



## Prof. Dr. Dr.h.c. Erich Walter Farkas

Zürich, Switzerland | +41 44 634 3953  
[walter.farkas@df.uzh.ch](mailto:walter.farkas@df.uzh.ch) | [www.math.ethz.ch/~farkas](http://www.math.ethz.ch/~farkas)

**Professor, Program Director**  
**Master of Science UZH ETH in Quantitative Finance**

27. February 1967  
Swiss & Romanian citizen

### Current professional activities

- Professor for Quantitative Finance, Department of Finance, University of Zurich (UZH), since 02/2009
- Associated Professor, Department of Mathematics, ETH Zurich, since 02/2009
- Program Director: joint UZH ETH Zurich specialized program "Master of Science in Quantitative Finance" (first joint degree program of UZH and of ETH), since 2009
- Program Director: UZH postgraduate program "Certificate of Advanced Studies (CAS) in Risk Management for Banking and Finance", since 2010
- Deputy Head: UZH postgraduates programs "Advanced Studies in Finance", since 2010
- Member of the UZH Executive Education Board, since 2021
- Faculty Member, Swiss Finance Institute, since 2013
- Lecturer for Quantitative Finance (since 2017) and Member of the Examination Committee at DOFIN (since 2013), Bucharest University of Economic Studies

### Academic degrees

05/2003	<i>Habilitation</i> , University of Munich, Germany Thesis: Function spaces of generalised smoothness and pseudo-differential operators associated to a continuous negative definite function
07/1998	<i>Ph.D. in Mathematics (Dr.rer.nat.)</i> , University of Jena, Germany Summa cum laude, Supervisor: Prof. Dr. Hans Triebel
06/1990	<i>M.Sc. in Mathematics</i> , University of Bucharest, Romania Maximum possible overall marks 10.0/10.0
06/1989	<i>Diploma in Mathematics</i> , University of Bucharest, Romania Maximum possible overall marks 10.0/10.0

### Postgraduate education

01/2018 - 12/2018	CAS for Board Members (Zertifizierte Verwaltungsräte) Bern-Rochester program, University of Bern
08/2004 - 12/2004	Leadership course (Aufbaumodul Führung); ETH Zürich
10/2004 - 02/2005	Advanced Studies in Corporate Finance, University of Zurich

### Highlights

- Dr.h.c. *Doctor Honoris Causa* of the Bucharest University of Economic Studies, November 2023
- Prize 'Simion Stoilow' for Mathematics of the Romanian Academy of Science for the four scientific articles on "Differential operators" published in the year 2001 (awarded Dec. 2003)
- Call for Professor (with direct tenure) at Baruch College, City University of New York, 2007

## Previous employment

10/2003 - 02/2009	<i>Scientific Managing Director (wissenschaftlicher Abteilungsleiter)</i> University of Zurich Program Director "Master of Advanced Studies in Finance" <i>Reader</i> at the ETH Zürich, Department of Mathematics and at the University of Zurich, Swiss Banking Institute
10/2000 - 09/2003	<i>Senior Research and Teaching Assistant (post-doc)</i> , Mathematics, University of Munich, Germany
05/2000 - 09/2000	<i>Senior Research and Teaching Assistant (post-doc)</i> , Mathematics, University of Regensburg, Germany Chair: Applied Mathematical Analysis (Prof. Dr. Heinz Siedentop)
08/1998 - 04/2000	<i>Research Associate</i> , Project of The German Union for Research (DFG) Institute for theoretical Informatics and Mathematics University of Federal Armed Forces Munich, Germany
11/1995 - 07/1998	<i>Ph.D. Research fellowship</i> of The German Union for Research (Deutsche Forschungsgemeinschaft - DFG), Friedrich-Schiller-University of Jena, Germany
09/1994 - 10/1995	<i>Research and Teaching Assistant</i> , Department of Mathematics University of Bucharest, Romania
10/1993 - 10/1994	<i>Research fellowship</i> of The German Office for Academical Exchanges (DAAD) Johannes-Gutenberg-University of Mainz, Germany
09/1990 - 09/1993	<i>Teaching Instructor (Preparator)</i> , Department of Mathematics University of Bucharest, Romania

## Academic summary

- **Research**

- More than 30 publications in relevant peer-review journals like: *Journal of Risk and Financial Management* (2023), *Frontiers of Mathematical Finance* (2022), *Mathematical Finance* (2021), *Journal of Corporate Finance* (2020) *Review of Derivatives Research* (2019) *Journal of Banking and Finance* (2017), *Journal of Computational Finance* (2016), *Mathematics and Financial Economics* (2015), *Finance and Stochastics* (2014), *Insurance: Mathematics and Economics* (2014), *Quantitative Finance* (2013), *Review of Deriv. Research* (2013).

- **(Selected) Invited talks / Paper presentations**

- More than 25 invited seminar talks in finance seminars, e.g. Vienna University of Economics (2018), TU Munich (2018), ESSEC Business School Paris (2013), University of Kent at Canterbury (UK, 2013, 2015), University of Trier (Germany, 2012), University of Birmingham (UK, 2010 and 2012), etc.
- Highlights: plenary speaker, Conference "Frontiers of Interdisciplinary Mathematics" (Penn State University, USA, 2017), invited talk, Conference "Innovations in Insurance, Risk- and Asset Management" (Munich, Germany 2017)

- **Teaching**

- Several courses taught on several aspects of mathematical methods for (and related to) finance at all levels (Bachelor, Master, PhD, Executive Education) both at University of Zurich and at ETH Zurich.

- **PhD Thesis supervision**

- Urban Ulrych, University of Zurich, 2022; Alexander Smirnow, University of Zurich, 2022; Ludovic Mathys, University of Zurich, 2020; Boris Wälchli, University of Zurich, 2016; Cosimo-Andrea Munari, ETH Zürich, 2015; Robert Huitema, University of Zurich, 2014; Erdinc Akyildirim, University of Zurich, 2013

### **Knowledge transfer: Conferences / organisation**

- Approximatively 30 conferences organized in the last 10 years, mostly in Zurich, but also in Berlin, at Penn State University, and in Beijing, with a focus on financial risk management, especially the yearly "ETH Risk Day".
- Organiser of about 25 conferences for the Swiss Risk Association and for the Zurich Chapter of PRMIA (Professional Risk Management International Association) in the last 10 years.

### **Grants**

- Swiss National Science Foundation (SNSF) BRIDGE grant of CHFm 1.5. together with Prof. Wolfgang Breymann and Prof. Tim Weingärtner for the project "Data Driven Financial Risk and Regulatory Reporting", April 2022 – March 2026.
- FP7 Marie Curie project "Heterogeneity and the Volatility of Financial Assets" (HETEROVOL 627701), funded with *EURO 268'000*, April 2015 - March 2017.
- Swiss National Science Foundation (SNSF) project 51NF40-144611, "Knowledge transfer project to the financial services industry: Capital adequacy, valuation and portfolio optimization for insurance companies", grant of *CHF 110'000* for the time 1. June 2012 - 30. May 2014.
- SCIEX project 11.159 – Sciex - N - 4 "Interaction of agents and asset price dynamics", grant of *CHF 90'000*, to support a post-doctoral researcher from Romania, 1. Oct. 2012 - 30. Sept. 2013, (SCIEX is a research program of the Swiss Confederation for supporting the new members of the European Union).
- relevant contribution to establishing the "Center for Finance and Insurance" at University of Zurich, grant of *CHF 2'000'000* from SwissRe, May 2013.

### **Former academic assignments**

- Representative of the Department of Banking and Finance: "UZH Committee for Academic Career Development and Research Committee of the Swiss National Science Foundation" 2013–2019
- Delegate of the UZH Rector: Foundation Council of the pension fund WWPK (Witwen-, Waisen-Pensionskasse der UZH), 2013–2017
- Founder and Co-president of the NPO "Swiss Risk Association", 2013–2021

### **Consulting projects**

- KPMG Switzerland, Quantitative Finance Group, 2011-2015
- Deloitte Switzerland, Financial Risk Management Group, 2007-2010

**List of publications (as of 31 January 2023)**

- *Research articles (in peer review journals)*
  1. T. Weingärtner, F. Fasser, P. R. Sá da Costa, W. FARKAS:  
Deciphering DeFi: A Comprehensive Analysis and Visualization of Risks in Decentralized Finance  
*J. Risk Financial Manag.* 16, 454–479, (2023)
  2. W. FARKAS, F. Ferrari, U. Ulrych:  
Pricing Autocallables under Local-Stochastic Volatility  
*Frontiers of Mathematical Finance* 1 (4), 575–610, (2022).
  3. W. FARKAS, L. Mathys:  
Geometric step options and Lévy models: Duality, PIDEs, and semi-analytical pricing  
*Frontiers of Mathematical Finance* 1 (1), 1–51, (2022).
  4. W. FARKAS, L. Mathys, N. Vasiljevic:  
Intra-Horizon Expected Shortfall and Risk Structure in Models with Jumps,  
*Mathematical Finance*, 31 (2), 772–823, (2021).
  5. A. Dyachenko, W. FARKAS, M. O. Rieger:  
Volatility Dependent Structured Products  
*Journal of Investing*, 30 (2), 53–60, (2021).
  6. W. FARKAS, F. Fringuellotti, R. Tunaru:  
A Cost-Benefit Analysis of Capital Requirements Adjusted for Model Risk,  
*Journal of Corporate Finance*, 65 (c), 1–22, (2020).
  7. N. Ettlín, W. FARKAS, A. Kull, A. Smirnow:  
Optimal Risk-Sharing Across a Network of Insurance Companies  
*Insurance: Mathematics and Economics*, 95, 39–47, (2020).
  8. C. Necula, G. Drimus, W. FARKAS:  
A General Closed Form Option Pricing Formula,  
*Review of Derivatives Research*, 22 (1), 1–40, (2019).
  9. W. FARKAS, A. Smirnow:  
Intrinsic Risk Measures,  
*Innovations in Insurance, Risk and Asset Management*, World Scientific, München, 163–184, (2018).
  10. W. FARKAS, E. GOURIER, R. HUITEMA, C. NECULA:  
A Two-Factor Cointegrated Commodity Price Model with an Application to Spread Option Pricing,  
*Journal of Banking and Finance*, 77, 249–268, (2017).
  11. W. FARKAS, E. GOURIER, R. HUITEMA, C. NECULA:  
The Impact of Cointegration on Commodity Spread Options,  
*Innovations in Derivatives Markets*, Springer Proceedings in Mathematics and Statistics, 165 (2016), 421–435.

12. G. DRIMUS, W. FARKAS, E. GOURIER:  
"Valuations of options on discretely sampled variance: a general analytic approximation",  
*Journal of Computational Finance*, 20(2), 39–66, (2016).
13. W. FARKAS, P. KOCH MEDINA, and C.-A. MUNARI:  
"Measuring risk with multiple eligible assets",  
*Mathematics and Financial Economics*, 9(1), 3–27, (2015).
14. W. FARKAS, P. KOCH MEDINA, and C.-A. MUNARI:  
"Beyond cash-additive risk measures: when changing the numeraire fails",  
*Finance and Stochastics*, 18(1), 145–173, (2014).
15. W. FARKAS, P. KOCH MEDINA, and C.-A. MUNARI:  
"Capital requirements with defaultable securities",  
*Insurance: Mathematics and Economics*, 55, 58–67, (2014).
16. G. BARONE-ADESI, W. FARKAS, and P. KOCH MEDINA:  
"Capital levels and risk-taking propensity in financial institutions",  
*Accounting and Finance Research*, 3(1), 85–89, (2014).
17. O. BACHEM, G. DRIMUS, W. FARKAS:  
Smooth and bid-offer compliant volatility surfaces under general dividend streams  
*Quantitative Finance*, 13 (11), 1801–1812, (2013).
18. G. DRIMUS, W. FARKAS:  
Local volatility of volatility for the VIX market  
*Review of Derivatives Research*, 16(3), 267–293, (2013).
19. W. FARKAS, E. GOURIER, D. ABBATE:  
"Operational risk quantification using extreme value theory and copulas: from theory to practice",  
*Journal of Operational Risk*, 3, 1–24, (2009).
20. W. FARKAS, N. REICH, and C. SCHWAB:  
"Anisotropic stable Levy copula processes - analytical and numerical aspects",  
*Mathematical Models and Methods in Applied Sciences*, 17 (9), 1405–1443, (2007).
21. A. CAETANO and W. FARKAS:  
"Local growth envelopes of Besov spaces of generalized smoothness",  
*Journal for Analysis and its Applications*, 25, 265–298, (2006).
22. W. FARKAS and H.-G. LEOPOLD:  
"Characterisations of function spaces of generalised smoothness",  
*Annali di Matematica Pura ed Applicata*, 185, 1–86, (2006).
23. J.-M. BARBAROUX, W. FARKAS, B. HELFFER, and H. SIEDENTOP:  
"On the Hartree-Fock equations of the electron-positron field",  
*Communications in Mathematical Physics*, 255, 131–159, (2005).
24. W. FARKAS:  
"Eigenvalue distribution of some fractal semi - elliptic differential operators",  
*Mathematische Zeitschrift*, 236, 291–320, (2001).
25. W. FARKAS, N. JACOB:  
"Sobolev spaces on non-smooth domains and Dirichlet forms related to subordinate reflecting diffusions",  
*Mathematische Nachrichten*, 224, 75–104, (2001).

26. W. FARKAS, N. JACOB, R. L. SCHILLING:  
 “Function spaces related to continuous negative definite functions:  $\psi$ - Bessel potential spaces”,  
*Dissertationes Mathematicae*, 393, 1–63, (2001).
27. W. FARKAS, N. JACOB, R. L. SCHILLING:  
 “Feller semigroups,  $L^p$ -sub-Markovian semigroups, and applications to pseudo-differential operators with negative definite symbols”,  
*Forum Mathematicum*, 13, 51–90. (2001).
28. W. FARKAS, J. JOHNSEN, W. SICKEL:  
 “Traces of Besov-Lizorkin-Triebel spaces - a complete treatment of the borderline cases”,  
*Mathematica Bohemica*, 125, 1–37, (2000).
29. W. FARKAS:  
 ”Atomic and subatomic decompositions in anisotropic function spaces”,  
*Mathematische Nachrichten*, 209, 83–113, (2000).
30. W. FARKAS, H. TRIEBEL:  
 ”The distribution of eigenfrequencies of anisotropic fractal drums”,  
*Journal of the London Mathematical Society*, 60, 224–236, (1999).
31. W. FARKAS:  
 “The behaviour of the eigenvalues for a class of operators related to some self-affine fractals in  $\mathbb{R}^2$ ”,  
*Zeitschrift für Analysis und ihre Anwendungen*, 18, 874–895, (1999).
32. W. FARKAS:  
 ”An embedding result for generalized Orlicz-Sobolev spaces”,  
*Revue Roumaine Mathematiques Pures Appliquees*, 42 (7-8), 555–565, (1997).
33. W. FARKAS:  
 ”On the sharpness of the Orlicz-Sobolev imbedding theorem”,  
*Revue Roumaine Mathematiques Pures Appliquees*, 41 (5-6), 311–320, (1996).
34. W. FARKAS:  
 ”A Calderon-Zygmund extension theorem for abstract Sobolev spaces”,  
*Mathematical Reports*, 47 (5-6), 379–395, (1995).

- *PhD Thesis*

- W. FARKAS: *Anisotropic function spaces, fractals, and spectra of some elliptic and semi-elliptic differential operators*,  
 Mark: **Summa cum laude**,  
 Supervisor: Prof. Dr. Hans Triebel,  
 Friedrich-Schiller-University of Jena (Germany), 6. July 1998.

- *Habilitation Thesis*

- W. FARKAS: *Function spaces of generalised smoothness and pseudo-differential operators associated to a continuous negative definite function*,  
 University of Munich, December 2002.  
 Referees: Prof. Dr. Heinz Siedentop, Prof. Dr. David E. Edmunds, Prof. Dr. Michael Solomyak

- *Books, monographs, exercise books*

- W. FARKAS, L. PAVEL: *Functional analysis - exercises and problems*, Bucharest University Press, 1994 (143 pages, in Romanian).