SVETLOZAR (ZARI) TODOROV RACHEV

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EDUCATION

M.SC. IN MATHEMATICS
Sofia University
July 1974
Thesis: "Reliability of Aging Systems"

Ph.D. IN MATHEMATICS
Lomonosov University (Moscow), Faculty of Mechanics and Mathematics, October 12, 1979, **Dissertation:** *"The structure of the metrics in the space of random variables and their distributions."*

DOCTOR OF SCIENCE
(Habilitation) in Physics and Mathematics, Steklov Mathematical Institute, Moscow, April 10, 1986.
Dissertation: "*Probability metrics and their applications to the stability problems for stochastic models*"

ABOUT

DATE OF BIRTH: September 6, 1951
CITIZENSHIP: U. S. A.
CURRENT POSITION: Professor, Dept. of Mathematics & Statistics, Texas Tech University

PREVIOUS APPOINTMENTS

2017 – NOW
Professor, Dept. of Mathematics & Statistics,
Texas Tech University

2012 – 2016
Professor, College of Business
Program Director, Finance and Accounting
Stony Brook University
Research Professor, Dept. of Applied Math & Statistics

2011 – 2012
Frey Family Foundation Chair of Quantitative Finance,
Department of Applied Mathematics and Statistics,
Stony Brook University

1998 – 2010
Endowed Chair of Statistics, Econometrics and Mathematical Finance, School of Economics and Business Engineering,
Karlsruhe Institute of Technology

1989 – 1998
Professor, Department of Statistics and Applied Probability,
University of California at Santa Barbara (1994-1995, Department Chairman)

1988 – 1988
Visiting Associate Professor,
State University of New York at Stony Brook

1987 – 1987
John H. Van Vleck, Visiting Professor, Wesleyan University, Connecticut, and Visiting Associate Professor, Centre for Stochastic Processes, University of North Carolina at Chapel Hill

1984 – 1986
Senior Research Fellow, Bulgarian Academy of Sciences, and
Visiting Senior Research Fellow, Steklov Mathematical Institute, Academy of Sciences of the USSR, Moscow

1980 – 1984
Research Fellow, Mathematical Institute, Bulgarian Academy of Sciences

1977 – 1979
Post-graduate Student, Lomonosov University, Faculty of Mechanics and Mathematics, Department of Probability, Moscow, USSR

1974 – 1977
Mathematician, Mathematical Institute, Bulgarian Academy of Sciences

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AWARDS

Fellow of the Institute of Mathematical Statistics
Elected Member of the International Statistical Institute
Foreign Member of the Russian Academy of Natural Sciences
Honorary Doctor of Science at St. Petersburg Technical University
Senior Humboldt Professor Award (1997)

PUBLISHED/BROADCAST INTERVIEWS

ZARI RACHEV. FACTBOX-TOOLS TO PREDICT MARKET SHOCKS, REUTERS, MAY 24, 2009
https://www.reuters.com/article/models-math/factbox-tools-to-predict-marketshocks-idUSL169274620090525
https://www.reuters.com/article/us-models-finanalytica/assessing-the-risk-ofa-cataclysm-idUSTRE54O00R20090525

RISIKOMANAGER JOURNAL: Interview with Prof. Dr. Svetlozar Rachev, Chair of Statistics, Econometrics and Mathematical Finance at University of Karlsruhe (TH) and Prof. Stefan Mittnik (Ph.D.) Chair of Financial Econometrics at University of Munich New Approaches for Portfolio Optimization Parting with the Bell Curve
https://statistik.econ.kit.edu/download/doc_secure1/RM-Interview-RachevMittnik-EnglishTranslation.pdf

PATENTS

RACHEV ET AL. SYSTEM AND METHOD FOR THE VALUATION OF DERIVATIVES,
United States Patent, Serial No. 10/888,414, Filed July 9, 2004, Docket No. 031/0424:US.UTL, Patent Number 7,630,931, Date of Patent: Dec. 8, 2009

RACHEV ET AL. SYSTEM AND METHOD FOR PROVIDING OPTIMIZATION OF A FINANCIAL PORTFOLIO USING A PARAMETRIC LEPTOKURTIC DISTRIBUTION, United States Patent, Serial No. 10/888,414, Filed July 9, 2004, Docket No. 031/0424.US.UTL, May, 2010

RACHEV ET AL. RISK MANAGEMENT SYSTEM AND METHOD FOR DETERMINING RISK CHARACTERISTICS EXPLAINING HEAVY TAILS OF RISK FACTORS, U.S. Patent Trademark Office, Patent No. 7,778,897, August 17, 2010

RACHEV ET AL. SYSTEM AND METHOD FOR PROVIDING REALLOCATION AND REVERSE OPTIMIZATION OF A FINANCIAL PORTFOLIO USING A PARAMETRIC LEPTOKURTIC DISTRIBUTION, United States Patent, U.S. Patent Trademark Office, Patent No. 7,890,409, February 15, 2011

RACHEV ET AL. SYSTEM AND METHOD FOR GENERATING RANDOM VECTORS FOR ESTIMATING PORTFOLIO RISK, United States Patent, U.S. Patent Trademark Office, Patient No. 8,170,941, May 1, 2012

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LIST OF SVETLOZAR RACHEV'S PH.D. STUDENTS

1. PRACHI CHATURVEDI (UCSB, DEPARTMENTS OF STATISTICS AND APPLIED PROBABILITY)
2. BESSY ATHANASOPOULOS (UCSB, DEPARTMENTS OF STATISTICS AND APPLIED PROBABILITY)
3. BERTRAND GAMROWSKI (ECOLE POLYTECHNIQUE, PARIS)
4. THOMAS KOZUBOWSKI (UCSB, DEPARTMENTS OF STATISTICS AND APPLIED PROBABILITY)
5. ANNA PANORSKA (UCSB, DEPARTMENTS OF STATISTICS AND APPLIED PROBABILITY)
6. BENNY CHENG (UCSB, DEPARTMENTS OF STATISTICS AND APPLIED PROBABILITY)
7. CHUFANG WU (UCSB, DEPARTMENTS OF STATISTICS AND APPLIED PROBABILITY)
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10. NORBERT SCHUMACHER (UCSB, DEPARTMENTS OF STATISTICS AND APPLIED PROBABILITY)
11. IRINA KHINDANOVA (UCSB, DEPARTMENTS OF ECONOMICS)
12. YESIM TOKAT (UCSB, DEPARTMENTS OF ECONOMICS)
13. BILIANA BAGASHEVA (UCSB, DEPARTMENTS OF STATISTICS AND APPLIED PROBABILITY)
14. ANNA CHERNOBAI (UCSB, DEPARTMENTS OF STATISTICS AND APPLIED PROBABILITY)
15. ALEX VOLLERT (UNIVERSITY OF KARLSRUHE, SCHOOL OF ECONOMICS AND BUSINESS ENGINEERING)
16. CHRISTIAN PETER (KARLSRUHE, SCHOOL OF ECONOMICS AND BUSINESS ENGINEERING)
17. LORENA VINUEZA (KARLSRUHE, SCHOOL OF ECONOMICS AND BUSINESS ENGINEERING) Ì
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25. MARKUS.HOECHSTOETTER (KARLSRUHE, SCHOOL OF ECONOMICS AND BUSINESS ENGINEERING)
26. MICHAEL GREBECK (UCSB, DEPARTMENTS OF STATISTICS AND APPLIED PROBABILITY)
27. JORGE HERNANDEZ (UCSB, DEPARTMENTS OF STATISTICS AND APPLIED PROBABILITY)
28. CARLO MARINELLI (COLUMBIA UNIVERSITY, DEPARTMENT OF STATISTICS)
29. TEO JAŠI (KARLSRUHE, SCHOOL OF ECONOMICS AND BUSINESS ENGINEERING)
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32. ANNA SERBINENKO (KARLSRUHE, SCHOOL OF ECONOMICS AND BUSINESS ENGINEERING)
33. CHRISTOPH MOELLER (KARLSRUHE, SCHOOL OF ECONOMICS AND BUSINESS ENGINEERING)
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40. MICHELE LEONARDO BIANCHI (KARLSRUHE, SCHOOL OF ECONOMICS AND BUSINESS ENGINEERING)
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43. ALEXANDER BECK (KARLSRUHE, SCHOOL OF ECONOMICS AND BUSINESS ENGINEERING)
44. DIRK KRAUSE (KARLSRUHE, SCHOOL OF ECONOMICS AND BUSINESS ENGINEERING)
45. ABDOLREZA NAZEMI (KARLSRUHE, SCHOOL OF ECONOMICS AND BUSINESS ENGINEERING)
46. JOCHEN PAPENBROCK (KARLSRUHE, SCHOOL OF ECONOMICS AND BUSINESS ENGINEERING)
47. MICHAEL PIEPER (KARLSRUHE, SCHOOL OF ECONOMICS AND BUSINESS ENGINEERING)
48. XIAOCHU ZHANG (STONY BROOK UNIVERSITY, DEPT. OF APPLIED MATH & STATISTICS)
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50. TETSUO KUROSAKI (STONY BROOK UNIVERSITY, DEPT. OF APPLIED MATH & STATISTICS)
51. BARRET SHAO (STONY BROOK UNIVERSITY, DEPT. OF APPLIED MATH & STATISTICS)
52. NAOSHI TSUCHIDA (STONY BROOK UNIVERSITY, DEPT. OF APPLIED MATH & STATISTICS)
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54. YIKANG CHAI (STONY BROOK UNIVERSITY, DEPT. OF APPLIED MATH & STATISTICS)
55. TIANYU LU (STONY BROOK UNIVERSITY, DEPT. OF APPLIED MATH & STATISTICS)
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59. PO-KENG CHENG (STONY BROOK UNIVERSITY, DEPT. OF APPLIED MATH & STATISTICS)
60. FANGFEI DONG (STONY BROOK UNIVERSITY, DEPT. OF APPLIED MATH & STATISTICS)
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62. YUAN HU (TEXAS TECH UNIVERSITY, DEPT. OF MATHEMATICS & STATISTICS)

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April 10, 1986.
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LIST OF SVETLOZAR RACHEV'S POSTDOCTORAL STUDENTS

1. Dr. Young Shin Kim (Karlsruhe Institute of Technology, School of Business and Economics)
2. Dr. Jiho Park (Texas Tech University, Dept. of Mathematics & Statistics)
3. Dr. Davide Lauria (Texas Tech University, Dept. of Mathematics & Statistics)

CURRENT TEACHING AT TTU

https://www.depts.ttu.edu/math/teaching/current_schedules.php

SPRING 2024

MATH 4000-002 ACTUARIAL MATHEMATICS
MATH 4342-001 MATHEMATICAL STATISTICS I
MATH 6351 001 QUANTITATIVE FINANCE
MATH 5099-D21 INDEPENDENT STUDY
MATH 7000-003 RESEARCH

PUBLICATIONS OF SVETLOZAR RACHEV

BOOKS & MONOGRAPHS

W. Brent Lindquist, Svetlozar T. Rachev, Yuan Hu, and Abootaleb Shirvani, Advanced Tools for Risk Management, Springer series, "Dynamic Modeling and Econometrics in Economics and Finance," Springer, 2022.
https://www.springer.com/series/5859/books?page=1

Frank J. Fabozzi, Sergio M. Focardi, Svetlozar T. Rachev, and Bala Arshanapalli, Basics of Financial Econometrics: Tools, Concepts, and Asset Management Applications, Wiley, 2014.
https://onlinelibrary.wiley.com/doi/book/10.1002/9781118856406 2.

Stoyan Stoyanov, Svetlozar Rachev, and Frank Fabozzi, Optimal Portfolio Management in Highly Volatile Markets, Scholars Press, 2013
https://www.amazon.com/Optimal-Portfolio-Management-Volatile- Markets/dp/3639514130

S. T. Rachev, L. B. Klebanov, S. V. Stoyanov, and F. Fabozzi, The Methods of Distances in the Theory of Probability and Statistics, John Wiley, 2013
https://www.springer.com/gp/book/9781461448686

S. T. Rachev, Y. Kim, M. Bianchi, and F. Fabozzi, Financial Models with Levy Processes and Volatility Clustering, Springer, 2011
http://www.wiley.com/WileyCDA/WileyTitle/productCd-0470482354,descCd-tableOfContents.html

S. T. Rachev, S. V. Stoyanov, and F. Fabozzi, A Probability Metrics Approach to Financial Risk Measures, Wiley–Blackwell, 2011
http://www.wiley.com/WileyCDA/WileyTitle/productCd-1405183691.html

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April 10, 1986.
Dissertation: "Probability metrics and their applications to the stability problems for stochastic models"

PUBLICATIONS OF SVETLOZAR RACHEV CONT.

Rachev, S. T., Hoechstoetter, M., Fabozzi, F., Focardi, S., Probability and Statistics for Finance, John Wiley, Finance, 2010
http://www.wiley.com/WileyCDA/WileyTitle/productCd-0470400935.html

L. Klebanov, S. T. Rachev, and F. Fabozzi, Robust and Non-Robust Models in Statistics, NOVA-Science Publishers, 2009
https://www.novapublishers.com/catalog/product_info.php?products_id=10251

S. Trueck and S. T. Rachev, Rating Based Modeling of Credit Risk: Theory and Application of Migration Matrices, Academic Press Advances Finance, 2008
http://www.elsevier.com/wps/find/bookdescription.cws_home/716895/description#description

Rachev, S. T., Stoyanov, S., Fabozzi, F., Advanced Stochastic Models, Risk Assessment and Portfolio Optimization: The Ideal Risk, Uncertainty, and Performance Measures, John Wiley, Finance, 2007
http://www.wiley.com/WileyCDA/WileyTitle/productCd-047005316X.html

S. T. Rachev, J. Hsu, B. Bagasheva, and F. Fabozzi, Bayesian Methods in Finance, John Wiley, 2007
http://www.wiley.com/WileyCDA/WileyTitle/productCd-0471920835.html

S. T. Rachev, S. Mittnik, Frank J. Fabozzi, S. Focardi, and T. Jasic, Financial Econometrics: From Basics to Advanced Modeling Techniques, John Wiley, 2007
http://www.wiley.com/WileyCDA/WileyTitle/productCd-0471784508.html

A. Chernobai, S. T. Rachev, and F. Fabozzi, Operational Risk: A Guide to Basel II Capital Requirements, Models and Analysis, John Wiley, 2007
http://www.wiley.com/WileyCDA/WileyTitle/productCd-0471780510.html

L. Klebanov, T. Kozubowski, and S. T. Rachev, Ill-Posed Problems in Probability and Stability of Random Sums, NOVA Science Publishers, 2006
https://www.novapublishers.com/catalog/product_info.php?products_id=4546

S. T. Rachev, C. Menn, and F. Fabozzi, Fat-Tailed and Skewed Asset Return Distributions: Implications for Risk Management, Portfolio selection and Option Pricing, John Wiley, 2005
http://www.wiley.com/WileyCDA/WileyTitle/productCd-0471718866.html

S. T. Rachev and S. Mittnik, Stable Paretian Models in Finance, Series in Financial Economics and Quantitative Analysis, John Wiley, 2000
http://www.wiley.com/WileyCDA/WileyTitle/productCd-0471953148.html

S. T. Rachev and L. Rueschendorf, Mass Transportation Problems, Vol II: Applications, Springer, 1999
http://www.springer.com/statistics/book/978-0-387-98352-3

S. T. Rachev and L. Rueschendorf, Mass Transportation Problems, Vol I: Theory, Springer, 1998
http://www.springer.com/mathematics/probability/book/978-0-387-98350-9construction_of.html?id=2_V9AAAAIAAJ

S. T. Rachev, Probability Metrics and the Stability of Stochastic Models, Wiley, 1991
http://www.springer.com/mathematics/probability/book/978-0-387-98350-9

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Dissertation: "Probability metrics and their applications to the stability problems for stochastic models"

PUBLICATIONS OF SVETLOZAR RACHEV CONT.

Rachev, S. T., Probability Metrics and the Stability of Stochastic Models, Wiley, Chichester, New York, 1991
http://books.google.com/books/about/Probability_metrics_and_the_stability_of.html?id=5grvAAAAMAAJ

V. Kashnikov and S. T. Rachev, Mathematical Methods for Construction for Queuing Models, Nauka, (in Russian) 1988; English translation, Wadsworth & Brooks/Cole Advanced Books, 1990.
http://books.google.com/books/about/Mathematical_methods_for_construction_of.html?id=2_V9AAAAIAAJ

A. Kakosyan, L. Klebanov, and S. T. Rachev, Quantitative Criteria for Convergence of Measures, Ajastan Press, 1978 (in Russian)

HANDBOOKS & SPECIAL VOLUMES

W. Lindquist and S. Rachev, Mathematical and Empirical Finance, a special issue of the Journal of Risk & Financial Management, 2023

S. T. Rachev, E. Sun, F. Fabozzi, O. Charchano, and Y. Kim, A Quasi-Maximum Likelihood Estimation Strategy for Value-at Risk Forecasting: Application to Equity Index Futures? Markets, Handbook of Financial Econometrics and Statistics, SpringerReference.com April 15, 2013

S. T. Rachev, A. Chernobai, and F. Fabozzi, Composite Goodness-of-Fit Tests for Left Truncated Loss Sample, SpringerReference.com April 15, 2013

S. T. Rachev and F., Fabozzi (Guest Editors), Special Issue on Studies in Mathematical and Empirical Finance, Mathematical Methods of Operations Research, Vol. 69/3, July 2009
http://www.springerlink.com/content/1432-2994/69/3/

G. Bol, S. T. Rachev, and R. Würth (Editors), Risk Assessment: Decisions in Banking and Finance, Springer/Physika, 2009
http://www.springer.com/business+%26+management/finance/book/978-3-7908-2049-2

S. T. Rachev (Editor), Handbook of Computational and Numerical Methods in Finance, Birkhäuser, 2004
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G. Bol, G. Nakhaeizadeh, S. T. Rachev, T. Rieder, and K. Vollmer (Editors), Credit Risk: Measurement, Evaluations and Management, Springer Verlag, Physika-Verlag Series, 2003
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http://www.elsevier.com/wps/find/bookdescription.cws_home/622468/description#description

S. T. Rachev (Editor), Mathematical Models in Market and Credit Risk Editor, Mathematical Methods of Operations Research, Vol. 55/2, 2002, Springer
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PUBLICATIONS OF SVETLOZAR RACHEV CONT.

S. Mittnik and S. T. Rachev (Editors), Stable Non-Gaussian Models in Finance and Econometrics, Mathematical and Computer Modeling, 29(10–12), 1999
http://www.sciencedirect.com/science/journal/08957177/29

S. Mittnik and S. T. Rachev (Editors), Distributional Modeling in Finance, Mathematical and Computer Modeling, 29(10–12)
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C. Heyde, Yu. Prohorov, R. Pyke, and S. T. Rachev (Editors), Athens Conference on Applied Probability and Time Series Analysis, Springer Verlag, 1995
http://www.springer.com/mathematics/probability/book/978-0-387-94788-4

G. Anastassiou and S. T. Rachev (Editors), Approximation, Probability and Related Fields, Plenum Press, 1994
http://books.google.com/books?id=w-vuAAAAMAAJ&q=Approximation,+Probability+and+Related+Fields&dq=Approximation,+Probability+and+Related+Fields

PUBLICATIONS (2009-2024)
NR refers to non-refereed papers.

2024
T. V. Mahanama, A. Shirvani, S. Rachev, and F. J. Fabozzi (2024) The financial market of indices of socioeconomic well-being, Journal of Risk and Financial Management 17 (1), 35, https://doi.org/10.3390/jrfm17010035

2023
Y. He, Y. Hu, and S. Rachev (2023) The implied views of bond traders on the spot equity market, Frontiers in Applied Mathematics and Statistics 9, 1324079, https://doi.org/10.3389/fams.2023.1324079

N. A. Nyarko, B. Divelgama, J. Gnawali, B. Omotade, S. T. Rachev, and P. Yegon (2023) Exploring dynamic asset pricing within Bachelier's market model, Journal of Risk and Financial Management 16 (8), 352

L. B. Klebanov, Y. V. Kuvaeva-Gudoshnikova, and S.T. Rachev (2023) Heavy-tailed probability distributions: Some examples of their appearance, Mathematics 11 (14), 3094

Y. He and S. Rachev (2023) Exploring implied certainty equivalent rates in financial markets: Empirical analysis and application to the electric vehicle industry, Journal of Risk and Financial Management 16 (7), 344

N. Abudurexiti, K. He, D. Hu, S. T. Rachev, H. Sayit, and R. Sun (2023) Portfolio analysis with mean-CVaR and mean-CVaR-skewness criteria based on mean–variance mixture models, Annals of Operations Research, 2023/5/30, 1–22

L. Klebanov and S. T. Rachev (2023) ν-Generalized hyperbolic distributions, Journal of Risk and Financial Management 16 (4), 251

(NR) Y. Hu, W. B. Lindquist, S. T. Rachev, and F. J. Fabozzi (2023) Option pricing using a skew random walk pricing tree, arXiv preprint arXiv:2303.17014

(NR) T. K. Mahanama, A. Shirvani, S. Rachev, and F. J. Fabozi (2023) The financial market of environmental indices, arXiv preprint arXiv:2308.15661

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