LILIA MALIAR

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Fields of specialization:

Quantitative Macroeconomics, Monetary Policy, Economic Theory, Economies in Transition, Economic Growth and Development

Current position:

Professor, The Graduate Center, City University of New York (CUNY), 2018-present

Visiting Fellow, Hoover Institution, Stanford University, Aug. 2021-present

Lecturer, Columbia University, Sep 2023-present

President of the Society for Computational Economics

Current Teaching:

- Econ 72500 (Mathematics for Economists), 1st year PhD, (The Graduate Center, CUNY)

- Econ 81230 (Machine Learning), 2nd year PhD, (The Graduate Center, CUNY)

- Econ 71200 (Macroeconomic Theory II), 1st year PhD, (The Graduate Center, CUNY)

- GR5211 (Microeconomic Analysis I), 1st year MA, (Columbia University)

NSF Grants:

- "Artificial Intelligence and Deep Learning Solution Methods for Dynamic Economic Models" SES-1949413, Lead (collaborative with Santa Clara University), 05/01/2020-04/30/2023, $308k

- "Analyzing non-stationary and unbalanced growth economic models, SES-1559407, 08/15/2016 - 07/31/2019, $249k.

Associate Editor:

- Quantitative Economics, Computational Economics

Senior Editor:

- Oxford Research Encyclopedias of Economics and Finance (Oxford University Press)

CEPR (Monetary Economics and Fluctuations):

- Research Fellow

CESifo Research Network (Macro, Money and International Finance):

- Fellow

Adviser:

-Canadian Central Bank, Model Development Division and Financial Stability Division

Education:

Ph.D. in Economics, University Pompeu Fabra, Spain, 1999

MA in Economics, Central European University, Czech Republic, 1994

B.A. in Economics, Oles Honchar Dnipro National University, Ukraine, 1991

Languages:

Ukrainian (native), Russian (native), English (fluent), Spanish (fluent)

Recent Working Papers:

1. Yuriy Gorodnichenko, Lilia Maliar, Serguei Maliar and Christopher Naubert (2020). "Household Savings and Monetary Policy under Individual and Aggregate Stochastic Volatility". CEPR working paper DP 15614.

2. Vadym Lepetyuk, Lilia Maliar, Serguei Maliar and John Taylor (2021). "The Power of Open-Mouth Policies". CEPR working paper 16262.

3. Lilia Maliar and Christopher Naubert (2019). "Monetary Policy and Redistribution: A Look Under the Hatch with TANK". CEPR working paper DP 14159.

4. Lilia Maliar and John Taylor (2018). "Taylor Rules and Forward Guidance: A Rule is not a Path." CEPR working paper DP 13383, NBER working paper 26053.

5. Lilia Maliar (2018). "Continuous Time versus Discrete Time in the New Keynesian Model: Closed-Form Solutions and Implications for Liquidity Trap", CEPR working paper DP 13384.

Work in Progress:

1. Arka Bandyopadhyay and Lilia Maliar (2024). "Reinforcement learning for household finance: designing policy via responsiveness". Work in progress.

2. Alexander Kwon and Lilia Maliar (2024), "Predicting Retirement and Social Security Decisions using Machine Learning", Work in Progress.

3. Yuriy Gorodnichenko, Lilia Maliar, Serguei Maliar and Christopher Naubert (2022). "U.S. versus Europe: How Differential COVID-19 Policies Affect Inequality", Work in progress.

4. Sergii Kiiashko and Lilia Maliar (2020), "Solving Sovereign Default Models with Taste Shocks", Work in progress.

5. Laurence Kotlikoff, Seung Lee, Lilia Maliar and Serguei Maliar (2017), "Long-Term Implications of Aging Population in the Macroeconomy". Work in progress.

Publications:

1. Lilia Maliar, Serguei Maliar and Inna Tsener (2022). "Capital-Skill Complementarity: Twenty Years After". CEPR working paper DP 15228. *Economic Letters*, 220, 110844.

2. Lilia Maliar and Serguei Maliar (2021). "Deep Learning Classification: Modeling Discrete Labor Choice". CEPR working paper DP 15346. *Journal of Economic Dynamics and Control* 135, 104295.

3. Lilia Maliar, Serguei Maliar and Pablo Winant (2021). "Deep Learning for Solving Dynamic Economic Models", *Journal of Monetary Economics* 122.

4. Vadym Lepetyuk, Lilia Maliar and Serguei Maliar (2020), "When the U.S. Catches a Cold, Canada Sneezes: a Lower-Bound Tale Told by Deep Learning", *Journal of Economic Dynamics and Control* 117, 103926.

5. Lilia Maliar, Serguei Maliar, John Taylor and Inna Tsener (2020). "A Tractable Framework for Analyzing a Class of Nonstationary Markov Models." *Quantitative Economics 11,* 1289-1323.

6. Chase Coleman, Spencer Lyon, Lilia Maliar and Serguei Maliar, (2020). "Matlab, Python, Julia: What to Choose in Economics? *Computational Economics,* https://doi.org/10.1007/s10614-020-09983-3

7. Kenneth L. Judd, Lilia Maliar and Serguei Maliar, (2017). "Lower Bounds on Approximation Errors to Numerical Solutions of Dynamic Economic Models", *Econometrica* 85 (3), 991-1020.

8. Kenneth L. Judd, Lilia Malia, Serguei Malia and Inna Tsener, (2016). "How to Solve Dynamic Stochastic Models Computing Expectations Just Once", *NBER 17418, Quantitative Economics 8 (3), 851-893.*

9. Cristina Arellano, Lilia Maliar, Serguei Maliar and Viktor Tsyrennikov, (2016). "Envelope Condition Method with an Application to Default Risk Models", *Journal of Economic Dynamics and Control* 69, 436-459.

10. Lilia Maliar and Serguei Maliar, (2016). "Ruling out Multiplicity of Smooth Equilibria in Dynamic Games: A Hyperbolic Discounting Example", *Dynamic Games and Applications* 6(2), 243-261, in special issue "Dynamic Games in Macroeconomics" edited by Edward C. Prescott and Kevin L Reffett.

11. Lilia Maliar and Serguei Maliar, (2015). "Merging Simulation and Projection Approaches to Solve High-Dimensional Problems with an Application to a New Keynesian model", *Quantitative Economics* 6, 1-47 (LEAD ARTICLE).

12. Lilia Maliar, (2015). "Assessing Gains from Parallel Computation on Supercomputers", *Economics Bulletin* 35/1, 159-167.

13. Kenneth L. Judd, Lilia Maliar, Serguei Maliar and Rafael Valero, (2014). "Smolyak Method for Solving Dynamic Economic Models: Lagrange Interpolation, Anisotropic Grid and Adaptive Domain", *Journal of Economic Dynamics and Control* 44(C), 92-123.

14. Lilia Maliar, Serguei Maliar and Sébastien Villemot, (2013). "Taking Perturbation to the Accuracy Frontier: A Hybrid of Local and Global Solutions", *Computational Economics* 42(3), pp 307-325.

15. Lilia Maliar and Serguei Maliar, (2013). "Envelope Condition Method versus Endogenous Grid Method for Solving Dynamic Programming Problems", *Economic Letters* 120, pp. 262-266.

16. Kenneth L. Judd, Lilia Maliar and Serguei Maliar, (2011). "Numerically Stable and Accurate Stochastic Simulation Methods for Solving Dynamic Models" and "Supplement", *Quantitative Economics* 2, 173-210.

17. Serguei Maliar, Lilia Maliar and Kenneth L. Judd, (2011). "Solving the Multi-Country Real Business Cycle Model Using Ergodic Set Methods" *Journal of Economic Dynamic and Control* 35(2), pp. 207-228.

18. Lilia Maliar and Serguei Maliar, (2011). "Capital-Skill Complementarity and Steady-State Growth", *Economica* 78, pp. 240-259.

19. Lilia Maliar, Serguei Maliar and Fernando Valli, (2010). "Solving the Incomplete Markets Model with Aggregate Uncertainty Using the Krusell-Smith Algorithm"*, Journal of Economic Dynamics and Control 34, pp. 42-49.*

20. Kateryna Garmel, Lilia Maliar and Serguei Maliar, (2008). "The EU Eastern Enlargement and FDI: the Implications from a Neoclassical Growth Model", *Journal of Comparative Economics* 36/2, pp. 307-325.

21. Lilia Maliar, Serguei Maliar and Fidel Perez, (2008). "Sovereign Risk, FDI Spillovers, and Economic Growth", *Review of International Economics* 16/3, pp. 463-477.

22. Dmytro Kylymnyuk, Lilia Maliar and Serguei Maliar, (2007). "Rich, Poor and Growth-Miracle Nations: Multiple Equilibria Revisited"*, BE Journals in Macroeconomics, Topics in Macroeconomics*: Vol. 7: No. 1, Article 20.

23. Dmytro Kylymnyuk, Lilia Maliar and Serguei Maliar, (2007). "A Model of Unbalanced Sectorial Growth with Application to Transition Economies", *Economic Change and Restructuring* 40/4, pp. 309-325.

24. Lilia Maliar and Serguei Maliar, (2007). "Short-Run Patience and Wealth Distribution", *Studies in Nonlinear Dynamics and Econometrics*, Vol.11: No. 1, Article 4.

25. Lilia Maliar and Serguei Maliar, (2006). "The Neoclassical Growth Model with Heterogeneous Quasi-Geometric Consumers", *Journal of Money, Credit, and Banking* 38(3), pp. 635-654.

26. Lilia Maliar and Serguei Maliar, (2006). "Indeterminacy in a Log-Linearized Neoclassical Growth Model with Quasi-Geometric Discounting", *Economics Modelling* 23/3, pp. 492-505.

27. Lilia Maliar and Serguei Maliar, (2005). "Solving the Neoclassical Growth Model with Quasi-Geometric Discounting: A Grid-Based Euler-Equation Method", *Computational Economics* 26, pp. 163-172.

28. Lilia Maliar, Serguei Maliar and Juan Mora, (2005). "Income and Wealth Distributions Along the Business Cycle: Implications from the Neoclassical Growth Model", *BE Journals in Macroeconomics, Topics in Macroeconomics* Vol. 5: No. 1, Article 15.

29. Lilia Maliar and Serguei Maliar, (2005). "Solving Nonlinear Stochastic Growth Models: an Algorithm Computing Value Function by Simulations", *Economics Letters* 87, pp. 135-140.

30. Dmytro Boyarchuk, Lilia Maliar and Serguei Maliar, (2005). "The Consumption and Welfare Implications of Wage Arrears in Transition Economies", *Journal of Comparative Economics* 33(3), pp. 540-567.

31. Lilia Maliar and Serguei Maliar, (2005). "Parameterized Expectations Algorithm: How to Solve for Labor Easily", *Computational Economics* 25, pp. 269-274.

32. Lilia Maliar and Serguei Maliar, (2004). "Endogenous Growth and Endogenous Business Cycles", *Macroeconomic Dynamics* 8/5, pp. 1-23.

33. Lilia Maliar and Serguei Maliar, (2004). "Indivisible Labor, Lotteries and Idiosyncratic Productivity Shocks", *Mathematical Social Sciences* 48, pp. 23-35.

34. Lilia Maliar and Serguei Maliar, (2004). "Preference Shocks from Aggregation: Time Series Data Evidence", *Canadian Journal of Economics* 37/3, pp. 768-781.

35. Lilia Maliar and Serguei Maliar, (2004). "Quasi-Geometric Discounting: a Closed-Form Solution under the Exponential Utility Function", *Bulletin of Economic Research* 56/2, pp. 201-206.

36. Lilia Maliar and Serguei Maliar, (2003). "Quasi-Linear Preferences in the Macroeconomy: Indeterminacy, Heterogeneity and the Representative Consumer", *Spanish Economic Review* 5, pp. 251-267.

37. Lilia Maliar and Serguei Maliar, (2003). "The Representative Consumer in the Neoclassical Growth Model with Idiosyncratic Shocks", *Review of Economic Dynamics* 6, pp. 362-380.

38. Lilia Maliar and Serguei Maliar, (2003). "Parameterized Expectations Algorithm and the Moving Bounds", *Journal of Business and Economic Statistics* 21/1, pp. 88-92.

39. Lilia Maliar and Serguei Maliar, (2001). "Heterogeneity in Capital and Skills in a Neoclassical Stochastic Growth Model", *Journal of Economic Dynamics and Control* 25/9, pp. 1367-1397.

40. Lilia Maliar and Serguei Maliar, (2000). "Differential Responses of Labor Supply Across Productivity Groups", *Journal of Macroeconomics*, 22, pp. 85-108.

Books and Chapters:

1. Lilia Maliar and Serguei Maliar, (2014). "Numerical Methods for Large Scale Dynamic Economic Models", in: Schmedders, K. and K.L. Judd (Eds.), *Handbook of Computational Economics*, Volume 3, Chapter 7, 325-477, Amsterdam: Elsevier Science.

2. Kenneth L. Judd, Lilia Maliar and Serguei Maliar *"Ergodic Set Methods for Solving Dynamic Economic Models"*: Aimed to be an up-to-date manuscript on numerical methods for solving dynamic economic models. Under a contract with *MIT Press* with approximate size of 300 pages.

3. Lilia Maliar and Serguei Maliar, *"Dynamic Macroeconomics: A Primer".* Aimed to be an introduction to dynamic macroeconomics at a beginning and intermediate graduate levels. Under a contract with *Cambridge University Press* with approximate size of 400 pages.

Teaching experience:

Visiting Associate Professor, Department of Economics, Stanford University, 2013-2018

       Econ 288 (Computational Economics), 2nd year PhD

       Econ 202N (Microeconomics), 1st year PhD

       Econ 203N (Game Theory), 1st year PhD

       Econ 160 (Game Theory), intermediate undergraduate

Associate Professor (2007-2013), Professor "Ramón y Cajal" (2003-2007), Assistant Professor (1999-2003), University of Alicante, Spain

Graduate (in English):	Macroeconomics I, II, III, 1st year PhD
	Growth Theory, 1st year PhD
	Math boot camp, 1st year PhD
	Advanced Macroeconomics 2nd year PhD
Undergraduate (in Spanish):	Introducción a la economía I
	Macroeconomía I
	Economía Monetaria y Bancaria

Visiting Professor, MA in Economics, EERC at the National University "Kyiv-Mohyla Academy", Ukraine, 2001-2010, (2 months per year)

                      Macroeconomics I (Growth Theory) 1st year

                      Advanced Macroeconomics (RBC theory) 2nd year

Teaching Assistant, University Pompeu Fabra, Spain, 1996-1999

Associate Professor, Zaporozhye State University, Ukraine, 1992-1993

Workshops, Mini-courses and Visiting Teaching

- Three-day intensive course "Machine Learning and Artificial Intelligence in Economics", Bank of Chile. December 2021.

- Visiting scholar, National Bank of Ukraine, IMF mission, June 2020, January 2021.

- Visiting faculty, Macro III and Advanced Macro PhD courses at University of Alicante in spring of 2013-2018 academic years.

- Visiting faculty, new Initiative for Computational Economics (nICE), Hoover Institution, Stanford University. August 2018.

- One week intensive course "Solution Methods for State-Dependent and Time-Dependent Models", Federal Reserve Board, Washington, August 2017 (jointly with Serguei Maliar).

- One day pre-conference workshop on solving state-dependent and time-dependent models, Society of Computational Economics, New York, USA, 2017

- Five-day mini-course on numerical methods, Indiana University, Bloomington, USA, 2015

- One day pre-conference workshop on numerical analysis in economics, Society of Computational Economics, Oslo, Norway, June 2014.

- Visiting Researcher, Hoover Institution, Stanford University, 2008-2013.

- Visiting Professor, Master Program in Economics, University of Bilbao, Spain, Graduate course: Macroeconomics I, 2007, 2010.

PhD thesis advising:
- Inna Tsener "Numerical Methods for Analyzing Nonstationary Dynamic Economic Models and Their Applications" (graduated 2015).
- Rafael Valero "Essays on Sparse-Grids and Statistical-Learning Methods in Economics" (graduated 2017).
- Rafael Serrano "Essays on Capital-Skill Complementarity" (graduated 2020).
- Fernando Valli "Portfolio Choice in Heterogeneous Agents Models".
- Seung Lee "Voting to Default".
- Mani Bayani "Essays on the Application of Machine Learning Methods in Economics".
- Christopher Naubert "Essays on Monetary Policy in Heterogeneous Agents New Keynesian Models".
- Minchul Kwon "Essays on Retirement Choices and Social Security Reforms".
- Kyungtae Lee "Female Labor Supply and Business Cycle".

MA thesis advising:
I served as an advisor of more than 30 MA theses.

Referee:
Computational Economics; Econometrica; Economica; Economic Journal, European Economic Review; Journal of Business and Economic Organization; Journal of Comparative Economics; Journal of Economic Dynamics and Control; International Economic Review, Journal of Macroeconomics; Journal of Money, Credit, and Banking; Journal of Monetary Economics; Journal of Political Economy, Journal of Public Economics, Quantitative Economics, Quarterly Journal of Economics, Scandinavian Journal of Economics; Spanish Economic Review

Selected Conferences with Presentations (since 2011):

- Society for Computational Economics, (San Francisco, US, 2011); Bag lunch seminar, (Stanford, US, 2011), UC at Berkeley, (Berkeley, US, 2011); University of Santa Clara, (Santa Clara, US, 2011); Federal Reserve Bank of San Francisco (San Francisco, US, 2011); Universidad Autónoma de Barcelona (Barcelona, Spain, 2013); Society for Computational Economics, (Vancouver, Canada, 2013); Stanford Summer Workshop on Computational Economics, (Stanford, US, 2013), Central Bank of Sweden (Stockholm, Sweden, 2014), Society for Computational Economics, (Oslo, Norway, 2014); Stanford Institute for Theoretical Economics, (Stanford, US, 2014); Canadian Central Bank (Ottawa, Canada, 2014); Conference on nonlinearities in macroeconomics and finance in the light of crises co-organized by the European Central Bank, the Euro Area Business Cycle Network and the Federal Reserve Bank of Atlanta, (Frankfurt, Germany, 2014); University of California at Santa Cruz, (Santa Cruz, USA, 2015); Society for Computational Economics, (Taipei, Taiwan, 2015); World Congress of the Econometric Society, (Montreal, Canada, 2015); Indiana University, (Bloomington, USA, 2015), Consumer Financial Protection Bureau and International Monetary Fund workshop on heterogeneous agent modeling, (Washington, USA, 2015), University of Alicante, (Alicante, Spain, 2016), Society for Computational Economics, (Bordeaux, France, 2016), Federal Reserve Bank of Dallas, (Dallas, USA, 2016), ASSA (Chicago, USA, 2017, session organizer), CEPR MMCN Conference (Frankfurt, Germany, 2017), Society for Computational Economics (New York, USA, 2017), West Coast Workshop in International Finance (Santa Clara, USA, 2017); Society for Computational Economics, (Milan Italy, 2018); Econometric Society Australasian Meeting (Auckland, New Zealand, 2018, plenary talk); Florida State University (Tallahassee, USA, 2018); Queen's College, CUNY (NY, USA, 2018), Bank of England (London, 2019); Society for Computational Economics, (Ottawa, Canada, 2019), the Graduate Center, CUNY (NY, USA, 2019), Bundesbank (Frankfurt, Germany, 2019), CEPR conference on Heterogeneous Agents (Paris, France, 2019), NYU (NY, USA, 2019), UCL (London, U.K., 2020), Bank of England (London, U.K., 2020), Bank of Chile (2020, online), American Economic Association meeting (2021, online); African Econometric Society (2021, online); Society for Economic Dynamics (2021, online); Society for Computational Economics (2021, online); Australian Meeting of the Econometric Society (2021, online); Asian Meeting of Econometric Society (2021, online); EcoMod2021 (online, a keynote speaker), Bank of Israel – CEPR conference (2021, online), Econometric Society European Meeting (2021, online), Bank of England "Advanced analytics" (2021, online), Bank of Chile (Santiago, Chile, 2021), American Economic Association (2022, online), Society of Computational Economics Meeting (plenary talk, Dallas, USA, June 2022), Stanford Institute for Economic Policy Research, SITE (Stanford, USA, September 2022), University of Texas at Austin (Austin, USA, October 2022), Bank of Canada (Ottawa, Canada, November 2022), University of Colorado at Boulder (Boulder, March 2023), Society of Computational Economics Meeting (Nice, France, July 2023), Reserve Bank of Australia (Sydney, August 2023), Econometric Society Australian Meeting (Sydney, Australia, August 2023), Australian National University (Canberra, Australia, August 2023), University of Lausanne (Lausanne, Switzerland, August 2023), Bank of England (London, U.K., January 2024), First behavioural macro and finance workshop (London, U.K., January 2024)