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# STYLIANOS (STELIOS) ARVANITIS

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## CURRICULUM VITAE

### PROFILE

Employment: Professor, Department of Economics, AUEB  
Date of Birth: 4/1/1975

### COMMUNICATION

Office Address: Derigny Wing, Patision str 76, 4th Floor, 10434, Athens, Greece  
E-mail Address: [stelios@aueb.gr](mailto:stelios@aueb.gr)  
Tel.No.: +302108203437

### 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

Associate Professor, Dept. of Economics, AUEB (October 2018—present).  
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)

## TEACHING EXPERIENCE

### A. UNDERGRADUATE COURSES

2017, Mathematics II, Dept. of Economics, AUEB  
(<https://eclass.aueb.gr/courses/OIK269/>)  
2009-2016, 2017-present, Mathematics III, Dept. of Economics, AUEB  
(<https://eclass.aueb.gr/courses/OIK228/>)  
2008-present, Statistics II, Dept. of Economics, AUEB  
(<https://eclass.aueb.gr/courses/OIK229/>)  
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

2022-23, 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 (<https://eclass.aueb.gr/courses/OIK231/>)  
2006-present, Econometrics II, MSc in Economic Theory, Dept. of Economics, AUEB (<https://eclass.aueb.gr/courses/OIK230/>)  
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), (<https://eclass.aueb.gr/courses/MISC219/>)  
2015, Preparatory Statistics, Part Time MSc in Applied Economics, Dept. of Economics, AUEB (<https://wordpress.com/view/prepstats.wordpress.com>)

### C. PHD COURSES

2009 and 2011, Mathematical Economics, Dept. of Economics, AUEB  
(<https://econmathphd.wordpress.com>)

2006, Topics in Econometrics, Dept. of Economics, AUEB

2006, Topics in Econometrics, Dept. of IEES, AUEB

### E. PAST PHD STUDENTS (AS SUPERVISOR AND/OR MEMBER OF PHD EXAMINATION COMMITTEE-THREE OR SEVEN MEMBER COMMITTEES)

1. A. Chatzilena, 2021, (typically supervisor): Essays on Epidemic Models and their Statistical Analysis.
2. S. Giannoulakis, 2020 (member of the examination committee): Essays on Firm Dynamics and Macroeconomics.
3. Danai Sarri, 2020, (typically supervisor): Measuring managerial skill in the Mutual Fund industry: A Stochastic Dominance based Approach.
4. A. Papadopoulos, 2018 (member of the examination committee): The Two-tier Stochastic Frontier (2TSF) Framework: Theory and Applications-Models and Tools.
5. E. Kyrkopoulou, 2018 (member of the examination committee): Essays in Immigration and Crime.
6. A. Tassiopoulos, 2016 (member of the examination committee): Essays in Bayesian Econometrics.
7. A. Louka, 2015 (supervisor): Essays in Limit Theorems for Martingale Transforms with Heavy-Tailed Innovations and the Limit Theory of the QMLE in Conditionally Heteroskedastic Models.
8. I. Karavias, 2012 (member of the examination committee): Unit root tests and structural breaks in panel data.
9. M. Papaspirou, 2012 (member of the examination committee): Statistical Inference in Production Function Models.
10. D. Kyriakopoulou, 2011 (member of the examination committee): Asymptotic Expansions of Econometric Estimators in Time Series Models.
11. I. Dendramis, 2011 (member of the examination committee): Discrete Time Modelling and Valuation in Finance.
12. S. Anyfantaki, 2010 (member of the examination committee): An Econometric Investigation of the Risk Return Relation».

### F. SUPERVISION OF A NUMBER OF UNDERGRADUATE/M.SC. THESES

## PUBLICATIONS

1. 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.
2. 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>.
3. Arvanitis, S., & Demos, A. (2005). Conditionally Heteroskedastic in Mean Models, *Quantitative Methods in Finance In Honour of Professor Andreas Kintis*, pp. 169-200
4. 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>.
5. Arvanitis, S., & Demos, A. (2014), Valid Locally Uniform Edgeworth Expansions Under Weak Dependence and Sequences of Smooth Transformations, *Journal of Time Series Econometrics*, vol. 6 (2), pp. 183-235, DOI: <https://doi.org/10.1515/jtse-2012-0003>.
6. 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.
7. 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>.
8. 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.
9. 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>.
10. 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, DOI: <https://doi.org/10.1515/jtse-2014-0034>.
11. 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>.
12. 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>.

13. 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>.
14. 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>.
15. 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>.
16. Arvanitis, S., Hallam, M., Post, T., & Topaloglou, N. (2017), Stochastic spanning. *Journal of Business & Economic Statistics*, , <https://doi.org/10.1080/07350015.2017.1391099>.
17. 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>.
18. Post, T., Karabati, S., & Arvanitis, S. (2018), Portfolio optimization based on stochastic dominance and empirical likelihood. *Journal of Econometrics*, **Volume 206, Issue 1**, Pages 167-186. <https://doi.org/10.1016/j.jeconom.2018.01.011>
19. Arvanitis, S. and Magdalinos, T. (2018), Mildly Explosive Autoregression Under Stationary Conditional Heteroskedasticity. *Journal of Time Series Analysis*, **39**: 892-908. doi:10.1111/jtsa.12410
20. Arvanitis, S. (2019). Stable limit theory for the Gaussian QMLE in a non-stationary asymmetric GARCH model. *Statistics & Probability Letters*, **145**, 166-172.
21. Stelios Arvanitis, Olivier Scaillet and Nikolas Topaloglou (2018), Spanning Tests for Markowitz Stochastic Dominance, *Journal of Econometrics*, **217**(2), 291-311 (<https://doi.org/10.1016/j.jeconom.2019.12.005>).
22. Post, T., Karabati, S., & Arvanitis, S. (2019), Robust Optimization of Forecast Combinations, *International Journal of Forecasting*, **35**(3), 910-926.
23. Arvanitis, S., & Anyfantaki, S. (2019). On the limit theory of the Gaussian SQMLE in the EGARCH (1, 1) model. *Journal of Time Series Analysis*.
24. 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>)
25. Thierry Post, Valerio Potti, Stelios Arvanitis and Selcuk Karabati (2021), Nonparametric Tests for Optimal Predictive Ability, *International Journal of Forecasting*. Volume 37, Issue 2, pp. 881-898, <https://doi.org/10.1016/j.ijforecast.2020.10.002>.
26. Sofia Anyfantaki, Stelios Arvanitis, and Nikolas Topaloglou (2021), Diversification benefits in the cryptocurrency market under mild explosivity, *European Journal of Operations Research*, <https://doi.org/10.1016/j.ejor.2021.02.058>.
27. Stelios Arvanitis (2021), Stochastic dominance efficient sets and stochastic spanning. *Decisions Econ Finan*, <https://doi.org/10.1007/s10203-021-00325-y>

28. Stelios Arvanitis, and Alexandros Louka (2022), Inconsistency for the Gaussian QMLE in GARCH-type models with infinite variance. ***Communications in Statistics-Theory and Methods***, pp.1-16.
29. Stelios Arvanitis (2023), Concentration Inequalities for Kernel Density Estimators Under Uniform Mixing, ***Journal of the Korean Statistical Society***. 2023 Feb 24:1-0.
30. Stelios Arvanitis and Thierry Post (2023), Generalized Stochastic Arbitrage Opportunities, ***Management Science***. (<https://doi.org/10.1287/mnsc.2023.4892>)
31. Stelios Arvanitis, Olivier Scaillet and Nikolas Topaloglou (2023), Spanning Analysis of Stock Market Anomalies Under Prospect Stochastic Dominance, ***Management Science***. (<https://doi.org/10.1287/mnsc.2023.4953>)
32. Stelios Arvanitis and Michalis Detsis (2024), Mild Explocivity, Persistent Homology and Cryptocurrencies' Bubbles: An Empirical Exercise, ***AIMS Mathematics*** 9, no. 1 (2024): 896-917. (published online 4/12/23)
33. Stelios Arvanitis and Thierry Post (2024), Stochastic Arbitrage Opportunities: Set Estimation and Statistical Testing, ***Mathematics***, 12(4), 608.
34. Stelios Arvanitis, and Alexandros Louka (2024), Limit Theory of Martingale Transforms with heavy-tailed noise, accepted for publication at ***Theory of Probability and Mathematical Statistics***, AMS.

#### WORKING PAPERS

1. Stelios Arvanitis, Nikolas Topaloglou, and George Tsomidis (2023), Behavioral Personae, Stochastic Dominance, and the Cryptocurrency Market.
2. Arvanitis, S., Scaillet, O., & Topaloglou, N. (2024). Sparse spanning portfolios and under-diversification with second-order stochastic dominance. ***arXiv preprint arXiv:2402.01951***.
3. Kalaitzoglou, Iordanis and Stelios Arvanitis, Time will tell! Towards the construction of instantaneous indicators of different agent-types (July 02, 2024). Available at SSRN: <https://ssrn.com/abstract=3703506> or <http://dx.doi.org/10.2139/ssrn.3703506>
4. Stelios Arvanitis and Nikolas Topaloglou (2023), Block Empirical Likelihood Inference for Stochastic Bounding: Large Deviations Asymptotics Under m-Dependence. ([10.13140/RG.2.2.29935.65449](https://doi.org/10.13140/RG.2.2.29935.65449))
5. Arvanitis, S., Pinar, M., Stengos, T., & Topaloglou, N. (2024). Multi-Objective Frequentistic Model Averaging with an Application to Economic Growth (No. 2401).

6. Arvanitis S., Kyriazi F., and D. Thomakos (2024), Market Timing and Predictive Complexity. ([10.13140/RG.2.2.10117.56807](https://doi.org/10.13140/RG.2.2.10117.56807))

#### WORK IN PROGRESS

1. Portfolio Optimization with SD and Norm Constraints: A Robust Optimization Non-Asymptotic Perspective.
2. Bayesian Conditional Density Estimator and Option Pricing, with Thierry Post and Ilja Kovalenko.
3. Stochastic Dominance Testing for Robust Prospect SD Bounding using Empirical Likelihood, with Alexandros Louka, Nikolas Topaloglou and Georgios Tsomidis.
4. Stochastic Spanning, Investment Opportunities, and the Geometry of Portfolio Weights: A Discussion.
5. Persistence and Conditional Heteroskedasticity in Stochastic Regression, with Tassos Magdalinos.
6. Optimal Environment Tax under Climate Change, with George Economides.
7. Smoothed EL Inference for Conditional Moment Inequalities with Partial Identification, with Dimitra Kyriakopoulou.
8. Does the 2<sup>nd</sup> Fundamental Theorem of Welfare Economics Imply the Banach Tarski Paradox?
9. Echo state network, minimum description loss, empirical likelihood and model selection, with Foteini Kyriazi and Dimitris Thomakos.
10. Adamek's fixed point theorem and Lipman's Regress, with Pantelis Argyropoulos.
11. Text ranking with network entropies, Stochastic Dominance, multi-objective optimization and Nash bargaining.

## BOOK

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

## REVIEWS FOR AMS MATHEMATICAL REVIEWS JOURNAL (MATHSCINET)

### 2017

1. Zapata J. M. (2017), On the Characterization of Locally  $L^0$ -Convex Topologies Induced by a Family of  $L^0$ -Seminorms, ***Journal of Convex Analysis***, 24.2, 383-391.
2. Bank, P., Dolinsky, Y., & Perkkiö, A. P. (2017). The scaling limit of super-replication prices with small transaction costs in the multivariate case. ***Finance and Stochastics***, 21(2), 487-508.
3. Baringhaus, L., Ebner, B., & Henze, N. (2017). The limit distribution of weighted  $L^2$ -goodness-of-fit statistics under fixed alternatives, with applications. ***Annals of the Institute of Statistical Mathematics***, 69(5), 969-995.

### 2018

1. Wei, W. (2017). Joint stochastic orders of high degrees and their applications in portfolio selections. ***Insurance: Mathematics and Economics***, 76, 141-148.
2. Huang, W., & Rosenbaum, M. (2017). Ergodicity and diffusivity of Markovian order book models: a general framework. ***SIAM Journal on Financial Mathematics***, 8(1), 874-900.
3. Schumacher, J. M. (2018). Distortion risk measures, ROC curves, and distortion divergence. ***Statistics & Risk Modeling***, 35(1-2), 35-50.



2019

1. Bi, H., & Zhu, W. (2019). The non-integer higher-order Stochastic dominance. *Operations Research Letters*, **47**(2), 77-82.

#### REFEREE IN INTERNATIONAL JOURNALS

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.

#### CURRENT RESEARCH INTERESTS AND RESEARCH AGENDA

1. Martingale Limit Theorems to Stable Laws and Econometric Applications
  - A. Joint convergence of martingale transforms with their power transformations (depending on possibly different scaling sequences) via the principle of conditioning and point process theory. Applications on tests based on resampling procedures.
  - B. Bootstrap resampling based on cdf estimates derived via the incorporation of information on the tails of the actual distribution. Applications on the construction of bootstrap based tests without the need of subsampling rates.

- C. Derivation of Wang type results [ET-2014] involving mixtures of stable limiting distributions when the scaling sequence scaled sums converge in distribution. Possibility of applications in near-stationary conditionally heteroskedastic autoregressions.
  - D. Large Sample Theory for the Betti Numbers of persistent homology for point processes of heavy-tailed martingale transforms with applications in Topological Data Analysis.
2. Orders on sets of probability distributions, stochastic dominance, spanning, bounding, efficient sets with applications in finance and forecasting, order theory econometrics.
- A. Further notions of stochastic spanning with applications involving inference on order properties of portfolio collections.
  - B. Spanning as an outer approximation of efficient sets. Approximation of properties of efficient sets by properties of monotone sequences of spanning sets.
  - C. Inner approximation of efficient sets and inferential procedures on whether a portfolio collection is efficient w.r.t. some stochastic dominance relation.
  - D. Further empirical applications in finance (e.g. Derivative miss-pricing).
  - E. Stochastic Dominance and spanning with covariates and further applications (e.g. effect of financial constraints on firm growth, tax system structure and minimum wage constraints, etc.)
  - F. Stochastic Dominance and Asset Pricing in Incomplete Markets.
  - G. Density Forecasting via Dominance Rules obtained using families of Reproducing Kernel Hilbert Spaces.
  - H. Non-Parametric Bayesian Inference on Dominance Relations-Bayesian Empirical Likelihood with non-favorable priors. Computation and Asymptotic Analysis.

3. Indirect Inference on GARCH-type models. Indirect estimation procedures combining consistent QML estimators with slow rates and non-standard limiting distributions, with inconsistent yet asymptotically normal QML estimators with standard rates, that inherit consistency from the former and standard limit theory from the latter.
4. Generalized Empirical likelihood-based inference on stochastic dominance. Optimality considerations. Econometrics of partial identification and moment inequalities on infinite dimensional parameter spaces.
5. Large Deviations Theory under temporal mixing with applications in the construction of optimal tests.
6. Limit theory of the QMLE in the non-stationary EGARCH model.
7. Extension of the Phillips, Wu and Yu [IER-2011] inferential procedures for the detection of micro-bubbles in financial asset returns.
8. Optimal Shrinkage Methods for the Eigenvalues of large covariance matrices.
9. Model Averaging under Stochastic Dominance Restrictions-relation with multi-objective optimization.
10. Forecasting and Algorithmic Complexity.
11. Applications of topological notions of networks, hypergraphs and simplicial complexes, in Cliometrics.
12. Structural breaks with applications in river flows.

#### 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

18<sup>th</sup> 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.

13<sup>th</sup> 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.

5<sup>th</sup> Italian Congress of Econometrics and Empirical Economics (ICEE), January 16- 18, 2013, Genova, Italy.

66<sup>th</sup> 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.

4<sup>th</sup> Conference on Research in Economic Theory and Econometrics, July 11-14, 2005, Syros, Greece.

3<sup>rd</sup> 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:

- Nazarbayev University
- University of Crete
- Smurfit Business School, University College Dublin
- University of Southampton
- University of Ioannina
- University of Cyprus
- University of Piraeus
- University of Peloponnese
- AUEB

#### PROGRAMMING AND MARK UP LANGUAGES

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

#### 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 of the School of Economic Sciences.

2018-present, Member of the administrative committee of the MSc in Economics of the School of Economic Sciences.

2020-2022, Director of of the MSc in Economics of the School of Economic Sciences.

#### GRANTS AND AWARDS

Greek General Secretariat for Research & Technology  
[Grant Number: ARISTEIA II-08-5413-Research Team of Elias Tzavalis].

Research Funding at AUEB for Excellence and Extroversion (EP-2089-01).

Research Award of the Department of Economics, AUEB, October 2017.

ELIDEK Grant, Research Team of Nikolas Topaloglou, 2020.