

**SERGUEI MALIAR**  
**Associate Professor in Economics**

Department of Economics  
Santa Clara University  
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**Previous positions:**

Visiting Associate Professor, Columbia University, 2019-2020

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
- Bank of England
- Income Club Investment Company, Palo Alto

**NSF grants:**

- Analyzing non-stationary and unbalanced growth economic models, SES-1559407, 08/15/2016- 07/31/2019.
- Artificial intelligence and deep learning solution methods for dynamic economic models, SES-1949430, 05/01/2020-04/30/2023.

**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

**Languages:**

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

**Recent Papers and Work in Progress:**

1. Lilia Maliar, Serguei Maliar and Pablo Winant (2019). "Will Artificial Intelligence Replace Computational Economists any Time Soon?" *CEPR working paper DP 14024*.
2. Yuriy Gorodnichenko, Lilia Maliar and Serguei Maliar (2019). "The Effect of Monetary Policy on Inequality".
3. Lilia Maliar, Serguei Maliar and Inna Tsener (2018). "Capital-Skill Complementarity: Twenty Years After". Work in progress.
4. Vadym Lepetyuk, Lilia Maliar and Serguei Maliar (2017), "Should Central Banks Worry about Nonlinearities of Their Large-Scale Macroeconomic Models?", Bank of Canada staff paper #2017-21.
5. Lilia Maliar, Serguei Maliar and John Taylor (2017). "The Impact of Alternative Transitions to Normalized Monetary Policy". Work in progress.
6. Laurence Kotlikoff, Seung Lee, Lilia Maliar and Serguei Maliar (2017), "Long-Term Implications of Aging Population in the Macroeconomy". Work in progress.
7. Lawrence Kotlikoff, Lilia Maliar and Serguei Maliar (2017). "A Stochastic Auerbach-Kotlikoff Approach for Solving Large-Scale OLG Models". Work in progress.

**Publications:**

1. 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 (2020), 103926.
2. Lilia Maliar, Serguei Maliar, John Taylor and Inna Tsener (2019). "A Tractable Framework for Analyzing a Class of Nonstationary Markov Models." *NBER 21155, Quantitative Economics, forthcoming*.
3. Chase Coleman, Spencer Lyon, Lilia Maliar and Serguei Maliar, (2018). "Matlab, Python, Julia: What to Choose in Economics? CEPR working paper DP 13210, *Computational Economics, forthcoming*.
4. 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.
5. Kenneth L. Judd, Lilia Maliar, Serguei Maliar and Inna Tsener, (2017). "How to Solve Dynamic Stochastic Models Computing Expectations Just Once", NBER 17418, *Quantitative Economics* 8 (3), 851-893.

6. 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.
7. 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.
8. 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).
9. 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.
10. 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.
11. Lilia Maliar and Serguei Maliar, (2013). "Envelope Condition Method versus Endogenous Grid Method for Solving Dynamic Programming Problems", *Economic Letters* 120, pp. 262-266.
12. 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.
13. 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.
14. 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.
15. Lilia Maliar and Serguei Maliar, (2011). "Capital-Skill Complementarity and Steady-State Growth", *Economica* 78, pp. 240-259.
16. 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.
17. 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.
18. Lilia Maliar, Serguei Maliar and Fidel Perez, (2008). "Sovereign Risk, FDI Spillovers, and Economic Growth", *Review of International Economics* 16/3, pp. 463-477.
19. 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.*

20. 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.
21. Lilia Maliar and Serguei Maliar, (2007). "Short-Run Patience and Wealth Distribution", *Studies in Nonlinear Dynamics and Econometrics*, Vol.11: No. 1, Article 4.
22. 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.
23. 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.
24. 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.
25. 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.
26. Lilia Maliar and Serguei Maliar, (2005). "Solving Nonlinear Stochastic Growth Models: an Algorithm Computing Value Function by Simulations", *Economics Letters* 87, pp. 135-140.
27. 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.
28. Lilia Maliar and Serguei Maliar, (2005). "Parameterized Expectations Algorithm: How to Solve for Labor Easily", *Computational Economics* 25, pp. 269-274.
29. Lilia Maliar and Serguei Maliar, (2004). "Endogenous Growth and Endogenous Business Cycles", *Macroeconomic Dynamics* 8/5, pp. 1-23.
30. Lilia Maliar and Serguei Maliar, (2004). "Indivisible Labor, Lotteries and Idiosyncratic Productivity Shocks", *Mathematical Social Sciences* 48, pp. 23-35.
31. Lilia Maliar and Serguei Maliar, (2004). "Preference Shocks from Aggregation: Time Series Data Evidence", *Canadian Journal of Economics* 37/3, pp. 768-781.
32. 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.
33. 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.
34. 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.

35. Lilia Maliar and Serguei Maliar, (2003). "Parameterized Expectations Algorithm and the Moving Bounds", *Journal of Business and Economic Statistics* 21/1, pp. 88-92.
36. 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.
37. 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:**

Leavey School of Business, SCU, 2013-2020

Graduate MBA:	Econ 3430 (Game Theory) Econ 3431 (Dynamic Macroeconomics)
Undergraduate:	Econ 187 (Dynamic Macroeconomics) Econ 177 (Machine learning: a Primer for Economists) Econ 113 (Intermediate Microeconomics I) Econ 114 (Intermediate Microeconomics II)

Department of Economics, Stanford University, 2011-2013

2 <sup>nd</sup> year PhD:	Econ 288 (Computational Economics)
1 <sup>st</sup> year PhD:	Econ 202N (Microeconomics)
1 <sup>st</sup> year PhD:	Econ 203N (Game Theory)

Department of Economics, University of Alicante, 1999-2008

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

Graduate (in English):	Macroeconomics I, II, III, 1 <sup>st</sup> year PhD Advanced Macroeconomics 2 <sup>nd</sup> year PhD
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Undergraduate (in Spanish):	Macroeconomía Avanzada I Economía Monetaria y Bancaria
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Estadística

Matemática (para economistas)

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

MA, 1<sup>st</sup> year: Macroeconomics I (Growth Theory)

MA, 2<sup>nd</sup> year: Advanced Macroeconomics (RBC theory)

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

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

**Invited workshops, Mini-courses and Visiting Teaching:**

- 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.
- One week intensive course “Solution Methods for State-Dependent and Time-Dependent Models”, Federal Reserve Board, Washington, August 2017 (jointly with Lilia Maliar).
- 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
- Pre-conference workshop on numerical analysis in economics, Society of Computational Economics, Oslo, Norway, June 2014.
- 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);