Stelios Arvanitis

Professor, Department of Economics, Athens University of Economics and Business

Communication

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Education

- PhD in Economics, (2003) AUEB (Distinction)
  Dissertation Title: *Properties of Models of Conditional Heteroskedasticity and Indirect Inference Estimators*
- MSc in Economics, (2000) AUEB (Grade 8.32/10)
- BSc in Economics, (1997) National and Kapodistrian University of Athens (Grade 7.9/10)

Academic Curriculum

- Visiting Professor, Dept. of Economics, Queen's University, Canada (January–April 2025)
- Professor, Dept. of Economics, AUEB (September 2023–present)
- Associate Professor, Dept. of Economics, AUEB (October 2018–September 2023)
- Assistant Professor, Dept. of Economics, AUEB (December 2008–October 2018)
- Assistant Professor (under appointment), Dept. of Economics, AUEB (December 2006–December 2008)
- Visiting Lecturer, Dept. of IIES, AUEB (September 2004–February 2005)
- Visiting Lecturer, Dept. of Economics, University of Cyprus (September 2003–July 2004)

Administrative Experience

- Occasionally member of several departmental committees (e.g. undergraduate program of study, etc.)
- 2016–2020, Scientific Coordinator of the Departmental Internship Program
- 2017–2022, Member of the administrative committee of the MSc in Finance and Banking (School of Economic Sciences)
- 2018–2023, Member of the administrative committee of the MSc in Economics (School of Economic Sciences)
- 2020–2022, Director of the MSc in Economics (School of Economic Sciences)
- 2024–present, Director of the PhD Program, Department of Economics

Teaching Experience

A. Undergraduate Courses

- 2026–present, Econometrics II, Dept. of Economics, AUEB
- 2017, Mathematics II, Dept. of Economics, AUEB

- 2009–2016, 2017–present, Mathematics III, Dept. of Economics, AUEB
- 2008–2024, Statistics II, Dept. of Economics, AUEB)
- 2006–2009, Analysis of Money and Capital Markets, Dept. of Economics, AUEB
- 2009, Mathematics III, Dept. of IEES, AUEB
- 2007, Econometrics II, Dept. of Economics, AUEB
- 2007, Econometrics II, Dept. of IEES, AUEB
- 2004, Mathematics I, Dept. of IEES, AUEB
- 2004, Mathematics I, Dept. of Economics, University of Cyprus
- 2004, Econometrics II, Dept. of Economics, University of Cyprus
- 2003, Mathematics II, Dept. of Economics, University of Cyprus

B. Masters Courses

- 2022–2023, Econometrics, MSc in Economics, School of Economic Sciences, AUEB
- 2019–present, Mathematical Economics, MSc in Economics, School of Economic Sciences, AUEB
- 2013, 2015–2017, Mathematical Analysis, MSc in Economic Theory, Dept. of Economics, AUEB
- 2006–2018, Econometrics II, MSc in Economic Theory, Dept. of Economics, AUEB
- 2010, Mathematics, MSc in Economic Theory, Dept. of Economics, AUEB
- 2010, Econometrics I, MSc in Economic Theory, Dept. of Economics, AUEB
- 2004, Econometrics I, MSc in International Economics, Dept. of IEES, AUEB

C. Executive and Part Time Masters Courses

- 2010–2016, Topics in Finance–Risk Measures, Part Time MSc in Finance and Banking, Dept. of Economics and Dept. of IEES, AUEB (part of the course)
- 2015, Preparatory Statistics, Part Time MSc in Applied Economics, Dept. of Economics, AUEB

D. PhD Courses / Lectures

- 2026, *Functional sentiment representations and their application to market forecasting*, PhD Program, Dept. of Economics, AUEB
- 2025, ECON851, Econometrics II, Dept. of Economics, Queen's University, Canada
- 2009 and 2011, Mathematical Economics, Dept. of Economics, AUEB
- 2006, Topics in Econometrics, Dept. of Economics, AUEB
- 2006, Topics in Econometrics, Dept. of IEES, AUEB

PhD supervision and committees (concise)

- Supervised PhD dissertations and served as member of three- and seven-member PhD examination committees (2010–2021).
- Supervision of a number of undergraduate/MSc theses.

Publications

Accepted (2026)

1. Arvanitis, S., Demos, A. (2026). Gaussian Stochastic Volatility, Misspecified Volatility Filters and Indirect Inference Estimation. *Econometrics and Statistics. Accepted.*
2. Arvanitis, S., Topaloglou, N., Tsomidis, G. (2026). Behavioral Personae, Stochastic Dominance, and the Cryptocurrency Market. *Annals of Operations Research. Accepted.*

3. Arvanitis, S., Kyriazi, F., Thomakos, D. (2026). Market Timing and Predictive Complexity. *IMA Journal of Managerial Mathematics. Accepted.*

Refereed publications

4. Arvanitis, S., & Demos, A. (2004). Time Dependence and Moments of a Family of Time-Varying Parameter Garch in Mean Models. *Journal of Time Series Analysis*, 25(1), 1–25. DOI: 10.1046/j.0143-9782.2003.01771.x.
5. Arvanitis, S. (2004). The diffusion limit of a TVP-GQARCH-M (1, 1) model. *Econometric Theory*, 20(1), 161–175. https://doi.org/10.1017/S0266466604201074.
6. Arvanitis, S., & Demos, A. (2005). Conditionally Heteroskedastic in Mean Models. *Quantitative Methods in Finance In Honour of Professor Andreas Kintis*, pp. 169–200.
7. Arvanitis, S. (2013). On the Existence of Strongly Consistent Indirect Estimators When the Binding Function Is Compact Valued. *Journal of Mathematics*, 2013, Article ID 515830, 14 pages. http://dx.doi.org/10.1155/2013/515830.
8. Arvanitis, S., & Demos, A. (2014). Valid Locally Uniform Edgeworth Expansions Under Weak Dependence and Sequences of Smooth Transformations. *Journal of Time Series Econometrics*, 6(2), 183–235. https://doi.org/10.1515/jtse-2012-0003.
9. Arvanitis, S. (2014). A simple example of an indirect estimator with discontinuous limit theory in the MA (1) model. *Journal of Time Series Analysis*, 35(6), 536–557. DOI: 10.1111/jtsa.12080.
10. Arvanitis, S., & Louka, A. (2015). Limit Theory for the QMLE of the GQARCH (1, 1) model. *Communications in Statistics–Theory and Methods*, 44(17), 3549–3575. https://doi.org/10.1080/03610926.2013.847105.
11. Arvanitis, S., & Demos, A. (2015). A class of indirect inference estimators: higher-order asymptotics and approximate bias correction. *The Econometrics Journal*, 18(2), 200–241. DOI: 10.1111/ectj.12045.
12. Arvanitis, S., & Demos, A. (2016). On the Validity of Edgeworth Expansions and Moment Approximations for Three Indirect Inference Estimators. *Journal of Econometric Methods*. https://doi.org/10.1515/jem-2015-0009.
13. Arvanitis, S., & Louka, A. (2016). A Note on the QMLE Limit Theory in the Non-stationary ARCH (1) Model. *Journal of Time Series Econometrics*, 8(1), 21–39. https://doi.org/10.1515/jtse-2014-0034.
14. Arvanitis, S., & Louka, A. (2016). A CLT for martingale transforms with infinite variance. *Statistics & Probability Letters*, 119, 116–123. https://doi.org/10.1016/j.spl.2016.07.015.
15. Arvanitis, S. (2017). A Note on Stable Limit Theory for the OLSE with Non-Usual Rates and the Heteroskedasticity Robust Wald Test. *Communications in Statistics–Theory and Methods*. http://dx.doi.org/10.1080/03610926.2017.1300277.
16. Arvanitis, S. (2017). A note on the limit theory of a Dickey–Fuller unit root test with heavy tailed innovations. *Statistics & Probability Letters*, 126, 198–204. https://doi.org/10.1016/j.spl.2017.02.032.
17. Arvanitis, S., & Topaloglou, N. (2017). Testing for prospect and Markowitz stochastic dominance efficiency. *Journal of Econometrics*, 198(2), 253–270. https://doi.org/10.1016/j.jeconom.2017.01.006.
18. Arvanitis, S. (2017). Existence and uniqueness of a stationary and ergodic solution to stochastic recurrence equations via Matkowski's FPT. *Cogent Mathematics*, 4(1), 1380392. https://doi.org/10.1080/23311835.2017.1380392.
19. Arvanitis, S., Hallam, M., Post, T., & Topaloglou, N. (2017). Stochastic spanning. *Journal of Business & Economic Statistics*. https://doi.org/10.1080/07350015.2017.1391099.

20. Arvanitis, S., & Louka, A. (2017). Stable limits for the Gaussian QMLE in the non-stationary GARCH (1,1) model. *Economics Letters*, 161, 135–137. https://doi.org/10.1016/j.econlet.2017.09.035.
21. Post, T., Karabatı, S., & Arvanitis, S. (2018). Portfolio optimization based on stochastic dominance and empirical likelihood. *Journal of Econometrics*, 206(1), 167–186. https://doi.org/10.1016/j.jeconom.2018.01.011.
22. Arvanitis, S., & Magdalinos, T. (2018). Mildly Explosive Autoregression Under Stationary Conditional Heteroskedasticity. *Journal of Time Series Analysis*, 39, 892–908. doi:10.1111/jtsa.12410
23. Arvanitis, S. (2019). Stable limit theory for the Gaussian QMLE in a non-stationary asymmetric GARCH model. *Statistics & Probability Letters*, 145, 166–172.
24. Arvanitis, S., Scaillet, O., & Topaloglou, N. (2018). Spanning Tests for Markowitz Stochastic Dominance. *Journal of Econometrics*, 217(2), 291–311. https://doi.org/10.1016/j.jeconom.2019.12.005.
25. Post, T., Karabatı, S., & Arvanitis, S. (2019). Robust Optimization of Forecast Combinations. *International Journal of Forecasting*, 35(3), 910–926.
26. Arvanitis, S., & Anyfantaki, S. (2019). On the limit theory of the Gaussian SQMLE in the EGARCH (1, 1) model. *Journal of Time Series Analysis*.
27. Arvanitis, S., Post, T., & Topaloglou, N. (2021). Stochastic bounds for reference sets in portfolio analysis. *Management Science*. https://doi.org/10.1287/mnsc.2020.3838.
28. Post, T., Potti, V., Arvanitis, S., & Karabatı, S. (2021). Nonparametric Tests for Optimal Predictive Ability. *International Journal of Forecasting*, 37(2), 881–898. https://doi.org/10.1016/j.ijforecast.2020.10.002.
29. Anyfantaki, S., Arvanitis, S., & Topaloglou, N. (2021). Diversification benefits in the cryptocurrency market under mild explosivity. *European Journal of Operational Research*. https://doi.org/10.1016/j.ejor.2021.02.058.
30. Arvanitis, S. (2021). Stochastic dominance efficient sets and stochastic spanning. *Decisions in Economics and Finance*. https://doi.org/10.1007/s10203-021-00325-y.
31. Arvanitis, S., & Louka, A. (2022). Inconsistency for the Gaussian QMLE in GARCH-type models with infinite variance. *Communications in Statistics–Theory and Methods*, pp. 1–16.
32. Arvanitis, S. (2023). Concentration Inequalities for Kernel Density Estimators Under Uniform Mixing. *Journal of the Korean Statistical Society*. 2023 Feb 24:1–0.
33. Arvanitis, S., & Post, T. (2023). Generalized Stochastic Arbitrage Opportunities. *Management Science*. https://doi.org/10.1287/mnsc.2023.4892.
34. Arvanitis, S., Scaillet, O., & Topaloglou, N. (2023). Spanning Analysis of Stock Market Anomalies Under Prospect Stochastic Dominance. *Management Science*. https://doi.org/10.1287/mnsc.2023.4953.
35. Arvanitis, S., & Detsis, M. (2024). Mild Explocivity, Persistent Homology and Cryptocurrencies' Bubbles: An Empirical Exercise. *AIMS Mathematics*, 9(1), 896–917. (published online 4/12/23)
36. Arvanitis, S., & Post, T. (2024). Stochastic Arbitrage Opportunities: Set Estimation and Statistical Testing. *Mathematics*, 12(4), 608.
37. Arvanitis, S., & Louka, A. (2024). Limit Theory of Martingale Transforms with heavy-tailed noise. *Theory of Probability and Mathematical Statistics*. (Accepted; AMS)
38. Arvanitis, S., & Topaloglou, N. (2024). Block Empirical Likelihood Inference for Stochastic Bounding: Large Deviations Asymptotics Under m-Dependence. *Journal of the Korean Statistical Society*. (Accepted)

39. Arvanitis, S. (2025). Asymptotics of a QLR-type test for optimal predictive ability. *International Journal of Portfolio Analysis and Management*. (Accepted)
40. Arvanitis, S. (2025). Distributionally Conservative Stochastic Dominance via Subsampling. *Statistical Analysis and Data Mining: An ASA Data Science Journal*, 18(4): e70038. https://doi.org/10.1002/sam.70038.
41. Arvanitis, S. (2025). Norm constrained empirical portfolio optimization with stochastic dominance: Robust optimization non-asymptotics. *Demonstratio Mathematica*, 58(1), 20250141. https://doi.org/10.1515/dema-2025-0141.

Working Papers – Submissions / Under Review

1. Arvanitis, S., Scaillet, O., & Topaloglou, N. (2024). *Sparse spanning portfolios and under-diversification with second-order stochastic dominance*. arXiv:2402.01951.
   Status: Under review at *Operations Research*.
2. Kalaitzoglou, I., & Arvanitis, S. (2026). *The Tell-Tale Clock! Speed and Agent Composition in High Frequency Trading*.
   Status: Under review at *Journal of Financial and Quantitative Analysis*.
   (Previous version: *Time will tell! Towards the construction of instantaneous indicators of different agent-types*, SSRN: https://ssrn.com/abstract=3703506)
3. Arvanitis, S., Argyropoulos, P., & Vassilakis, S. (2025). *Universal Choice Spaces and Expected Utility: A Banach-type Functorial Fixed Point*.
   Status: Under review at *Applied Categorical Structures*.
4. Arvanitis, S. (2025). *VAR(1) Long Memory from Bottlenecks and Long Cycles in Network Dynamics*.
   Status: Revise & Resubmit, *Journal of Complex Networks*.
   (Previous title: *Long Memory from Cheeger Bottlenecks and Long Cycles*.)
5. Arvanitis, S. (2026). *Ordering and Quantifying Textual Cohesion via Semantic, Geometric and Statistical Structure*.
   Status: Revised & Resubmitted at *Stat.*
   (Previous title: *Measuring Textual Cohesion via Graph Curvature, Weighted Dominance, and Embedding-Based Coherence*.)
6. Arvanitis, S. (2026). *Sentiment Utopia Index: Rhetorical Structure and Corpus-Relative Financial Sentiment*.
   Status: Submitted to *Journal of Business and Economic Statistics*.
7. Arvanitis, S., McGee, R., & Post, T. (2025). *Updating Density Estimates Using Conditional Information Projection*.
   Status: Under review at *Journal of Econometrics*.
8. Arvanitis, S., McGee, R., & Post, T. (2026). *Empirical Likelihood Tests for Pairwise Stochastic Dominance*.
   Status: In preparation / active project (planned submission).

Work in Progress

1. Stochastic Dominance Testing for Robust Prospect SD Bounding using Empirical Likelihood, with Alexandros Louka, Nikolas Topaloglou and Georgios Tsomidis.
2. Stochastic Spanning, Investment Opportunities, and the Geometry of Portfolio Weights: A Discussion.
3. Persistence and Conditional Heteroskedasticity in Stochastic Regression, with Tassos Magdalinos.

4. Does the 2nd Fundamental Theorem of Welfare Economics Imply the Banach Tarski Paradox?
5. Echo state network, minimum description loss, empirical likelihood and model selection, with Foteini Kyriazi and Dimitris Thomakos.
6. Curvature-Driven Entropy Amplification in Multiplex Networks under Bounded Attention.
7. Turing Jumps and Economic Complexity.

Book

- *Elements of Probability Theory for Economics*, in Greek, 2023, Pedio Publications, Athens Greece

AMS / MathSciNet (concise)

- Reviewer for *AMS Mathematical Reviews (MathSciNet)*, 2017–2019 (multiple reviews).

Referee in International Journals (updated)

Journal of Econometrics; Physica A; Journal of the American Statistical Association; Journal of Economic Dynamics and Control; Communications in Statistics: Simulation and Computation; International Journal of Forecasting; Journal of Probability; Quantitative Finance; The European Journal of Finance; Journal of Statistical Theory and Practice; Journal of Banking and Finance; Journal of Empirical Finance; Cogent Economics and Finance; Communications in Statistics: Theory and Methods; International Transactions in Operational Research; Statistics and Probability Letters; Econometric Theory; Stochastics: An International Journal Of Probability And Stochastic Processes; STAT; Computational Statistics and Data Analysis; Data; Axioms; Mathematics; Journal of the Royal Statistical Society: Series C; Optimization Letters; Electronic Journal of Statistics; Demonstratio Mathematica; Empirical Economics.

Research Synopsis

My research program develops econometric and decision-theoretic methods for economic environments characterized by complex dependence, structural instability, model uncertainty, and heterogeneous agents. A central objective is to understand economic problems in terms of *order, information, and complexity.*

On the inferential side, I study order-based methods—stochastic dominance, spanning, bounding, and efficient-set analysis—together with empirical likelihood and indirect inference techniques for non-standard time-series and financial models. These provide robust procedures under partial identification, heavy tails, and non-standard asymptotics.

A complementary strand investigates prediction and model combination under multi-objective and distributionally robust criteria. More recently, I adopt a structural perspective in which persistence and predictability emerge from interaction geometry: network bottlenecks, curvature, spectral constraints, entropy, and topological features that shape the transmission and aggregation of economic information.

A current direction extends these ideas to the analysis of *obstructions to order and decision*: the introduction of meta-layers in machine learning procedures that detect barriers to dominance relations and reveal behavioral regularities, such as preferences over the positioning of sentiment-type information in texts and markets. In parallel, I

study hierarchical structures of preferences and higher-order choice spaces, providing a unified framework for multi-level decision systems under limited rationality.

Overall, my work aims to design reliable statistical and decision procedures and to characterize the structural sources of economic complexity.

Current Research Interests and Research Agenda

1. **Non-standard asymptotics, heavy tails, and martingale limit theory**
   - Joint convergence of martingale transforms and their power transformations via conditioning and point process methods, with applications to resampling-based tests.
   - Bootstrap procedures incorporating tail information for valid inference without subsampling rates.
   - Stable-limit mixtures for near-stationary conditionally heteroskedastic processes.
   - Large-sample theory for Betti numbers of persistent homology for heavy-tailed processes.
2. **Order-based econometrics: stochastic dominance, spanning, and efficient sets**
   - Outer and inner approximations of efficient sets via stochastic spanning.
   - Inference on order properties of portfolio collections and asset pricing in incomplete markets.
   - Density forecasting and RKHS-based dominance rules.
   - Bayesian and empirical likelihood inference for dominance under partial identification.
3. **Indirect inference and generalized empirical likelihood**
   - Indirect estimation for GARCH-type models with non-standard limit theory.
   - Generalized empirical likelihood for stochastic dominance and infinite-dimensional moment inequalities.
4. **Prediction, model averaging, and algorithmic complexity**
   - Multiobjective model averaging under dominance restrictions.
   - Distributionally robust forecast combination.
   - Links between forecasting performance and algorithmic complexity.
5. **Interaction geometry, networks, and long memory**
   - Network bottlenecks, curvature, and spectral constraints as sources of persistence.
   - Topological and simplicial-complex methods in economic and financial data.
   - Applications in cliometrics and financial market dynamics.
6. **Meta-learning, behavioral structure, and obstructions to order**
   - Meta-layers in machine learning procedures that detect obstacles to dominance relations and efficient orderings.
   - Statistical identification of behavioral patterns, including preferences over the positioning of sentiment-type information in texts and markets.
   - Information-theoretic measures of structural complexity in decision systems.
7. **Hierarchies of preferences and higher-order decision systems**
   - Structural analysis of hierarchical preference spaces and multi-level choice.
   - Foundations for recursive and higher-order expected utility.
   - Decision-making under limited rationality in complex informational environments.

8. **Additional econometric topics**
   - Large deviations under temporal mixing for optimal testing.
   - Limit theory for non-stationary EGARCH models.
   - Detection of financial micro-bubbles.
   - Optimal shrinkage for large covariance matrices.
   - Structural breaks in environmental and economic time series.

Recent International Conferences, Workshops, Research Visits and Seminars

- CFE 2023, December 14–16, Berlin, Germany.
- CFE 2019, December 14–16, London, UK.
- 4th Vietnam Symposium in Banking and Finance (VSBF), 24–26/10, 2019, Hanoi, Vietnam.
- 18th Conference on Research on Economic Theory and Econometrics, July 12–16, 2019, Tinos, Greece.
- Finance Research Symposium, CAD Analytica and Nazarbayev University, 18–19 April 2019, Astana, Kazakhstan, invited speaker.
- CFE 2018, December 14–16, Pisa, Italy.
- ASSET 2018, November 8–10, Florence, Italy.
- CFE 2017, December 16–18, London, UK.
- Econometrics Workshop with PCB Phillips as special guest, June 12, 2017, Athens, Greece, Co-organizer.
- Econometric Conference in honor of PCB Phillips, June 6, 2017, Cyprus, Invited Speaker.
- CFE 2015, December 12–14, London, UK.
- EEA-ESEM European Meeting, August 25–29, 2014, Toulouse, France.
- 13th Conference on Research on Economic Theory and Econometrics, July 13–17, 2014, Milos, Greece.
- Conference on Indirect Estimation Methods in Finance and Economics, May 30–31, 2014, Abbey Hegne, Allensbach, Lake Constance, Germany, Invited Speaker.
- 5th Italian Congress of Econometrics and Empirical Economics (ICEE), January 16–18, 2013, Genova, Italy.
- 66th European Meeting of the Econometric Society (EEA-ESEM), August 27–31, 2012, Malaga, Spain.
- Southampton Spring Econometrics Event (SSEE), June 28–29, 2012, Southampton, UK.
- 4th Conference on Research in Economic Theory and Econometrics, July 11–14, 2005, Syros, Greece.
- 3rd Conference on Research in Economic Theory and Econometrics, July 12–15, 2004, Syros, Greece.

I have been invited for research visits and/or presented papers in seminar series and/or workshops of the following:

- Queen's University
- Nazarbayev University
- University of Crete
- Smurfit Business School, University College Dublin
- University of Southampton

- University of Ioannina
- University of Cyprus
- University of Pireaus
- University of Pelloponese
- AUEB
- Keio University (Invited seminar, November 2025)
- Kobe University (Short course on Uncertainty, 2026)

Programming and Markup Languages

PYTHON, FORTRAN, C++, LaTeX, Ox, MATLAB, Mathematica, TSP.