Jörg Robert Osterrieder

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Research Interests

Artificial Intelligence, Machine Learning, Reinforcement Learning, Deep Learning, Quantitative Finance, Financial Technology (FinTech), Digital Finance, Risk Management, Financial Data Science, Blockchain and Distributed Ledger Technologies, Regulatory Technology, Explainable AI in Finance, Generative AI for Financial Services.

Current Academic Positions

Associate Professor of Finance and Artificial Intelligence
2021 – Present
University of Twente, Department of Behavioural, Management and Social Sciences, The Netherlands

Teaching and supervision of BSc and MSc theses on Machine Learning, Reinforcement Learning, and Artificial Intelligence. Leading collaboration with **ING Group** on technical-quantitative topics and coordinating the Marie Skłodowska-Curie Actions Industrial Doctoral Network on Digital Finance (**€4.5M**, 2024-2027). Developing and delivering courses on Reinforcement Learning in Finance, Information Systems for Financial Services, and AI for Business at undergraduate, postgraduate, and doctoral levels.

Professor of Finance and Artificial Intelligence
2022 – Present
Bern University of Applied Sciences (Bern Business School), Switzerland

Teaching and supervision of BSc and MSc theses on Machine Learning and Artificial Intelligence in Business and Information Systems programmes. Leading multiple **Swiss National Science Foundation (SNSF)**-funded research projects on narrative digital finance, network-based credit risk models, and blockchain fraud detection. Developed curriculum for Digital Finance and AI/ML courses delivered at bachelor's and master's levels.

Education

Ph.D. in Mathematics
2003 – 2007
ETH Zürich (Swiss Federal Institute of Technology), Department of Mathematics, Switzerland

Financial Mathematics Group. Thesis: "Arbitrage Opportunities and Market Microstructure" (Supervisor: Prof. Dr. Freddy Delbaen). Scholar of the **German Academic Merit Foundation** for PhD Studies (awarded to **top 0.25%** of doctoral students). Doctoral fellowship funded by SNSF and Credit Suisse. Research stay at London School of Economics (European Science Foundation scholarship, 2006).

M.Sc. in Mathematics
2000 – 2002
Syracuse University, United States

Thesis: Jacobian Matrices. Scholar of the **German Academic Merit Foundation** for Graduate Studies (**top 0.25%** of students). Syracuse University Merit-based Scholarship. US National Science Foundation Merit-based Scholarship (summer 2001).

M.Sc. (Diplom) in Business Economics
1998 – 2002
University of Ulm, Germany

Graduated with Highest Honors.

Industry Experience

Quantitative Research and Portfolio Management, Man Investments, Pfäffikon, Switzerland, November 2012 – December 2014

Senior Vice President, Regulatory Projects, Credit Suisse Group, Zürich, Switzerland, February 2012 – October 2012

Executive Director, Global Markets, Goldman Sachs International, London, United Kingdom, April 2009 – January 2012

Associate, Global Markets, Merrill Lynch International, London, United Kingdom, April 2007 – March 2009

Summer Associate, The Boston Consulting Group, Düsseldorf, Germany, June 2002 – August 2002

Summer Associate, Oliver Wyman & Company, Frankfurt, Germany, June 2001 – August 2001

Previous Academic Positions

Lecturer/Professor of Risk Management
2015 – 2022
Zurich University of Applied Sciences (ZHAW), School of Engineering, Switzerland

Teaching and supervision of BSc and MSc theses on Machine Learning and AI in Data Science, Industrial Engineering, and Information Systems programmes. Led Innosuisse, SNSF, and directly funded research projects. Finalist for Teaching Award (2016, top 10).

Major Academic Leadership Positions

Chair, European COST Action CA19130: FinTech and Artificial Intelligence in Finance
2020 – 2024

Led Europe's largest research network on FinTech and AI in Finance with **400 academic members from 51 countries**. Coordinated international research collaborations, organised major conferences and workshops, and enabled interdisciplinary research across member institutions. Managed **€860,000** in COST funding from Horizon Europe. Established strategic partnerships across academia, industry, and regulatory bodies, positioning the network as the leading European forum for advancing AI applications in financial services.

Principal Investigator and Coordinator, Marie Skłodowska-Curie Actions Industrial Doctoral Network on Digital Finance
January 2024 – Present

Lead a **€4.5 million** European PhD research and training programme focused on digital finance under Horizon Europe. Coordinate collaboration among more than **20 institutions** and **100 participating researchers** from academia and industry. Key partners include **European Central Bank**, **ING Group**, **Deutsche Börse**, and **Bank for International Settlements**. Direct strategic research agenda on AI, machine learning, and digital transformation in financial services whilst supervising capacity building, knowledge exchange, and impact generation across the network.

Principal Investigator, Swiss National Science Foundation Research Projects
2016 – Present

Principal Investigator for six major research projects funded by SNSF: Narrative Digital Finance investigating narratives in financial markets using AI (CHF 236,118, 2023-2026); Network-Based Credit Risk Models developing ML approaches for P2P lending (CHF 347,836, 2022-2025); Hybrid Approach for Investors Driving Sustainability using AI for investor classification (CHF 150,000, 2020-2021, Co-PI); Anomaly and Fraud Detection in Blockchain Networks applying ML to blockchain security (CHF 6,700, 2022-2023); Mathematics and FinTech foundational research on digital transformation (CHF 300,000,

2016-2019); and Blockchain and Virtual Currencies early cryptocurrency research (CHF 100,000, Co-PI, 2018).

Steering Committee Member, Luxembourg National Research Fund
June 2024 – Present

Reviewer for the National Center of Excellence in Research (NCER) line on Financial Technologies. Promote transdisciplinary research and intersectoral collaboration addressing societal-relevant financial missions whilst providing strategic leadership in financial technology research at national level.

International Advanced Fellow, Babeș-Bolyai University, Romania
January 2024 – December 2024

Conduct research on AI in finance, blockchain fraud detection, and narrative digital finance whilst building international research capacity and collaboration.

Visiting Research Professor, American University of Sharjah, UAE
January 2022 – Present

Collaborate with Department of Mathematics and Statistics on AI in Finance research, focusing on blockchain fraud detection, narrative digital finance, and artificial intelligence applications.

Major Industry Partnerships

ING Group - Joint Professorship
May 2021 – Present
University of Twente - ING Collaboration

Partnership with **ING Group's Global Analytics team** on AI-driven finance research including synthetic data generation, risk management, Large Language Models, reinforcement learning applications, and credit risk early warning systems. Joint supervision of MSc students and collaborative research projects.

European Central Bank - Cooperation Partner
September 2023 – Present
MSCA Industrial Doctoral Network on Digital Finance

Collaborating on AI and data science initiatives for financial supervision. Research focus on AI applications for **ECB's supervisory tasks**. Contributing to regulatory innovation and supervisory technology development.

Bank for International Settlements - Cooperation Partner
September 2023 – Present
MSCA Industrial Doctoral Network on Digital Finance

Engaged in data science and statistics research exchange to enhance global financial analysis. Contributing expertise on AI applications in central banking and financial stability.

Deutsche Börse - Collaboration Partner
January 2024 – Present
SNSF Narrative Digital Finance Project

Partnering with **Deutsche Börse's Quantitative Research team** on narrative digital finance projects funded by Swiss National Science Foundation. Research focus on high-frequency trading and market microstructure.

Additional Strategic Industry Partners

Quoniam Asset Management (2016 – Present) - AI-driven portfolio optimization and predictive analytics, NLP in financial markets.
QCAM Currency Asset Management (2017–2020) - Development of currency overlay asset management products.

Projects and Grants

As Principal Investigator and Coordinator of 30+ research projects, I have secured **€8.0 million** in research funding (**€7.5 million** directly attributable as PI) from competitive European sources (Horizon Europe, COST Association), national programmes (Swiss National Science Foundation), innovation agencies (Innosuisse), and industry partners. This funding has enabled strategic partnerships with the **European Central Bank**, **Quoniam Asset Management**, **ING Group**, and **Deutsche Börse**, whilst advancing research in artificial intelligence, machine learning, and digital finance applications.

MSCA Industrial Network on Digital Finance, Horizon Europe, **€4,500,000**, Coordinator and Principal Investigator, January 2024 – December 2027

> This Marie Skłodowska-Curie Actions Industrial Doctoral Network advances research in digital finance through collaboration among more than 20 institutions and 100 participating researchers from academia and industry. Key partners include the **European Central Bank**, **ING Group**, **Deutsche Börse**, and **many universities across Europe**, addressing critical challenges in AI applications for financial services and regulation.

2. COST Action FinTech and AI in Finance, Horizon Europe, **€860,000**, Principal Investigator and Action Chair, April 2020 – October 2024

> Coordinated Europe's largest research network on FinTech and AI in Finance with 400 academic members from 51 countries, organising major conferences and enabling interdisciplinary research. Established strategic partnerships across academia, industry, and regulatory bodies whilst positioning the network as the leading European forum for AI applications in financial services.

3. Narrative Digital Finance: A Tale of Structural Breaks, Bubbles and Market Narratives, Swiss National Science Foundation, **CHF 236,118**, Principal Investigator, November 2023 – July 2025

> Investigating the role of narratives, structural breaks, and bubbles in digital financial markets using AI and natural language processing techniques. Partnership with Deutsche Börse's Quantitative Research team focusing on high-frequency trading and market microstructure.

4. Network-Based Credit Risk Models in P2P Lending Markets, Swiss National Science Foundation, **CHF 347,836**, Principal Investigator, August 2022 – August 2025

> Developing novel machine learning approaches for credit risk assessment using network topology and centrality measures in peer-to-peer lending platforms. Research addresses how network structure and borrower connections affect default risk and lending dynamics.

5. Currency Hedging for SMEs and Pension Funds, Innosuisse, **CHF 439,610**, Principal Investigator, October 2018 – October 2021

> Developed practical currency hedging solutions for small and medium-sized enterprises and pension funds using quantitative methods and algorithmic approaches. Industry partnership with QCAM Currency Asset Management focusing on real-world implementation and deployment.

6. Strengthening Swiss Financial SMEs through Reinforcement Learning, Innosuisse, **CHF 312,315**, Deputy Principal Investigator, April 2021 – July 2022

> Applied reinforcement learning techniques to enhance competitiveness of Swiss small and medium-sized financial services firms through AI-driven decision-making and optimization. Collaborated with industry partners to develop practical RL solutions for real-world financial applications.

7. Mathematics and FinTech: Digital Transformation of the Finance Industry, Swiss National Science Foundation, **CHF 300,000**, Principal Investigator, January 2016 – December 2019

> Foundational research project investigating the mathematical and computational foundations of financial technology and the digital transformation of the finance industry. This work established the research programme on machine learning and artificial intelligence applications in finance that continues today.

8. Large Scale Data-Driven Financial Risk Modelling, Innosuisse, **CHF 309,000**, Team Member, January 2017 – July 2019

Developed large-scale data-driven approaches for financial risk modelling using machine learning and big data analytics. Industry collaboration focusing on practical risk management applications for financial institutions.

9. Towards Explainable AI and Machine Learning in Credit Risk, Innosuisse, **CHF 282,969**, Co-Principal Investigator, September 2020 – September 2022

Developed methods for creating explainable and interpretable AI models for credit risk assessment, addressing the critical barrier of black-box models in financial services. Industry partnership focusing on transparent ML solutions that satisfy regulatory requirements.

10. Decentralized Financing of Fairtrade Producers Using Blockchains, Innosuisse, **CHF 250,539**, Deputy Principal Investigator, August 2020 – January 2023

Investigated blockchain-based decentralized financing solutions to connect Fairtrade producers with consumers and investors using digital tokens and distributed ledger technology. Project addressed financial inclusion and sustainable supply chain financing challenges.

11. Financial Supervision and Technology Compliance, Horizon 2020, **€200,000**, Principal Investigator, April 2018 – April 2021

Research on financial supervision technology and regulatory compliance in the European context, addressing how technology can enhance supervisory effectiveness. Collaborated with European Central Banks through Horizon Europe framework on regulatory technology and SupTech applications.

12. Hybrid Approach for Robust Identification of Investors Driving Corporate Sustainability and Innovation, Swiss National Science Foundation, **CHF 150,000**, Principal Investigator, February 2020 – August 2021

Developed AI-driven methods for identifying and measuring investors who drive corporate sustainability and innovation, creating policy tools for evaluating investor impact. Research combines machine learning with financial economics to assess quality of companies' investor bases.

13. Blockchain and Virtual Currencies, Swiss National Science Foundation, **CHF 100,000**, Co-Principal Investigator, January 2018 – December 2018

Early research project on cryptocurrency markets and blockchain technology, investigating statistical properties of Bitcoin and cryptocurrencies. This foundational work produced multiple best-paper-award-winning publications on crypto markets and established expertise in blockchain research.

14. Conferences on Artificial Intelligence in Finance, Innosuisse, **CHF 80,000**, Principal Investigator, January 2021 – July 2022

Organised series of conferences on AI in Finance bringing together academics, industry practitioners, and regulators to advance knowledge exchange. These events built the community and network that led to the COST Action and MSCA collaborations.

15. Quantitative Trading Strategies, Industry Partner, **CHF 80,000**, Principal Investigator, April 2016 – December 2017

Developed and implemented quantitative trading strategies using machine learning and statistical methods for financial markets. Industry-funded research project focusing on algorithmic trading, optimal execution, and portfolio optimization applications.

16. Swisscom E-Signature Technical Project, Swisscom, **CHF 80,000**, Co-Principal Investigator, January 2018 – December 2019

Technical research project on electronic signature infrastructure and cryptographic security for digital transactions in collaboration with Swisscom. Addressed practical challenges in implementing secure digital signature systems for financial and business applications.

17. Digital Real Estate Dossier (DIGIM), Innosuisse, **CHF 204,012**, Co-Principal Investigator, November 2018 – April 2020

Developed digital infrastructure for real estate documentation and transaction processing using blockchain and distributed ledger technology. Industry collaboration focusing on digitalization of real estate markets and property records management.

18. Digitalization of Non-Bankable Assets (Art), Innosuisse, **CHF 300,000**, Deputy Principal Investigator, January 2020 – June 2020

Investigated blockchain-based solutions for digitalization and tokenization of non-bankable assets including art and collectibles. Research addressed valuation, authentication, and fractional ownership challenges using distributed ledger technology.

19. Digital Transformation of Finance and Society, Institutional Fund University of Twente, **€20,000**, Principal Investigator, January 2023 – December 2023

20. Advanced AI-Supported Rating Models for P2P Systems, Innosuisse, CHF 15,000, Co-Principal Investigator, July 2020 – July 2021

21. Anomaly and Fraud Detection in Blockchain Networks, Swiss National Science Foundation, CHF 6,700, Principal Investigator, August 2022 – August 2023

22. Methods for Fintech and Artificial Intelligence in Finance, Blended Intensive Programme (EU), €6,000, Co-Principal Investigator, September 2024

23. Strategic Research Fund: Digital Finance, Institutional Fund BFH, €10,000, Principal Investigator, January 2023 – December 2023

24. Strategic Research Fund: NSF-SNF, Institutional Fund BFH, €5,000, Co-Principal Investigator, January 2023 – December 2023

25. AI in Finance Conference, Institutional Fund BFH, €5,000, Principal Investigator, January 2023 – December 2023

26. FinTech and AI in Finance COST Grants, COST Association, €6,300, Principal Investigator, November 2021 – October 2022

27. PhD Training School University of Twente, COST Grant, €4,000, Principal Investigator, June 2024

28. 8th European Conference on AI in Finance, COST Grant, €4,000, Principal Investigator, September 2022

29. 11th FinanceCom Conference, COST Grant, €6,000, Principal Investigator, August 2022

30. Deep Learning & AI for Trading Strategies, Innosuisse, CHF 15,000, Deputy Principal Investigator, July 2019 – January 2020

31. Assessment of Derivatives-Based Hedging Solutions, Industry Partner, CHF 15,000, Co-Principal Investigator, June 2021 – November 2021

32. 1st European Conference on AI in Industry, Industry, CHF 20,000, Principal Investigator, January 2016 – September 2016

33. 2nd European Conference on AI in Industry, Industry, CHF 20,000, Principal Investigator, January 2017 – September 2017

34. 3rd European Conference on AI in Industry, Industry, CHF 20,000, Principal Investigator, January 2018 – September 2018

35. 4th European Conference on AI in Industry, Industry, CHF 20,000, Principal Investigator, January 2019 – September 2019

36. 5th European Conference on AI in Industry, Industry, CHF 20,000, Principal Investigator, January 2020 – September 2020

37. 6th European Conference on AI in Industry, Industry, CHF 20,000, Principal Investigator, January 2021 – September 2021

38. Renewable Energies in Future Energy Supply, Innosuisse, CHF 48,000, Team Member, July 2013 – December 2016

39. Industrialization of Quantitative Research, Institutional Fund ZHAW, CHF 10,000, Principal Investigator, April 2015 – December 2016

40. Swissnex Research Stay New York, Swissnex Mobility Grant, CHF 10,000, Principal Investigator, July 2018

Publications

Work in Progress

1. Osterrieder, J., & Schlamp, S. (2025). Reaction times to economic news in high-frequency trading: An analysis of latency and informed trading ahead of macro-news announcements.

2. Taibi, G., Schlamp, S., & Osterrieder, J. (2024). Nanoseconds traders: How ultra-fast and high-frequency traders reshape market microstructure.

3. Amato, A., Machado, M., Rebelo Moreira, J.L., & Osterrieder, J. (2024). Integrating Early Warning Systems with Customer Segmentation: An Information Management Approach to Identifying Business Opportunities for Commercial Customers in the Financial Industry. Available at SSRN 4989541.

4. Skaftadóttir, H.K., Belbe, S., Teijeiro, L.G., Wenzlaff, K., Mare, C., Elitzur, R., ... & Osterrieder, J. (2024). AI 4 Crowdfunding: A hands-on roadmap to study and understand crowdfunding data using critical thinking.

5. Bolesta, K., Akar, M., Coita, I., Tarantola, C., Iannario, M., Osterrieder, J., Sipos, C., et al. (2024). AI-Driven Failed Trials in Investment Strategies: A Network Data Analysis Approach.

6. Machado, M., Coita, I.F., Bolesta, K., Filipovska, O., van Heeswijk, W., Muñiz, J.A., ... & Osterrieder, J. (2024). What do we Know About Fraud Detection in Peer-to-Peer Lending? A Systematic Literature Review.

7. Arakelian, V., Bolesta, K., Vlah Jeric, S., Liu, Y., Osterrieder, J., Potì, V., et al. (2024). A discussion paper for possible approaches to building a statistically valid backtesting framework. Available at SSRN 4893677.

Peer-Reviewed Journal Articles

1. Goldmann, S.H., Machado, M.R., & Osterrieder, J.R. (2025). Advancing credit risk assessment in the retail banking industry: A hybrid approach using time series and supervised learning models. *Data & Knowledge Engineering*, 102490.

2. Machado, M.R., Chen, D.T., & Osterrieder, J.R. (2025). An analytical approach to credit risk assessment using machine learning models. *Decision Analytics Journal*, 100605.

3. van Braak, B., Osterrieder, J. R., & Machado, M. R. (2025). How can consumers without credit history benefit from the use of information processing and machine learning tools by financial institutions? *Information Processing & Management*, 62(2), 103972.

4. Kozian, L. L., Machado, M. R., & Osterrieder, J. R. (2025). Modeling commodity price co-movement: Building on traditional time series models and exploring applications of machine learning algorithms. *Decisions in Economics and Finance*, 1-44.

5. Beltman, J., Machado, M. R., & Osterrieder, J. R. (2025). Predicting retail customers' distress in the finance industry: An early warning system approach. *Journal of Retailing and Consumer Services*, 82, 104101.

6. Amato, A., Osterrieder, J. R., & Machado, M. R. (2025). How can artificial intelligence help customer intelligence for credit portfolio management? A systematic literature review. *International Journal of Information Management Data Insights*, 4(2), 100234.

7. Chan, S., Chandrashekhar, D., Almazloum, W., Zhang, Y., Lord, N., Osterrieder, J., & Chu, J. (2024). Stylized facts of metaverse non-fungible tokens. *Physica A: Statistical Mechanics and its Applications*, 130103. Elsevier.

8. Liu, Y., Baals, L. J., Osterrieder, J., & Hadji-Misheva, B. (2024). Leveraging network topology for credit risk assessment in P2P lending: A comparative study under the lens of machine learning. *Expert Systems with Applications*, 252, 124100.

9. Liu, Y., Baals, L. J., Osterrieder, J., & Hadji-Misheva, B. (2024). Network centrality and credit risk: A comprehensive analysis of peer-to-peer lending dynamics. *Finance Research Letters*, 63, 105308. Elsevier.

10. Coita, I.-F., Belbe, Ș. Ș., Mare, C., Osterrieder, J., & Hopp, C. (2023). Modelling taxpayers' behaviour based on prediction of trust using sentiment analysis. *Finance Research Letters*, 58, 104549. Elsevier.

11. Osterrieder, J., & Seigne, M. (2023). Examining share repurchase executions: Insights and synthesis from the existing literature. *Frontiers in Applied Mathematics and Statistics*, 9, 1265254. Frontiers Media SA.

12. Liu, Y., Osterrieder, J., Hadji-Misheva, B., Koenigstein, N., & Baals, L. (2023). Navigating the environmental, social, and governance (ESG) landscape: Constructing a robust and reliable scoring engine—Insights into data source selection, indicator determination, weighting and aggregation techniques, and validation processes for comprehensive ESG scoring systems. *Open Research Europe*, 3. European Commission, Directorate General for Research and Innovation.

13. Osterrieder, J. (2023). Share buybacks: A theoretical exploration of genetic algorithms and mathematical optionality. *Frontiers in Artificial Intelligence*, 6, 1276804. Frontiers Media SA.

14. Osterrieder, J., Misheva, B. H., & Machado, M. (2023). Digital finance: Reaching new frontiers. *Open Research Europe*, 3. European Commission, Directorate General for Research and Innovation.

15. Henrici, A., & Osterrieder, J. (2022). Artificial intelligence in finance and industry: Highlights from 6 European COST conferences. *Frontiers in Artificial Intelligence*, 5, 1007074. Frontiers Media SA.

16. Filipovska, O. (2022). Discussion on: Programmable money: Next-generation blockchain-based conditional payments by Ingo Weber and Mark Staples. *Digital Finance*, 4(2), 133–134. Springer International Publishing.

17. Hadji-Misheva, B., Jaggi, D., Posth, J.-A., Gramespacher, T., & Osterrieder, J. (2021). Audience-dependent explanations for AI-based risk management tools: A survey. *Frontiers in Artificial Intelligence*, 4, 794996. Frontiers Media SA.

18. Posth, J.-A., Kotlarz, P., Misheva, B. H., & Osterrieder, J. (2021). The applicability of self-play algorithms to trading and forecasting financial markets. *Frontiers in Artificial Intelligence*, 4, 668465. Frontiers Media SA.

19. Osterrieder, J., Kucharczyk, D., Rudolf, S., & Wittwer, D. (2020). Neural networks and arbitrage in the VIX: A deep learning approach for the VIX. *Digital Finance*, 2(1), 97–115. Springer International Publishing.

20. Osterrieder, J., & Barletta, A. (2020). Special issue on cryptocurrencies. *Digital Finance*, 1, 1–4. Springer International Publishing.

21. Giudici, P., Hochreiter, R., Osterrieder, J., Papenbrock, J., & Schwendner, P. (2019). AI and financial technology. *Frontiers in Artificial Intelligence*, 2, 25. Frontiers Media SA.

22. Osterrieder, J., & Barletta, A. (2019). Editorial on the special issue on cryptocurrencies. *Digital Finance*, 1, 1–4. Springer International Publishing.

23. Chu, J., Chan, S., Nadarajah, S., & Osterrieder, J. (2017). GARCH modelling of cryptocurrencies. *Journal of Risk and Financial Management*, 10(4), 17. **[Best Paper Award, Journal of Risk and Financial Management, 2019]**

24. Chan, S., Chu, J., Nadarajah, S., & Osterrieder, J. (2017). A statistical analysis of cryptocurrencies. *Journal of Risk and Financial Management*, 10(2), 12. **[Best Paper Award, International Conference on Economics, Finance and Statistics, Hong Kong, 2017]**

25. Osterrieder, J., Strika, M., & Lorenz, J. (2017). Bitcoin and cryptocurrencies—not for the faint-hearted. *International Finance and Banking*, 4(1), 56.

26. Osterrieder, J., & Lorenz, J. (2017). A statistical risk assessment of Bitcoin and its extreme tail behavior. *Annals of Financial Economics*, 12(1), 1750003. World Scientific Publishing Company.

27. Lorenz, J., & Osterrieder, J. (2009). Simulation of a limit order driven market. *The Journal of Trading*, 4(1), 23–30. Portfolio Management Research.

28. Osterrieder, J. R., & Rheinländer, T. (2006). Arbitrage opportunities in diverse markets via a non-equivalent measure change. *Annals of Finance*, 2(3), 287–301. Springer.

Five Most Important Invited Talks and Presentations

1. Panelist, ``Digital Transformation of EU's Financial Markets", 11th European Financial Regulation Conference, October 11, 2022
2. Honorary Speaker, ``Artificial Intelligence in Finance", FinTech Days Tirana: Digital Transformation—Where Tech Meets Finance, September 23, 2022

3. Keynote Speaker, ``Fintech and Artificial Intelligence in Finance - An Overview'', IFC Workshop on Data Science in Central Banking: Applications and Tools, Bank for International Settlements, February 14–17, 2022
4. Invited Speaker, ``Generative Adversarial Networks and Its Applications in Finance'', 7th Annual Columbia-Bloomberg Machine Learning in Finance Conference, Columbia University, September 17, 2021
5. Invited Speaker, ``Generative Adversarial Networks and Some Applications in Finance'', Advances in Stochastic Analysis Conference, CIRM, Luminy, France, September 13–17, 2021

Additional Invited Talks and Presentations

6. Award Presenter, COST FinAI Datathon Award Ceremony, Tirana, Albania, September 22, 2022
7. Co-opening Speaker, COST FinAI Workshop on Diversity, Tirana, Albania, September 22, 2022
8. Session Moderator, FinTech: Challenges and Opportunities, COST FinAI Workshop, Tirana, Albania, September 21, 2022
9. Session Chair, Central Bank Digital Currencies, European Alternative Finance Conference, Utrecht, Netherlands, October 6, 2022
10. Speaker, FinTech and AI, University of Twente and ING Group, FinanceCom 2022, Enschede, Netherlands, August 24, 2022
11. Speaker, COST FinAI Management Committee Meeting, August 22, 2022
12. Co-Chair, Digital Disruption in Financial Markets Roundtable, ICESS 2022, June 16–17, 2022
13. Speaker, The European COST Action Fintech and AI in Finance - A History and Definition of Artificial Intelligence, ICESS 2022, June 16–17, 2022
14. Speaker, Artificial Intelligence in Finance - Data Challenges and Biases, Putting Science Into Standards Workshop, June 9, 2022
15. Speaker, COST Action Fintech and Artificial Intelligence in Finance - An Introduction, Diversity Challenges and Opportunities in FinTech, May 16–17, 2022
16. Session Chair, Welcome Address, Diversity Challenges and Opportunities in FinTech, May 16–17, 2022
17. Speaker, Machine Learning and AI in Finance – with Applications to Optimal Trading Strategies, Technology, Innovation and Stability: New Directions in Finance, May 5–6, 2022
18. Invited Talk, Generative Adversarial Networks for Finance, Bits and Blocks (Blockchain) Workshop 2021, December 18, 2021
19. Chair, 2nd Annual Management Committee Meeting of the COST Action CA19130, Bucharest University of Economic Studies, October 28, 2021
20. Invited Speaker, Deep Generation of Financial Data, Annual Research Conference of the COST Action CA19130, October 28, 2021
21. Invited Speaker, Fintech and Artificial Intelligence in Finance - An Overview, Skopje, North Macedonia, October 15, 2021
22. Invited Speaker, Deep Generation of Financial Data, 6th European COST Conference on AI in Industry and Finance, September 9, 2021
23. Invited Speaker, COST Action Fintech and Artificial Intelligence in Finance - An Overview, 6th European COST Conference, September 9, 2021
24. Roundtable Participant, Trustworthy AI in Europe: Multiple Perspectives, IEEE Portugal, June 24, 2021
25. Panel Participant, The Impact of AI on Germany's Industry, EU Tech Chamber, June 8, 2021
26. Speaker, Running a European Research Network on AI during Corona-times, Swiss AI4Good, May 26, 2021
27. Speaker, Fintech and Artificial Intelligence in Finance, 1st International Conference on Economics and FinTech, April 12, 2021
28. Speaker, Fintech and AI - Towards a Transparent Financial Industry, RegTech Workshop, October 23, 2020
29. Speaker, Training ML Models: Decision Trees and Random Forest, Central Bank of Hungary SupTech Training, Budapest, October 27, 2020
30. Speaker, What is AI? How is it Transforming the Financial Ecosystem?, Central Bank of Hungary SupTech Training, October 26, 2020
31. Speaker, Blockchain and Distributed Trust, Winlink Winterthur, Switzerland, October 1, 2020
32. Speaker, Bitcoin and Cryptocurrencies, Third International Conference on Mathematics and Statistics, American University of Sharjah, February 2020
33. Research Stay, Invited Research Stay, American University of Sharjah, February 2020

34. Invited Talk, Haindorf Seminar, Ladislaus von Bortkiewicz Chair of Statistics, Humboldt University Berlin, January 2019
35. Research Stay, Ladislaus von Bortkiewicz Chair of Statistics, Humboldt University Berlin, November 26–30, 2018
36. Session Chair, Markets, Bank and Finance, 2nd Berlin Conference on Crypto-Currencies in a Digital Economy, November 29–30, 2018
37. Speaker, Introducing Trust into Blockchain, 2nd Berlin Conference on Crypto-Currencies, November 29–30, 2018
38. Speaker, Trend-Following Strategies for Currency Markets, 11th Conference on Computational and Financial Econometrics, University of London, December 16, 2017
39. Speaker, Cryptocurrencies – Not for the Faint-hearted, Einstein Center Digital Future, TU Berlin, November 16, 2017
40. Speaker, Cryptocurrencies and Risk Management, FinTech Innovation Conference, Zurich, March 2017
41. Speaker, A Unified Standard for Modelling Financial Contracts, Fintech Workshop, London, January 2017
42. Keynote Speaker, International Conference on Economics and Finance, Hong Kong, January 2017
43. Speaker, Algorithmic Trading - The Rise of the Machines (for Experts), Swiss Finance Institute Breakfast Seminar, September 15, 2016
44. Speaker, Algorithmic Trading, Internal Talk at UBS, 2016
45. Invited Talk, Creating and Combining Alpha Streams from Big Data, Research Symposium London, Ravenpack, November 19, 2015
46. Moderator, Alpha Trader Forum (ATF), May 2017

PhD Supervision and Committee Membership

Current PhD Students (Primary Supervisor)

Dennis Wegmann, University of Twente, Netherlands
Topic: AI and Asset Management (Industry cooperation with Quoniam Asset Management)
Expected completion: 2029

Gabin Taibi, University of Twente, Netherlands
Topic: Narrative Digital Finance and High-Frequency Trading
Expected completion: 2027

Lennart Baals, University of Twente, Netherlands
Topic: Network-Based Credit Models for P2P Lending
Expected completion: 2026

Yiting Liu, University of Twente, Netherlands
Topic: Network-Based Credit Models for P2P Lending
Expected completion: 2026

Rahul Tak, ASE Bucharest Business School, Romania
Topic: High-Frequency Market Microstructure and Machine Learning
Expected completion: 2027

Fulvio Rado, BBU University, Romania
Topic: Machine Learning for Financial Markets
Expected completion: 2027

Completed PhD Supervisions

Dr. Piotr Kotlarz, University of Liechtenstein
Thesis: The EUR/CHF Exchange Rate: Drivers, Forecasting, and Trading Strategies
Role: Daily Supervisor, 2019 – 2023

Dr. Weilong Fu, Columbia University, USA
Thesis: Innovative Derivative Pricing and Time Series Simulation Techniques via Machine and Deep Learning
Role: Co-Supervisor and PhD Committee Member, 2021 – 2022

Dr. Patchara Santawisook, Worcester Polytechnic Institute (WPI), USA
Thesis: Price Impact of VIX Futures and Two Order Book Mean-Field Games
Role: PhD Committee Member, 2022

Dr. Branka Hadji Misheva, University of Pavia, Italy
Thesis: Network-based Credit Risk Models
Role: Daily Supervisor, 2019 – 2022

Dr. Martin Wiegand, University of Manchester, UK
Thesis: Extreme Value Theory and Distribution Theory
Role: Daily Supervisor, 2017

PhD Examination Committees

1. Dr. Zexuan Yin, University College London, UK. Thesis: Neural Time Series Forecasting With Latent Dynamics. PhD Examiner, 2024

2. Dr. Rui Li, University of Manchester, UK. Thesis: Generalizations of the Normal Distribution. PhD Examiner, 2020

3. Dr. Idika Okorie, University of Manchester, UK. Thesis: Contributions to Distribution Theory with Applications. PhD Examiner, 2019

4. Dr. M. Weibel, University of Technology Sydney, Australia. Thesis: Fast Scenario-Based Optimal Control for Stochastic Portfolio Optimization. PhD Examiner, 2019

Habilitation Committee Memberships

1. Ing. Tomáš Plíhal, Ph.D., Department of Finance, Faculty of Economics and Administration, Masaryk University, Czech Republic. Habilitation Topic: FX Market Volatility Modelling: Can We Use Low Frequency Data? Committee Member, January 2023

Teaching Experience

Executive Education

1. Generative AI for CFOs, CFO Workshop MENA, Fall 2024. Workshop on AI's business impact for 60+ CFOs.

2. CAS Sustainable Finance, University of Zurich, Switzerland, Fall 2021–2024. Module on AI in sustainable finance.

3. CAS Big Data & Distributed Ledger, ZHAW, Switzerland, 2019–2022. Director of Studies, Machine Learning in Finance.

4. Machine Learning and Deep Learning in Finance, ZHAW, Switzerland, 2021. Director of Studies, curriculum development and teaching.

5. Financial Technology, Horizon Europe Training Programme, 2017–2020. Research and training on fintech at European Central Banks.

6. Algorithmic Trading – Latest Developments, Deutsche Börse, 2019. Workshop on algorithmic trading for senior executives.

7. Basel IV and Beyond – Latest Regulations, UBS, 2019–2020. Training for 100+ UBS employees globally on Basel IV regulations.

Doctoral Level Courses

1. Reinforcement Learning for Finance, University of Twente, Netherlands, June 2024. Co-Organizer and Trainer.

2. Methods for Fintech & AI in Finance, University of Naples, Italy, September 2024. Scientific Committee Member and Trainer.

3. Fintech and AI in Finance Training School, University of Twente, Netherlands, June 2024. Organizer and Trainer.

4. Advanced Statistical Modelling for Fintech & Financial Inclusion, University of Naples, Italy, September 2023. Lecturer.

5. European Summer School in Financial Mathematics, TU Delft, Netherlands, September 2023. Lecturer on Deep Reinforcement Learning.

6. Fintech & AI in Finance Training School, University of Twente, Netherlands, June 2023. Organizer and Trainer.

7. Fintech & AI in Finance: Training School for Latest Technologies, University of Tirana, Albania, April 2023. Lecturer.

Master's Level Courses

1. Information Systems for the Financial Services Industry, University of Twente, Netherlands, Spring 2025. Coordinator. Developed curriculum.

2. Reinforcement Learning in Finance, University of Twente, Netherlands, Spring 2022–2025. Developed 40% of curriculum.

3. Information Systems for the Financial Services Industry, University of Twente, Netherlands, Spring 2022–2024. Module: AI in Finance.

4. Artificial Intelligence for Business, University of Twente, Netherlands, Spring 2022–2024. Module: Deep Reinforcement Learning in Finance.

5. Data Science for Business, University of Münster, Germany, Spring 2022, 2023. Module: AI Business Models.

6. Digital Finance, Bern Business School, Switzerland, Fall 2023, 2024. Machine Learning and AI in finance.

7. Statistics for Finance, Bucharest Business School, Romania, Spring 2024. Invited International Lecturer.

Bachelor's Level Courses

1. Digital Finance, Bern Business School, Switzerland, Fall 2022–2024. Developed curriculum on ML and AI.

2. AI and ML for Finance, Bern Business School, Switzerland, Fall 2022–2024. Introduction to ML algorithms using Python.

3. Empirical Methods in Finance, ZHAW, Switzerland, Spring 2022. Developed curriculum.

4. Introduction to Interest Rate Theory, ZHAW, Switzerland, Spring 2018, 2019. Focus on interest rate models.

5. Quantitative Risk Management, ZHAW, Switzerland, Spring 2015–2017. Extended course with latest methods.

6. Mathematics of Financial Markets I, ZHAW, Switzerland, Spring 2015–2016. Asset pricing and financial markets.

7. Mathematics of Financial Markets II, ZHAW, Switzerland, Fall 2015–2016. CAPM and APT models.

8. Topics in Financial Engineering, ZHAW, Switzerland, Spring 2016–2022. Focus on real-world use cases.

Selected Master's and Bachelor's Thesis Supervision

Supervised >37 Bachelor's theses and >20 Master's theses on topics including Machine Learning, Reinforcement Learning, Deep Learning, Artificial Intelligence in Finance, Credit Risk Management, FinTech, Digital Finance, Blockchain, Cryptocurrencies, and Quantitative Trading Strategies.

Selected Master's Thesis Supervisions

1. Daniel Sam Attard, "Leveraging Uncertainty Information in Deep Learning for Algorithmic Trading", MSc Artificial Intelligence, University of Malta, 2023

2. Alessandra Amato, "Applications of Early Warning Systems for Customer Segmentation of Wholesale Banking Clients", MSc Business Information Systems, University of Twente, 2023

3. Daniel Chen, "Development of Financial Distress Prediction Model for Watchlist Classification of Wholesale Banking Clients", MSc Industrial Engineering and Management, University of Twente, 2023

4. Luca Kozian, "Commodity Price Co-Movement: Comparing Models and Correlation Measures", MSc Business Administration, University of Twente, 2023

5. Sebastian Goldmann, "Enhancing Credit Risk Prediction in Retail Banking: Integrating Time Series and Classical ML Algorithms", MSc Industrial Engineering and Management, University of Twente, 2024

Conference Organization and Scientific Committee Memberships

1. Reinforcement Learning in Finance, Enschede, Netherlands. Chair and Co-Organizer, February 2–7, 2025
2. FinTech and AI in Finance PhD Training School, Enschede, Netherlands. Chair, June 19–23, 2023
3. European Alternative Finance Conference, Utrecht, Netherlands. Co-Organizer, October 5–7, 2022
4. Annual FinTech and AI in Finance Management Committee Meeting, Bern, Switzerland. Main Organizer, September 27–28, 2023
5. FinTech and AI in Finance Conference, Helsinki, Finland. Main Co-Organizer, July 10–11, 2023
6. Women in FinTech and AI (3rd Edition), Coimbra, Portugal. Co-Organizer, June 1–2, 2023
7. FinTech and AI in Finance Meets Brussels, Brussels, Belgium. Organizer, May 15–16, 2023
8. ML, AI, and Data Protection in FinTech Conference, Dublin, Ireland. Scientific Committee Member, July 6–8, 2023
9. 22nd ECMI Conference on Applied Mathematics, Wrocław, Poland. Scientific Committee Member, June 26–30, 2023
10. 1st International Conference on Economics and FinTech, Athens, Greece. Co-Organizer, April 12, 2021
11. Annual FinTech and AI in Finance MC Meeting, Bern, Switzerland. Main Organizer, September 27–28, 2023
12. Management Committee COST Action CA19130, Utrecht, Netherlands. Organizer, October 5, 2022
13. COST FinAI Management Committee Meeting, Enschede, Netherlands. Organizer, August 22, 2022
14. FinTech and AI in Finance Conference, Helsinki, Finland. Main Co-Organizer, July 10–11, 2023
15. Research Conference on FinTech, Coimbra, Portugal. Panel Member, June 1–2, 2023
16. Diversity Challenges for a Sustainable FinTech, Pavia, Italy. Scientific Committee Member, April 13–14, 2023
17. ML, AI, and Data Protection in FinTech Conference, Dublin, Ireland. Scientific Committee Member, July 6–8, 2023
18. 22nd ECMI Conference on Applied Mathematics, Wrocław, Poland. Scientific Committee Member, June 26–30, 2023
19. Technology, Innovation and Stability: New Directions in Finance, Zagreb, Croatia. Committee Member, May 5–6, 2022
20. ECMI 2021 Conference, Wuppertal, Germany. Scientific Committee Member, April 13–15, 2021
21. Annual European Conference on AI in Finance, Bern, Switzerland. Chair and Organizer, 2021–2022
22. Annual European Conference on AI in Finance and Industry, Winterthur, Switzerland. Chair and Organizer, 2015–2021

Academic Engagement

Editorial Positions

1. Associate Editor, Digital Finance (Springer), since 2020

2. Associate Editor, Frontiers in Artificial Intelligence (Section: AI in Finance), since 2020

3. Associate Editor, Frontiers in Blockchain (Section: Financial Risk and Blockchain), since 2020

4. Associate Editor, Frontiers in Artificial Intelligence (Section: AI in Finance and Industry), since 2020

5. Associate Editor, Journal of Investment Strategies, since 2022

6. Editorial Board Member, Journal of Investment Strategies, since 2021

Guest Editor of Research Topics

1. Statistical Modelling for Fintech, Financial Inclusion, and Inequality, Frontiers in AI in Finance, 2024

2. AI in Finance and Industry: 6 European COST Conferences, Frontiers in AI in Finance, 2020

3. AI and Financial Technology, Frontiers in AI in Finance, 2019

4. Cryptocurrencies, Digital Finance (Springer), 2018

Reviewer for Academic Journals

Annals of Operations Research (Springer, since 2018), Journal of Banking and Finance (2018), Empirical Economics (Springer, since 2018), European Journal of Finance (since 2019), Frontiers in Artificial Intelligence in Finance (since 2018), Journal of Investment Strategies (since 2020).

Expert Reviewer for the European Commission

1. European Innovation Council and SMEs Executive Agency Programme, 2023

2. European Innovation Council Accelerator Pilot Program, 2022

3. European Innovation Council Accelerator Pilot Program, 2021

4. Executive Agency for Small and Medium-Sized Enterprises, 2020

Outreach and Policy Engagement

1. Academia-Government Policy Workshop on AI in Finance, European Commission, Brussels, Organizer, May 2024

2. Academia-Government Policy Workshop on AI in Finance, COST Association, Brussels, Organizer, May 2023

3. Research Workshop on Blockchain, Hungarian Central Bank, Budapest, Speaker, April 2021

4. Research Workshop on Artificial Intelligence, Hungarian Central Bank, Budapest, Speaker, March 2020

5. Research Workshop on Big Data, Hungarian Central Bank, Budapest, Speaker, June 2019

6. Academia-Industry Round-Table Discussion: Big Data Analytics in FinTech, Zurich, Switzerland, Organizer, July 2019

Honors and Awards

1. Elected Fellow of the International Engineering and Technology Institute (IETI), 2024

2. IETI Researcher Award, 2024

3. Named Top 20 2024 European Quant & Finance Professors by Rebellion Research, 2024

4. Best Paper Award, Journal of Risk and Financial Management, for "GARCH Modelling of Cryptocurrencies", 2019

5. Best Paper Award, International Conference on Economics, Finance and Statistics, Hong Kong, for "Statistics of Bitcoin and Cryptocurrencies", January 2017

6. Finalist, Teaching Award, Zurich University of Applied Sciences (top 10), 2016

7. Virtual Mobility Grants, COST Action Fintech and AI in Finance, 2023 and 2024

8. Grants for Organizing International PhD Doctoral Training Schools, COST Action, 2023 and 2024

9. Swissnex Scholarship for Research Stay, New York City, USA, 2018

10. Doctoral Fellowship, ETH Zurich, funded by SNSF and Credit Suisse, 2003–2007

11. Research Fellowship, University of Zürich, funded by SNSF via NCCR Finrisk, 2002

12. European Science Foundation Scholarship, Research stay at London School of Economics, 2006

13. Scholar of the German Academic Merit Foundation for doctoral studies (awarded to top 0.25% of all German doctoral students), 2003–2007

14. Scholar of the German Academic Merit Foundation for diploma/graduate studies (top 0.25%), 2000–2002

15. Syracuse University Merit-based Scholarship for Master's degree, 2000–2002

16. US National Science Foundation Merit-based Scholarship, summer 2001

Professional Development and Qualifications

1. University Teaching Qualification (UTQ), University of Twente, Netherlands, 2022 (exempt based on prior qualifications)

2. Certificate in Advanced Studies: University Teaching Certificate, Zurich Universities of Teacher Education, Switzerland, 2018

3. Leadership in Academia, ZHAW, Switzerland, 2018

4. Media Skills Training, COST Academy, Training for COST Action Chairs, March 2023

5. Sustainability of COST Actions, COST Academy, February 2023

6. How to Manage and Coordinate International Research Networks, COST Academy, March 2022

7. Presenting with Impact, University of Twente, October–December 2021

8. Science Diplomacy in Practice, COST Academy, September–October 2021

9. How to Pitch Your Research (Elevator Pitch), COST Academy, May 2021

10. How to Engage with European Union Policymakers, COST Academy, April 2021

Membership in Professional and Academic Associations

Swiss Risk Association, Bachelier Finance Society, European Mathematical Society, European Finance Association, American Finance Association

Media Coverage (Selected)

1. "Are Companies Being Ripped Off by Big Banks Over Share Buybacks?" *The Sunday Times*, September 2023

2. "How Gender Diversity and AI are Changing the Fintech Industry", *SocietyBytes Science Magazine*, August 2023

3. "If Companies Are Going to Buy Back Shares, They Should Pay a Fair Price" by Brooke Masters, *Financial Times Weekend Edition*, July 2023

4. "Governance from the Perspective of Science, Administration, and Industry", *Künstliche Intelligenz im Staat*, February 2022

5. "Artificial Intelligence in the Financial Industry", *PostFinance Pionierblog*, February 2022

6. "Jörg Osterrieder from ZHAW on Fintech, Open Banking, and Blockchain", *Netzwoche Magazine*, November 2021

7. "Greater Zurich Boosts AI in Finance", *Greater Zurich Area News*, October 2021

8. "Artificial Intelligence Must Not Be a Black Box", *Fintech Interview*, September 2020