Curriculum Vita February 9, 2025

SERGUEI MALIAR
Associate Professor in Economics
Department of Economics, Santa Clara University
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Fields of specialization:

Numerical Methods, Machine Learning, Macroeconomics, Monetary Policy, Economic Theory, Economies in Transition, Economic Growth and Development

Education:

PhD in Economics, University Pompeu Fabra, Spain, 1999

PhD in Applied Mathematics, Zaporozhye State University, Ukraine, 1995

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

B.S. in Physics and Applied Mathematics, Moscow Institute of Physics and Technology ("PhisTech"), Russia, June 1992

Previous positions:

Visiting Associate Professor, Columbia University, 2019-2021

Visiting Associate Professor, Stanford University, 2011-2013

Visiting Fellow, Hoover Institution, Stanford University, 2008-2013

Full Professor (2013), Associate Professor (2007-2012), Professor "Ramón y Cajal" (2003-2007), Assistant Professor (1999-2003), University of Alicante, Spain

Associate editor: Journal of Economic Dynamics & Control

Editorial Board: Journal of Open Source Economics

Adviser:

- Canadian Central Bank, Model Development Division

- Income Club Investment Company, Palo Alto

NSF grants:

- Analyzing non-stationary and unbalanced growth economic models, SES-1559407, 08/15/2016- 07/31/2019, $264,000.

- Artificial intelligence and deep learning solution methods for dynamic economic models, SES-1949430, 05/01/2020-04/30/2023, $149,000.

Languages:

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

Recent Papers:

1. Serguei Maliar and Bernard Salanie (2024). "Testing for Asymmetric Information with Neural Networks", CEPR DR 19105.
2. Yuriy Gorodnichenko, Lilia Maliar, Serguei Maliar and Christopher Naubert (2022). "U.S. versus Europe: How Differential COVID-19 Policies Affect Inequality", manuscript.
3. Keith Kuester, Lilia Maliar, Serguei Maliar and Josef Schroth (2022). "Macroprudential Policy and Precautionary Savings", manuscript.
4. Vadym Lepetyuk, Lilia Maliar, Serguei Maliar and John Taylor (2021). "The Power of Open-Mouth Policies", CEPR DP16262.
5. Yuriy Gorodnichenko, Lilia Maliar, Serguei Maliar and Christopher Naubert (2021). "Household Savings and Monetary Policy under Individual and Aggregate Stochastic Volatility", CEPR DP 15614.
6. Laurence Kotlikoff, Seung Lee, Lilia Maliar and Serguei Maliar (2020), "Long-Term Implications of Aging Population in the Macroeconomy". manuscript.
7. James Kahn and Serguei Maliar (2020). "What Drives Housing Prices?" manuscript.
8. Lilia Maliar and Serguei Maliar. Deep Learning (2020). Solving HANC and HANK Models in the Absence of Krusell-Smith Aggregation at SSRN:3758315.

Publications:

1. Lilia Maliar, Serguei Maliar and Inna Tsener (2022). "Capital-Skill Complementarity: Twenty Years After", *Economics Letters* 220, 110844.
2. Lilia Maliar and Serguei Maliar (2021). "Deep Learning Classification: Modeling Discrete Labor Choice", *Journal of Economic Dynamics & Control* 135, 104295.
3. Lilia Maliar, Serguei Maliar and Pablo Winant (2021). Deep learning for solving dynamic economic models. *Journal of Monetary Economics* 122.

   Earlier version 2018 was titled: "Will Artificial Intelligence Replace Computational Economists Any Time Soon?" CEPR working paper DP 14024.
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 & 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." *NBER 21155*, *Quantitative Economics 11/4*, 1289-1323.
6. Chase Coleman, Spencer Lyon, Lilia Maliar and Serguei Maliar, (2020). "Matlab, Python, Julia: What to Choose in Economics? CEPR working paper DP 13210, *Computational Economics.*
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, (2017). “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. 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.
13. 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.
14. Lilia Maliar and Serguei Maliar, (2013). “Envelope Condition Method versus Endogenous Grid Method for Solving Dynamic Programming Problems”, *Economic Letters* 120, pp. 262-266.
15. 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.
16. 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.
17. Robert Kollmann, Serguei Maliar, Benjamin Malin and Paul Pichler, (2011). "Comparison of Solutions to the Multi-Country Real Business Cycle Model", *Journal of Economic Dynamics and Control* 35(2), pp. 186-202.
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.

Invited workshop and mini-courses:

- One-day plenary workshop on numerical analysis in economics in the Society for Computational Economics, Oslo, Norway, June 2014 (jointly with Lilia Maliar).
- Five-day mini course on numerical methods, Indiana University, Bloomington, USA, 2015 (jointly with Lilia Maliar).
- One-day plenary workshop on numerical analysis in economics in the Society for Computational Economics, New York, US, June 2017 (jointly with Lilia Maliar).
- Five-day intensive mini-course **"**Solution Methods for State-Dependent and Time-Dependent Models", Federal Reserve Board, Washington, August 2017 (jointly with Lilia Maliar).
- Two-day intensive minicourse "Artificial intelligence and deep learning solution methods for dynamic economic models", Columbia University, 2020.
- Two-day intensive minicourse "Machine learning solution methods for dynamic economic models", Rice University, 2020.
- Two-day intensive minicourse "Machine learning and artificial intelligence in economics and finance", Baruch College, 2021.
- Three-day intensive minicourse "Machine learning and artificial intelligence in economics and finance", Stony Brook University, 2021.

- Two-day intensive minicourse "Artificial intelligence and deep learning solution methods for dynamic economic models", Bank of Chile, 2021 (joinlty with Lilia Maliar).
- Keynote speach International Conference on Economic Modeling and Data Science, EcoMod2021, Milan, Italy, 2021.
- Three-day intensive minicourse "Machine learning and artificial intelligence in economics and finance", Peking University, 2022.
- Four-day intensive minicourse "Artificial intelligence and deep learning solution methods for dynamic economic models", University of Texas at Austin, 2022 (jointly with Lilia Maliar).
- Three-day intensive minicourse "Artificial intelligence and deep learning solution methods for dynamic economic models", Bank of Canada, 2022, (jointly with Lilia Maliar).
- Keynote speach International Conference on Economic Modeling and Data Science, EcoMod2023, Prague, Czech Republic, 2023.
- Keynote speach International Conference on Economic Modeling and Data Science, EcoMod2024, Cesme, Turkey, 2024.
- Three-day intensive minicourse "Artificial intelligence and deep learning solution methods for dynamic economic models", European Central Bank, 2025.

Visiting Teaching:

- Visiting Associate Professor, Columbia University, 2019-2021
- Visiting faculty, Econ 288 PhD course (Computational Economics) at Stanford University in fall of 2013-2018 academic years.
- 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.
- Visiting Faculty, Initiative for Computational Economics, University of Chicago, 2012.
- Visiting Researcher, Hoover Institution, Stanford University, 2008-2013.
- Visiting Professor, Master Program in Economics, University of Bilbao, Spain, Graduate course: Macroeconomics I, 2007, 2010.

Selected conferences and seminars (since 2012):

2012. Bag lunch seminar, (Stanford, US); UC at Berkeley, (Berkeley, US); Santa Clara University, (Santa Clara, US), Birkbeck University of London, (London, UK); University of Oxford (Oxford, UK), University of Edinburgh (Edinburgh, UK); Federal Reserve Bank of San Francisco (San Francisco, US); Society for Computational Economics, (San Francisco, US)

2013. Santa Clara University, (Santa Clara, US), Canadian Central Bank (Ottawa, Canada), Initiative for Computational Economics, (University of Chicago), Cornell University (Ithaca, USA); Society for Computational Economics, (Vancouver, Canada), Santa Clara University, (Santa Clara, USA)

2014. American Economic Association, (Philadelphia, US); Boston University, (Boston, USA), Society for Computational Economics, (Oslo, Norway); Stanford University, (Stanford, USA); Canadian Central Bank (Ottawa, Canada); University of California at Santa Cruz, (Santa Cruz, USA), Santa Clara University, (Santa Clara, USA)

2015. Society for Economic Dynamics, (Warsaw, Poland); Society for Computational Economics, (Taipei, Taiwan); World Congress of the Econometric Society, (Montreal, Canada); Indiana University, (Bloomington, USA), Consumer Financial Protection Bureau and International Monetary Fund workshop on heterogeneous agent modeling, (Washington, USA)

2016. Federal Reserve Bank of Cleveland, (Cleveland, USA), 4th International Symposium in Computational Economics and Finance, (Paris, France), University of Alicante, (Alicante, Spain), University Carlos III, (Madrid, Spain), Computational Economics Conference, (Federal Reserve Bank of Chicago, Chicago), University of Valencia, (Valencia, Spain), Society for Computational Economics, (Bordeaux, France), Society for the Advancement of Economic Theory, (Rio de Janeiro, Brasil), Bank of Canada Workshop on Advancements in Economic Modeling, (Ottawa, Canada)

2017. Sustainable Growth Under Uncertainty: Challenges in Global Recessions, (Kyungpook National University, South Korea); Bank of England**,** (London, UK); American Economic Association, (Chicago, US); Society for Computational Economics, (New York US); Federal Reserve Board, (Washington, US)

2018. American Economic Association, special session of Econometric Society, (Philadelphia, US); Society for Computational Economics, (Milan Italy); Econometric Society Australasian Meeting (Oakland, New Zealand).

2019. CUNY Graduate Center, (NY); Queens College (NY); Rutgers University, (New Brunswick), Santa Clara University, (Santa Clara, USA), The Platform for Advanced Scientific Computing, PASC, (Zurich, Switzerland), Macroeconomic Modelling, (Goethe University, Frankfurt, Germany), Universidad de Complutense (Madrid, Spain), Stanford University (Stanford, USA), Columbia University (NY, USA).

2020. CUNY Queens College (NY); Jeshiva University (NY); Columbia University (NY); Stony Brook University (NY); World Congress of the Econometric Society, (Milan, Italy); Rice University (TX)

2021. American Economic Association (virtual), Society for the Advancement of Economic Theory (Seoul, South Korea), Society for Economic Dynamics (Minneapolis, US), Society for Computational Economics (Tokyo, Japan), Asian Meeting of Econometric Society (Sarawak, Malaysia), Africa Meeting of Econometric Society (Abidjian, Côte d'Ivoire), China Meeting of Econometric Society (Shanghai, China), EcoMod2021 - International Conference on Economic Modeling and Data Science (Milan, Italy, keynote speach), European Economic Assiciation (Copengaguen, Denmark), European Society European Meeting (Copengaguen, Denmark)

2022. American Economic Association (Chicago, US), University of Taxes at Austin (Austin, US), 2022 Vietnam Symposium in Banking and Finance (Hanoi, Vietnam), Institute for Advanced Computational Economics (Stony Brook University, US), Peking University, (Peking, China), Bank of Canada (Ottawa, CA)

2023. American Economic Association (New Orleans, US), Peking University, (Peking, China), Forum Harmony of Civilizations and Prosperity for All, (Peking, China), University of Colorado Boulder (Boulder, US), Plenary talk at EcoMod2023 conference (Prague, Czech Republic)

2024. 5th Annual International Conference on Computer & Software Engineering, (Athens, Greece), Plenary talk at EcoMod2024 conference (Cesme, Turkey), International Conference on Human Computer Interaction Design and Interaction, (Hue, Vietnam), International Conference on Economics and Statistical Sciences (Ho, Chi Minh City, Vietnam), Numerical Methods in Macroeconomics, (Frankfurt, Germany), European Central Bank (Frankfurt, Germany)