

Emmanouil Sofianos, Post-Doc

Bureau d'Economie Théorique et Appliquée (BETA)

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EDUCATION

2016–2023: Ph.D., Democritus University of Thrace, Department of Economics.

Thesis title: “*Study of macroeconomic variables of the euro area using machine learning*”

2014–2016: MBA Graduate student, Democritus University of Thrace.

Dissertation: “*Directional forecast of WTI price with the SVM method*”. Dissertation degree 10/10

2009–2014: Graduate of the Department of Economics, Democritus University of Thrace.

TEACHING/RESEARCH EXPERIENCE

- **2023–Present:** Post-Doc researcher at Bureau d'Economie Théorique et Appliquée (BETA), University of Strasbourg
- **2023:** Research Assistant at Groupe Rennes School of Business
- **2021–Present:** Teaching (online) at Lifelong Learning Center (KEDIVIM) of Democritus University of Thrace

Programs:

- Economics for Non-Experts
- Artificial Intelligence and Machine Learning: Theory and Applications
- Modern Business Tools
- **2017–2023:** Teaching Assistant in tutorials, Democritus University of Thrace, Department of Economics
Undergraduate courses:
 - Entrepreneurship 1 (Innovation and Startups), Entrepreneurship 2 (Business Consulting)
Workshops on Business Plans, Business valuation, Space Matrix Analysis, SWOT analysis, Break Even Point analysis, financial ratios, etc.

- Infomatics 1, Infomatics 2, Workshops on MS Word, MS Excel, Introduction to Octave

PUBLICATIONS

- Sofianos, E., Zaganidis, E., Papadimitriou, T. & Gogas, P. (2024) 'Forecasting East and West Coast Gasoline Prices with Tree-Based Machine Learning Algorithms', *Energies*, 17(6), p. 1296. <https://doi.org/10.3390/en17061296>
- Sofianos, E., Papadimitriou, T. & Gogas, P. (2023) 'Forecasting Inflation Spikes with Machine Learning', *Encyclopedia of Monetary Policy, Financial Markets and Banking*, forthcoming. <http://dx.doi.org/10.2139/ssrn.4610424>
- Toulas, G., Sofianos, E. & Gogas, P. (2023) 'Bitcoin, Sentiment Analysis and the Efficient Market Hypothesis: a Machine Learning Approach', *Empirical Economics Letters*, 22(1)
- Alexiadou, M., Sofianos, E., Gogas, P. & Papadimitriou, T. (2023) 'Cryptocurrencies and Long-Range Trends', *International Journal of Financial Studies*, 11(1), p. 40. <https://doi.org/10.3390/ijfs11010040>
- Lefkou T., Sofianos E. & Gogas P. (2023) 'Banking Sector Resilience to Major Crises', *Journal of Finance and Economics*, 11(1), pp. 1–13. <https://doi.org/10.12691/jfe-11-1-1>
- Gogas, P., Papadimitriou, T. & Sofianos, E. (2021) 'Forecasting Unemployment in the Euro-Area with Machine Learning', *Journal of Forecasting*, 41(3), pp. 551–566. <https://doi.org/10.1002/for.2824>
- Mouchtaris, D., Sofianos, E., Gogas, P. & Papadimitriou, T. (2021) 'Forecasting Natural Gas Spot Prices with Machine Learning', *Energies*, 14(18), p. 5782. <https://doi.org/10.3390/en14185782>
- Sofianos, E., Gogas, P. & Papadimitriou, T. (2021) 'Mind the gap: forecasting euro-area output gaps with machine learning', *Applied Economics Letters*, pp. 1–5. <https://doi.org/10.1080/13504851.2021.1963403>
- Gogas, P., Papadimitriou, T. & Sofianos, E. (2019) 'Money Neutrality, Monetary Aggregates and Machine Learning', *Algorithms*, 12(7), p. 137. <http://dx.doi.org/10.3390/a12070137>.

SUBMITTED PAPERS

- Barbier-Gauchard, A. & Sofianos, E. (2024) 'Forecasting Public Debt in the Euro Area Using Machine Learning: Decision Tools for Financial Markets', *submitted to Journal of Forecasting*
- Sofianos, E., Alexakis, C., Gogas, P. & Papadimitriou, T. (2024) 'Machine Learning Forecasting in the Macroeconomic Environment: The case of the US Output Gap', *submitted to Economic Change and Restructuring*

WORKING PAPERS

- Barbier-Gauchard, A. & Sofianos, E. (2024) 'Forecasting Public Debt in the Euro Area Using Machine Learning: Decision Tools for Financial Markets', *BETA Working Papers*, 2024-47, pp. 1-44

CONFERENCES – PRESENTATIONS

- Barbier-Gauchard, A. & **Sofianos, E.** (2024) 'Forecasting public debt in the Euro Area using machine learning: Decision tools for financial markets', presented at the *29th Forecasting Financial Markets Conference*, 11–13 September, Oxford, United Kingdom
- Barbier-Gauchard, A. & **Sofianos, E.** (2024) 'Forecasting Euro-Area Countries Public Debt with Machine Learning', presented at the *12th UECE Conference on Economic and Financial Adjustments in Europe* of the ISEG-University of Lisbon, 19 July, Lisbon, Portugal
- **Sofianos, E.**, Papadimitriou, T. & Gogas, P. (2021) 'Forecasting Euro-Area Output Gaps with Machine Learning and Interest Rates', presented at the *International Conference on Business & Economics* of the Hellenic Open University 8 May, Athens, Greece
- **Sofianos, E.**, Papadimitriou, T. & Gogas, P. (2020) 'Machine Learning for EU Unemployment Forecasting', presented at the *4th Forum of Research Activity of the department of Economics of Democritus University of Thrace (DUTH)*, 14–15 October, Komotini, Greece
- **Sofianos, E.**, Papadimitriou, T. & Gogas, P. (2019) 'Money neutrality, monetary aggregates and machine learning', presented at the *16th Conference of the International Federation of Classification Societies*, 26–29 August, Thessaloniki, Greece

- **Sofianos, E.**, Papadimitriou, T. & Gogas, P. (2018) 'The impact of simple sum and Divisia monetary aggregates on the Eurocoin index', presented at the 3rd Forum of Research Activity of the department of Economics of Democritus University of Thrace (DUTH), October, Komotini, Greece
- **Athanasίου, A.F.**, Sofianos, E., Gogas, P. & Papadimitriou, T. (2018) 'Directional Forecasting of Cryptocurrency returns using Support Vector Machines', presented at the *International Conference on Business & Economics* of the Hellenic Open University 2018, 11–12 May, Athens, Greece
- **Sofianos, E.**, Athanasίου, A.F., Papadimitriou, T. & Gogas, P. (2018) 'Directional forecast of crude oil daily price using Machine Learning', presented at the *International Conference on Business & Economics* of the Hellenic Open University 2018, 11–12 May, Athens, Greece
- **Athanasίου, A.F.**, Sofianos, E., Papadimitriou, T. & Gogas, P. (2018) 'Forecasting Energy Prices using Support Vector Machines', presented at the *4th International Conference on Applied Theory, Macro and Empirical Finance*, 2–3 April, Thessaloniki, Greece
- **Sofianos, E.**, Athanasίου, A.F., Papadimitriou, T. & Gogas, P. (2018) 'Forecasting the Eurocoin Index using Machine Learning', presented at the *4th International Conference on Applied Theory, Macro and Empirical Finance*, 2–3 April, Thessaloniki, Greece
- **Athanasίου, A.F.**, Sofianos, E., Papadimitriou, T. & Gogas, P. (2017) 'Forecasting electricity prices in Nord Pool', presented at the *8th National Conference of the Financial Engineering and Banking Society*, 18–19 December, Athens, Greece
- **Sofianos, E.**, Athanasίου, A.F., Gogas, P. & Papadimitriou, T. (2017) 'Directional forecast of WTI price with the SVM method', presented at the *8th National Conference of the Financial Engineering and Banking Society*, 18–19 December, Athens, Greece

Seminars/Workshops

- 'Is Euro Area Public Debt Forecasting a Feasible Task? A Machine Learning Approach', *Journée Doc & Post-Doc MAKERs 2024*, University of Strasbourg, Strasbourg, France, April 8, 2024
- 'Is Euro Area Public Debt Forecasting a Feasible Task? A Machine Learning Approach', *Axis MPP-ERMEES Seminar*, University of Strasbourg, Strasbourg, France, April 16, 2024
- 'Forecasting Unemployment in the Euro Area with Machine Learning', *Axis MPP-ERMEES Seminar*, University of Strasbourg, Strasbourg, France, October 10, 2023

REFEREE SERVICE

- Health Economics Review (ISSN: 2191-1991)
- Journal of Forecasting (ISSN: 0277-6693)
- Open Economies Review (ISSN: 0923-7992)
- Scientific Reports (ISSN: 2045-2322)
- Journal of Banking and Financial Technology (ISSN: 2524-7964)
- The Journal of Economic Asymmetries (ISSN: 1703-4949)
- MethodsX (ISSN: 2215-0161)
- Computational Economics (ISSN: 0927-7099)
- Financial Innovation (ISSN: 2199-4730)
- Journal of Economics, Management & Trade (ISSN: 2278-098X)
- Journal for Labour Market Research (ISSN: 2510-5027)
- International Journal of Data Science and Analytics (ISSN: 2364-415X)
- Empirica (ISSN: 1573-6911)
- Qeios (ISSN 2632-3834)
- Applied Economics (0003-6846)

GRANTS AND FELLOWSHIPS

- Fellowship for post-Doc position from the Interdisciplinary Thematic Institute (ITI) MAKerS at the University of Strasbourg, as part of the ITI 2021-2028 program of the University of Strasbourg, CNRS and INSERM. It is financially support from the IdEx Unistra (ANR-10-IDEX-0002), and from the Programme Investissement d'Avenir as part of the SFRI-STRAT'US project(s) (ANR-20-SFRI-0012).
- Scholarship for PhD research co-financed by Greece and the European Union (European Social Fund- ESF) through the Operational Programme «Human Resources Development, Education and Lifelong Learning» in the context of the project “Strengthening Human Resources Research Potential via Doctorate Research” (MIS-5000432), implemented by the State Scholarships Foundation (IKY)
- Scholarship from the Department of Economics, of the Democritus University of Thrace and the “Master of Business Administration” Master's Degree Program in Business Administration for the 2nd best performance with a final grade of 8,385.

AWARDS AND HONORS

- Second entrepreneurship award from the Economics Department of the Democritus University of Thrace and the company of Macedonia-Thrace Brewery S.A. for the innovative business plan entitled "Energy-saving system for professional refrigerators (self-service)" during the course Entrepreneurship 1.

RELEVANT SKILLS

- Programming ability in Matlab and Python
- Proficient in Microsoft Office Suite
- Registered instructor at Lifelong Learning Center (KEDIVIM) of Democritus University of Thrace

LANGUAGES:

- Greek: Native (C2)
- English: Fluent (C1)
- French: Intermediate (B1)