Fixed Term Employment Contracts” (With Vicente Cuñat), <i>The Economic Journal</i>, 2008, Vol. 118, Issue 533, Pages 2013-2046. ● “Testing Financing Constraints on Firm Investment Using Variable Capital”, <i>Journal of Financial Economics</i>, n.86, December 2007, Pages 683-723. ● “Financing Constraints, Irreversibility and Investment Dynamics”, <i>Journal of Monetary Economics</i>, n.54, October 2007, Pages 2102-2130.
Software / Hardware Needed	Stata and Matlab
About the Instructors	<p>Andrea Caggese earned his PhD in Economics at the London School of Economics and Political Science in 2002. Currently he is an Associate Professor at Universitat Pompeu Fabra (UPF), an Affiliated Professor at Barcelona GSE, and a Research Associate at the Center for Research in International Economics (CREI). He is also the Coordinator of the Master of Research in Economics, Finance and Management at the Department of Economics and Business at Universitat Pompeu Fabra (UPF). His work has appeared in the <i>American Economic Journals: Macroeconomics, Journal of Financial Economics, Review of Financial Studies, Journal of Monetary Economics, the Economic Journal, the Review of Economic Dynamics, and European Economic Review</i>, among others. His research interests include Macro-Finance, Firm Dynamics, and Entrepreneurship and Innovation. He was recently awarded a grant from the European Investment Bank (2021-24) to study the relation between Financial Factors, Intangibles, and Technology Diffusion.</p>

COURSE TITLE	Macroeconomic Policy in the Global Economy
Overview and Objectives	<p>This course introduces state-of-the-art models and empirical methods to analyze key macroeconomic policy challenges confronting the world economy. We will consider monetary and fiscal policy in open economies, capital flows and international financial crises, macroprudential policies and capital controls, exchange rate policy, financial globalization and international macroeconomic dependence. Substantial attention will be devoted to current policy debates, such as global imbalances and the 2008 global financial crisis, the past and future of the euro area, secular stagnation, the emergence of China as a global player and the global productivity slowdown.</p>
Prerequisites to Enroll (Skills / Knowledge / Readings)*	NA
Course Outline	<ul style="list-style-type: none"> ● Monetary and fiscal policy in open economies. ● Capital flows and international financial crises: lessons from the 2008 global financial crisis. ● The economics of monetary unions: implications for the euro area. ● Global imbalances, the emergence of China and the global productivity slowdown.
List of References	<ul style="list-style-type: none"> ● “A Theory of Monetary Union and Financial Integration”, <i>The Review of Economic Studies</i>, forthcoming. ● “Monetary Policy for a Bubbly World”, (with Asriyan, A. Martin and J. Ventura), <i>The Review of Economic Studies</i>, forthcoming. ● “The Paradox of Global Thrift”, (with F. Romei), <i>American Economic Review</i>, 109 (11), 2019, 3745-3779. ● “Stagnation Traps”, (with G. Benigno), <i>The Review of Economic Studies</i>, 85 (3), 2018, 1425-1470. ● “International Debt Deleveraging”, <i>Journal of the European Economic Association</i>, 16 (5), 2018, 1394-1432.

	<ul style="list-style-type: none"> • “Financial Crises and Exchange Rate Policy”, <i>Journal of International Economics</i>, 95 (2), 2015, 202-215.
Software / Hardware Needed	NA
About the Instructors	<p>Luca Fornaro is a Senior Researcher at CREI, Adjunct Professor at Universitat Pompeu Fabra (UPF), and Research Professor at the BSE. He is also a Research Affiliate at the Center for Economic Policy Research (CEPR) in London, and has been a Visiting Scholar at the Bank of England, the Federal Reserve Bank of Minneapolis and the Federal Reserve Bank of New York. He holds a PhD from the London School of Economics. He has been awarded the Klaus Liebscher Award from the Austrian Central Bank, the Lamfalussy Fellowship and the Duisenberg Fellowship from the ECB, and a Starting Grant from the European Research Council. His research has been published in the <i>American Economic Review</i>, the <i>Review of Economic Studies</i>, the <i>Journal of the European Economic Association</i> and the <i>Journal of International Economics</i>. His research interests include international macroeconomics, monetary economics and economic growth.</p>

COURSE TITLE	Numerical Methods for Fiscal and Monetary Policy Analysis
<p>Overview and Objectives</p>	<p>This course will cover state-of-the-art techniques to solve and simulate modern macroeconomic models, with specific applications to models used for fiscal and monetary policy analysis. Through a combination of theory classes and lab sessions, participants will learn the main methodologies, their pros and cons, and how to implement them in specific applications. Some examples are models to study the role of a zero-lower bound constraints on the nominal interest rate and forward-guidance policies, sovereign debt models, models with financial frictions, and heterogeneous agent models.</p> <p>The course is designed for graduate students, researchers and practitioners in policy institutions who would like to upgrade their toolbox for solving and analyzing modern macroeconomic models, and for studying their policy implications.</p> <p>Computer Lab Practicals</p> <p>The course includes 5 hours of practical sessions to give participants the opportunity to familiarize with the different routines described in class, and will demonstrate their advantages and disadvantages in terms of accuracy and efficiency.</p>
<p>Prerequisites to Enroll (Skills / Knowledge / Readings)*</p>	<p>No previous knowledge of numerical methods is required, but a basic knowledge of MATLAB (or another programming language) would be very helpful.</p>
<p>Course Outline</p>	<ul style="list-style-type: none"> ● Introduction to Local Solution Methods (Perturbation) <p>Basic principles about solving and simulating dynamic models; linear and higher-order approximation of stochastic models (the perturbation method);</p> <ul style="list-style-type: none"> ● Fiscal and Monetary Policy Rules <p>simple rules; regime-switches; the zero-lower bound.</p>

	<ul style="list-style-type: none"> ● Optimal Fiscal and Monetary Policy the welfare criterion; optimal simple rules; optimal Ramsey policy; commitment vs. discretion. ● Solving models with Global Approximations models with borrowing constraints; sovereign default models. ● Heterogeneous Agent Models how to deal with idiosyncratic and aggregate uncertainty; solution with perturbation methods; solution with sequence-space Jacobian.
List of References	<p>Main references (additional references will be provided during the course)</p> <ul style="list-style-type: none"> ● Auclert, A., Bardóczy, B., Rognlie, M., & Straub, L. (2021), "Using the sequence-space Jacobian to solve and estimate heterogeneous-agent models," <i>Econometrica</i>, 89(5), 2375-2408. ● Fernandez-Villaverde J. and J. Rubio Ramirez (2016), "Solution and Estimation Methods for DSGE Models", <i>Handbook of Macroeconomics</i>, Vol. 2. ● Guerrieri, L. and M. Iacoviello (2015), "OccBin: A toolkit for solving dynamic models with occasionally binding constraints easily", <i>Journal of Monetary Economics</i>, 70, 22-38. ● Debortoli, D., Galí, J., & Gambetti, L. (2020), "On the empirical (ir) relevance of the zero lower bound constraint," <i>NBER Macroeconomics Annual</i>, 34(1), 141-170. ● Schmitt-Grohé, S., and M. Uribe (2005), "Optimal fiscal and monetary policy in a medium-scale macroeconomic model," <i>NBER Macroeconomics Annual</i>, 20, 383-425.
Software / Hardware Needed	Sample codes and exercises will be provided in MATLAB.
About the Instructors	<p>Davide Debortoli is Professor of Economics at UPF, Research Associate at CREI, Affiliated Professor at the BSE and a Research Fellow at the CEPR. He has held an academic position at the University of California San Diego, and visiting positions at the Norges Bank and Bocconi University. He has been awarded a</p>

	Marie Curie Fellowship from the European Commission (2016), and the Wim Duisenberg Fellowship from the European Central Bank (2020). His research interests include Macroeconomics, Fiscal Policy and Monetary Policy.
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COURSE TITLE	Sovereign Debt Crises: Theory, Evidence and Policy
Overview and Objectives	<p>This course provides an overview of sovereign debt crises from theoretical, empirical and policy points of view. It covers both traditional and new theories that emphasize the interplay between international and domestic financial markets, and the relevant empirical evidence. It discusses the distinction between liquidity and solvency crises and the appropriate policy responses. The last part of the course is devoted to an analysis of the European crisis.</p> <p>The course is aimed at both students and practitioners. It provides a formal analysis of some of the main theoretical models and empirical studies in the sovereign debt academic literature. At the same time, the presentation is accessible as it emphasizes conceptual understanding and policy implications.</p>
Prerequisites to Enroll (Skills / Knowledge / Readings)*	NA
Course Outline	<ol style="list-style-type: none"> 1. What are the costs of sovereign default? Reputation and sanctions 2. Market structure and defaults: Secondary markets and collateral damage 3. Rollover crises: Lender of last resort and moral hazard 4. Solvency crises: Debt overhang, buybacks and restructuring

5. Lessons from Europe

List of References

- Acharya, V., I. Drechsler, and P. Schnabl (2014), "A pyrrhic victory? Bank bailouts and sovereign credit risk," *Journal of Finance*
- Aguiar, M. and G. Gopinath (2006), "Defaultable debt, interest rates and the current account," *Journal of International Economics*
- Arellano, C. (2008), "Default risk and income fluctuations in emerging economies," *American Economic Review*
- Arellano, C. and A. Ramanarayanan (2012), "Default and the maturity structure in sovereign bonds," *Journal of Political Economy*
- Broner, F., A. Erce, A. Martin, and J. Ventura (2014), "Sovereign debt markets in turbulent times: Creditor discrimination and crowding-out effects," *Journal of Monetary Economics*
- Broner, F., G. Lorenzoni and S. Schmukler (2013), "Why do emerging economies borrow short term?" *Journal of the European Economic Association*
- Broner, F., A. Martin and J. Ventura (2010), "Sovereign risk and secondary markets," *American Economic Review*
- Broner, F. and J. Ventura (2016), "Rethinking the effects of financial globalization," *Quarterly Journal of Economics*
- Cole, H. and T. Kehoe (2000), "Self-fulfilling debt crises," *Review of Economic Studies*
- Cruces, J. and C. Trebesch (2013), "Sovereign defaults: The price of haircuts," *AEJ: Macroeconomics*

	<p>Gennaioli, N., A. Martin and S. Rossi (2014), "Sovereign default, domestic banks, and financial institutions," <i>Journal of Finance</i></p> <p>Obstfeld, M. and K. Rogoff (1996), <u>Foundations of International Macroeconomics</u>, Ch. 6.1</p> <p>Obstfeld, M. and K. Rogoff (1996), <u>Foundations of International Macroeconomics</u>, Ch. 6.2</p> <p>Reinhart, C. and K. Rogoff (2011), "From financial crash to debt crisis," <i>American Economic Review</i></p> <p>Reinhart, C., V. Reinhart, and K. Rogoff (2012), "Public debt overhangs: Advanced-economy episodes since 1800," <i>Journal of Economic Perspectives</i></p> <p>Reinhart, C. and B. Sbrancia (2015), "The liquidation of government debt," <i>Economic Policy</i></p> <p>Reinhart, C. and C. Trebesch (2016), "Sovereign debt relief and its aftermath," <i>Journal of the European Economic Association</i></p> <p>Rose, A. (2005), "One reason countries pay their debts: Renegotiation and international trade," <i>Journal of Development Economics</i></p>
Software / Hardware Needed	NA
About the Instructors	<p>Fernando Broner is a Senior Researcher at the Center for Research in International Economics (CREI), an Adjunct Professor at Universitat Pompeu Fabra, a Research Professor at the BSE and a Research Fellow at the CEPR (London). He is Co-Director of the Master's in International Trade, Finance and Development at the BSE and coordinator of Macroeconomics teaching in the UPF PhD program. He received his PhD in Economics from MIT in 2000.</p> <p>Professor Broner was Visiting Professor at MIT and LBS, Assistant Professor at University of Maryland, Co-Editor of the Journal of International Economics, Advisor at Bank of Spain's Division of International</p>

	<p>Economics, and Visiting Scholar at the IMF and the World Bank. He was awarded a European Research Council Starting Grant in 2010 for the project “International Capital Flows and Emerging Markets.”</p> <p>His work has appeared in the American Economic Review, the Quarterly Journal of Economics, the Review of Economic Studies, the Journal of the European Economic Association, the Journal of Monetary Economics, and the Journal of International Economics. His research interests include International Economics, Finance, and Macroeconomics.</p>
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COURSE TITLE	The Macroeconomics of Credit and Asset Bubbles
Overview and Objectives	<p>What are bubbles? What are their effects on the economy? How should policymakers deal with them? In this course, we address these questions from a macroeconomic perspective. We first review the stylized evidence on credit and asset bubbles. We then develop a workhorse model to think about bubbles and their macroeconomic effects. In particular, we focus on the effects of credit and asset bubbles on business cycle models. We conclude by using the model to shed light two key debates regarding bubbles: (i) How should monetary policy respond to asset bubbles?; (ii) What roles do bubbles play in driving credit booms and busts?</p> <p>This course is intended for students, researchers and practitioners who want to become familiar with the state of knowledge on the origins and macroeconomic effects of bubbles.</p>
Prerequisites to Enroll (Skills / Knowledge / Readings)*	Basic knowledge of dynamic models is recommended.
Course Outline	<ul style="list-style-type: none"> · A review of the empirical evidence on bubbles · Introduction to the theory of rational bubbles · Credit and asset bubbles in business cycle models

	<ul style="list-style-type: none"> · Policy design (I): bubbles and monetary policy · Policy design (II): bubble, credit booms, and information depletion
<p>List of References</p>	<p>Asriyan, V., L. Fornaro, A. Martin, and J. Ventura, Monetary Policy for a Bubbly World, Review of Economic Studies, forthcoming.</p> <p>Asriyan, V., L. Laeven, and A. Martin, Collateral Booms and Information Depletion, Review of Economic Studies, forthcoming.</p> <p>Abel, A., N. Mankiw, L. Summers and R. Zeckhauser, Assessing Dynamic Efficiency: Theory and Evidence, Review of Economic Studies, 1989.</p> <p>Carvalho, V., A. Martin and J. Ventura, Bubbly Business Cycles, American Economic Review, 2012.</p> <p>Gali, J., Monetary Policy and Bubbles in a New Keynesian Model with Overlapping Generations, American Economic Journal: Macroeconomics.</p> <p>Guerrón-Quintana, P., Hirano, T. and R. Jinnai, Recurrent Bubbles and Growth, Boston University mimeo, 2021.</p> <p>Hiraona, T., M. Inabab, and N. Yanagawa, Asset Bubbles and Bailouts, Journal of Monetary Economics, 2015</p> <p>Leroy, S., Rational Exhuberance, Journal of Economic Literature, 2004.</p> <p>Martin, A. and J. Ventura, Theoretical Notes on Bubbles and the Current Crisis, IMF Economic Review, 2011.</p> <p>Martin, A. and J. Ventura, Economic Growth with Bubbles, American Economic Review, 2012.</p> <p>Martin, A. and J. Ventura, Managing Credit Bubbles, Journal of the European Economic Association, 2016.</p> <p>Martin, A. and J. Ventura, The Macroeconomics of Rational Bubbles: A User's Guide, Annual Review of Economics, 2018.</p> <p>Tirole, J., Asset Bubbles and Overlapping Generations, Econometrica, 1985.</p>

Software / Hardware Needed	NA
About the Instructors	<p>Alberto Martin is a Senior Researcher at the Center for Research in International Economics (CREI), an Adjunct Professor at Universitat Pompeu Fabra, a Research Professor at the Barcelona Graduate School of Economics (GSE), and a Research Fellow at the Center for Economic Policy Research. He also serves as Deputy Director for Research at the Barcelona GSE and as Associate Editor at the <i>Journal of International Economics</i>. He earned his PhD in Economics from Columbia University in 2005.</p> <p>Professor Martin has held positions at the European Central Bank, the International Monetary Fund and the Argentine Ministry of Economics, as well as visiting positions at various policy institutions and universities. He has also served as a member of the Board of Editors of the <i>Review of Economic Studies</i> and as a Member of the Panel at <i>Economic Policy</i>. Prof. Martin has been awarded the Fulbright Fellowship, the Lamfalussy Fellowship from the European Central Bank, and Consolidator and Advanced Research Grants from the European Research Council in 2014 and 2022, respectively.</p> <p>His work has appeared in <i>The American Economic Review</i>, <i>The Review of Economic Studies</i>, and <i>The Journal of Finance</i>, among others. His research interests include macroeconomics, finance and international economics.</p>

COURSE TITLE	Policy-Metrics: Econometrics for Macroeconomic Policy Making
Overview and Objectives	<p>Real world policy decisions often result from analyzing different models and making judgment calls. This practical approach has benefits in terms of robustness, but a major downside is that it can be difficult to identify the most appropriate course of policy. For instance, using such an approach, how do</p>

	<p>we determine that the magnitude and timing of a fiscal package is well calibrated? or that the monetary stance is appropriate, e.g., in a range that best balances inflation and unemployment?</p> <p>In this course, participants will learn how modern econometric methods, in particular methods for impulse response estimation and forecasting, can be used as building blocks to evaluate and improve practical macroeconomic policy decisions. The methodology allows participants to combine insights from multiple economic models, qualitative evidence, and judgment to reach optimal policy decisions in complex and data rich macroeconomic environments.</p> <p>The course is designed for monetary and fiscal policy makers, their staff members, and researchers and PhD students interested in the econometrics of policy making.</p>
<p>Prerequisites to Enroll (Skills / Knowledge / Readings)*</p>	<p>Participants should be familiar with basic macroeconomic models and methods.</p> <p>In case of doubt please contact the instructor directly.</p>
<p>Course Outline</p>	<p>The course provides a bottom-up approach to explain the econometrics of policy making.</p> <p>After a review of the state of the art techniques for causal inference and forecasting in macroeconomics, the course will cover modern methods for (i) testing the optimality of policy decisions, (ii) optimizing policy decisions, (iii) communicating policy decisions (either internally to fellow decision makers or externally to the general public) and (iv) evaluating and ranking the systematic conduct of policy, i.e., formally evaluating the performance of policy makers.</p> <p>Participants will be exposed to a variety of real time policy problems and learn how to analyze policy decisions using minimal assumptions. Implementation material is provided for all methods and practical assignments allow to develop a quick understanding for implementing.</p>
<p>List of References</p>	<p>Barnichon, R. & Mesters, G., A Sufficient Statistics Approach for Macro Policy Evaluation, R&R American Economic review, 2022.</p> <p>Barnichon, R. & Mesters, G., The Phillips Multiplier, Journal of Monetary Economics, 2021.</p>

	<p>Brownlees, C. & Mesters, G. Detecting Granular Time Series in Large Panels, Journal of Econometrics, 2021.</p> <p>Barnichon, R. & Mesters, G., Identifying modern macro equations with old shocks, The Quarterly Journal of Economics, 2020.</p> <p>Barnichon, R. & Mesters, G., On the Demographic Adjustment of Unemployment, The Review of Economics and Statistics, 2018</p>
<p>Software / Hardware Needed</p>	<p>Empirical implementation code is provided in Matlab and R.</p>
<p>About the Instructors</p>	<p>Geert Mesters is an Associate Professor at Universitat Pompeu Fabra, Research Professor at the BSE and an Associate Researcher at CREI. He holds a PhD from the Tinbergen Institute and VU Amsterdam. He has been awarded a Starting Grant from the European Research Council, a VENI research grant from the Netherlands Ministry of Science and a Ramon y Cajal fellowship from the Spanish Ministry of Science. He received the Arnold Zelner thesis award from the American Statistical Association and the Christian Huygens award. His research has been published in the Quarterly Journal of Economics, Journal of Econometrics, The Review of Economics and Statistics and the Journal of Monetary Economics. His research interests include macroeconomics, econometrics and statistics.</p>