Marc Paolella

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Higher Education:

Post Doc Habilitation, 2002; and Dr. sc. pol., 1998; Kiel University.

M.S., Statistics, 1993, Colorado State University.

Bachelor of Arts (Economics), and Bachelor of Science (Applied Mathematics and Statistics), 1990, SUNY Stony Brook.

Academic Positions:

Full Professor — January 2007 - Present
Department of Banking and Finance, University of Zurich

Visiting Professor / Lecturer — 2008 - 2012
Department of Econometrics, University of Geneva

Associate Professor — September 2003 - December 2006
Department of Banking and Finance, University of Zurich

Assistant Professor — April 1999 - March 2003
Institute of Statistics and Econometrics, Kiel University, Germany.

Editorial Work:

- Editor-in-Chief, Econometrics, since September 2016.
- Guest Editor. Econometrics and Statistics (EcoSta), Special Issue on Financial Technology (Fintech), with Monica Billio and Mike K.P. So, 2021.
- Guest Editor. Econometrics and Statistics (EcoSta), Special Issue on Risk Management, with John M. Maheu, Tak Kuen Siu, and Mike K.P. So, 2018.
- Associate Editor. Journal of the Royal Statistical Society, Series A (JRSS-A), January 2015 to December 2018.
- Editorial Board Member: International Journal of Academic Research in Management (IJARM), since 2013.
- Advisory Board Member. Brazilian Journal of Economics and Finance, since 2011.
- Associate Editor. *e*conomics, http://www.economics-ejournal.org/, 2007-2020.
- Associate Editor. Operations Research and Decisions (Wroclaw University of Economics, and Wroclaw University of Technology), since 2011
- Guest Editor. Computational Statistics & Data Analysis, The Fifth Special Issue on Computational Econometrics, Vol. 54(11), 2010.
- Associate Editor. Computational Statistics & Data Analysis, 2009-2013.
- Leading Scientist. Computational Optimization Methods in Statistics, Econometrics and Finance (COMISEF), 2008-2011.

Keynote Speeches:

- 1st International Conference on Econometrics and Statistics (EcoSta), Hong Kong, HKUST, June 2017.
- The International Conference on Engineering and Technology Innovations (ICETI), Wuhan, China, March, 2016.
- The Annual Meeting of the Taiwan Finance Association, National Tsing Hua University, Hsinchu, Taiwan, May, 2014.

Member:

- Elected Fellow, International Engineering and Technology Institute (IETI), Hong Kong.
- International Advisory Board, 21st (2016) and 22nd (2017) MODSIM (Modelling and Simulation Society of Australia and New Zealand).
- Verein für Socialpolitik: Ausschuss für Ökonometrie.

Current Papers in Progress:

"Getting out of the COMFORT Zone: The MEXI Distribution for Asset Returns", with R. Butler, J. Näf, and P. Polak.

"Portfolio Selection with Active Risk Monitoring", with Pawel Polak.

"MCD^2: Minimum Covariance Determinant Methods with Mixed Correlation Dynamics".

Submitted Journal Articles:

"Risk Parity Allocation with Expected Shortfall under Non-Gaussian Returns", with P. Polak, A. Polino, and P. Walker.

"Density and Risk Prediction with Non-Gaussian COMFORT Models", with Pawel Polak.

Refereed Journal Articles:

"A Non-Elliptical Orthogonal GARCH Model for Portfolio Selection under Transaction Costs", with P. Polak and P. Walker. **Journal of Banking and Finance**, 125, 2021.

"Regime Switching Dynamic Correlations for Asymmetric and Fat-Tailed Conditional Returns", with P. Polak and P. Walker, **Journal of Econometrics**, 213(2), 2019.

"Heterogenous Tail Generalized COMFORT Modeling via Cholesky Decomposition", with J. Näf and P. Polak, **Journal of Multivariate Analysis**, 172, 2019.

"Approximating Expected Shortfall for Heavy–Tailed Distributions", with S. Broda and J. Krause, **Econometrics and Statistics**, 8, 2018.

"Autoregressive Lag–Order Selection Using Conditional Saddlepoint Approximations", with R. Butler, **Econometrics**, 5(3), Special issue in honor of P.C.B. Phillips, 2017.

"Robust Normal Mixtures for Financial Portfolio Allocation", with M. Gambacciani, **Econometrics and Statistics**, 3, 2017.

"The Univariate Collapsing Method for Portfolio Optimization", **Econometrics**, 5(2), 2017.

"Asymmetric Stable Paretian Distribution Testing", **Econometrics and Statistics**, 1, 2016.

"Stable-GARCH Models for Financial Returns: Fast Estimation and Tests for Stability", **Econometrics**, 4(2), 2016.

"New Graphical Methods and Test Statistics for Testing Composite Normality", **Econometrics**, 3(3), 2015.

"COMFORT: A Common Market Factor Non-Gaussian Returns Model", with Pawel Polak, **Journal of Econometrics**, 187(2), 2015.

"Multivariate Asset Return Prediction with Mixture Models", in: **European Journal of Finance**, 21(13-14), 2015.

"ALRIGHT: Asymmetric LaRge-Scale (I)GARCH with Hetero-Tails", with Pawel Polak, **International Review of Economics and Finance**, 2015.

"Fast Methods for Large-Scale Non-Elliptical Portfolio Optimization", Special Issue "Recent Developments in Quantitative Finance", **Annals of Financial Economics**, 9(2), 2014, ID: 1440001. Lead Article.

"A Fast, Accurate Method for Value-at-Risk and Expected Shortfall", with Jochen Krause, in: **Econometrics**, 2, 2014.

"Time-varying Mixture GARCH Models and Asymmetric Volatility", with M. Haas, J. Krause and S.-C. Steude, in: **North American Journal of Economics and Finance**, 26, 2013.

"Stable Mixture GARCH Models", with S. Broda, M. Haas, J. Krause and S.-C. Steude, in: **The Journal of Econometrics**, 172(2), 2013.

"CHICAGO: A Fast and Accurate Method for Portfolio Risk Calculation", with S. Broda, **Journal of Financial Econometrics**, Vol. 7(4), 2009.

"Evaluating the Density of Ratios of Noncentral Quadratic Forms in Normal Variables", with S. Broda, **Computational Statistics and Data Analysis**, Vol. 53(4), 2009.

"Asymmetric Multivariate Normal Mixture GARCH", with M. Haas and S. Mittnik, **Computational Statistics and Data Analysis**, Vol. 53(6), 2009.

"Assessing and Improving the Performance of Nearly Efficient Unit Root Tests in Small Samples", with S. Broda and K. Carstensen, **Econometric Reviews**, Vol. 28(5), 2009.

"An Econometric Analysis of Emission Trading Allowances", with Luca Taschini, **Journal of Banking and Finance**, Vol. 32, 2008.
The 6th most cited article since 2007 in that journal, see:
`http://www.journals.elsevier.com/journal-of-banking-and-finance/most-cited-articles/`

"Risk Prediction: A DWARF-like Approach", with S-C. Steude, **The Journal of Risk Model Validation**, Vol. 2(1), 2008.

"Uniform Saddlepoint Approximations for Ratios of Quadratic Forms", with R. Butler. **Bernoulli**, Vol. 14(1), 2008.

"Bias–Adjusted Estimation in the ARX(1) Model", with S. Broda and K. Carstensen. **Computational Statistics and Data Analysis**, Vol. 51, 2007.

"Saddlepoint Approximations for the Doubly Noncentral t Distribution", with S. Broda. **Computational Statistics and Data Analysis**, Vol. 51, 2007.

"Accurate Value–at–Risk Forecasting Based on the Normal–GARCH Model", with C. Hartz and S. Mittnik. **Computational Statistics and Data Analysis**, Vol. 51, 2006.

"Modeling and Predicting Market Risk With Laplace-Gaussian Mixture Distributions", with S. Mittnik and M. Haas. **Applied Financial Economics**, Vol. 16, 2006.

"Value–at–Risk Prediction: A Comparison of Alternative Strategies", with K. Kuester and S. Mittnik. **Journal of Financial Econometrics**, Vol. 4, No. 1, 2006.
Reproduced in: THE FOUNDATIONS OF CREDIT RISK ANALYSIS, edited by Willi Semmler and Lucas Bernard, Edward Elgar Publishing, 2007.

"A New Approach to Markov-Switching GARCH Models", with S. Mittnik and M. Haas, **Journal of Financial Econometrics**, Vol. 2, No. 4, 2004.

"Modeling German Monthly Money Demand", **Applied Economics Quarterly**, Vol. 50, No. 2, 2004.

"Mixed Normal Conditional Heteroskedasticity", with S. Mittnik and M. Haas, **Journal of Financial Econometrics**, Vol. 2, No. 2, 2004.

"Computing Moments of Ratios of Quadratic Forms in Normal Variables", **Computational Statistics and Data Analysis**, Vol. 42, No. 3, 2003.

"Saddlepoint Approximation and Bootstrap Inference for the Satterthwaite Class of Ratios", with R. Butler, **Journal of the American Statistical Association**, Vol. 97, No. 459, 2002.

"Calculating the Density and Distribution Function for the Singly and Doubly Noncentral F", with R. Butler, **Statistics and Computing**, Vol. 12, No. 1, 2002.

“Stationarity of Stable Power–GARCH Processes”, with S. Mittnik and S. Rachev, **Journal of Econometrics**, Vol. 106, 2002.

“Testing the Stable Paretian Assumption”, **Mathematical and Computer Modelling**, Vol. 34, 2001.

“Diagnosing and Treating the Fat Tails in Financial Returns Data”, with S. Mittnik and S. Rachev, **Journal of Empirical Finance**, Vol. 7, 2000.

“Conditional Density and Value-at-Risk Prediction of Asian Currency Exchange Rates”, with S. Mittnik, **Journal of Forecasting**, Vol. 19, 2000.

“A Simple Estimator for the Characteristic Exponent of the Stable Paretian Distribution”, with S. Mittnik, **Mathematical and Computer Modelling**, Vol. 29, 1999.

“Approximate Distributions for the Various Serial Correlograms”, with R. Butler, **Bernoulli**, Vol. 4, No. 4, 1998.

“Unconditional and Conditional Distributional Models for the Nikkei Index”, with S. Mittnik and S. Rachev, **Asia-Pacific Financial Markets**, Vol. 5, No. 2, 1998.

“A Tail Estimator for the Index of the Stable Paretian Distribution”, with S. Mittnik and S. Rachev, **Communications in Statistics–Theory and Methods**, Vol. 27, No. 5, 1998.

Invited Contributions in Edited Volumes:

"COBra: Copula-Based Portfolio Optimization", with P. Polak, in Kreinovich, V.; Sriboonchita, S.; and Chakpitak, N., (eds.) **Predictive Econometrics and Big Data**, 2018, Springer-Verlag.

"Mixture and Regime-switching GARCH Models", with Markus Haas, in Bauwens, L; Hafner, C; and Laurent, S., (eds.) **Handbook of Volatility Models and Their Applications**, 2012, Wiley.

"Saddlepoint Approximations: A Review and Some New Applications", with Simon Broda, in Gentle, J. E.; Härdle, W. K.; and Mori, Y., (eds.) **Handbook of Computational Statistics**, 2nd edition, 2012, Springer Verlag, Berlin.

"Expected Shortfall for Distributions in Finance", with Simon Broda, in Cizek, P.; Härdle, W. K.; and Weron, R, (eds.) **Statistical Tools for Finance and Insurance**, 2nd edition, 2011, Springer Verlag, Berlin.

"Prediction of Financial Downside–Risk with Heavy–Tailed Conditional Distributions", with S. Mittnik, in Rachev, S. T. (editor) **Handbook of Heavy Tailed Distributions in Finance**, Volume 1, Chapter 9, Elsevier North–Holland, 2003.

"On Median Unbiased Inference for First Order Autoregressive Models", with Kai Carstensen, Chap. 3 in **Contributions to Modern Econometrics: From Data Analysis to Economic Policy**, Kluwer Academic Publishers, 2003.

"Stable Paretian Modeling in Finance: Some Empirical and Theoretical Aspects", with S. Mittnik and S. Rachev, in Adler, R., Feldman, R. and Taqqu, M., (eds.) **A Practical Guide to Heavy Tailed Data**, 1998, Birkhäuser, Boston, MA.

Refereed Conference Proceedings: "Forecasting Financial Time Series: Normal GARCH with Outliers or Heavy Tailed Distribution Assumptions?", with Christoph Hartz, in **Proceedings of the Thailand Econometric Society, Chiang Mai University**, 2012.

Book Reviews: "Financial Modeling Under Non-Gaussian Assumptions", by E. Jondeau, S.-H. Poon and M. Rockinger, Springer, 2007; **Journal of the American Statistical Association**, Vol. 104, No. 486, 2009.

Textbooks: "Linear Models and Time-Series Analysis: Regression, ANOVA, ARMA and GARCH", **John Wiley & Sons**, 2019, 700 pages.

"Fundamental Statistical Inference: A Computational Approach", **John Wiley & Sons**, 2018, 500 pages.

"Intermediate Probability: A Computational Approach", **John Wiley & Sons**, September 2007, 415 pages.
Reviewed in *Journal of the American Statistical Association*, September 2009, Vol. 104, No. 487.

"Fundamental Probability: A Computational Approach", **John Wiley & Sons**, March 2006, 488 pages.
Reviewed in *The American Statistician*, May 2008, Vol. 62, No. 2.

Newspaper Articles: "Lessons from the financial crisis", with Nuttanan Wichitaksorn, **Bangkok Post**, 10 June 2015, http://www.bangkokpost.com/opinion/opinion/587873/lessons-from-the-financial-crisis.

Grants: Swiss National Science Foundation (SNSF) grant 105218–150277: "Portfolio Optimization and Risk Management Under Non-Elliptical Distributions" (455,498 CHF), 2014-2017.

Eidgenössische Technische Hochschule Zürich (ETH), ETH Global grant: Seed Money Project "Development and Application of Advanced Risk Management Tools for Stabilizing the Economic and Financial System in Thailand" (10,000 CHF), 2015.

Conference Organization:

- Organizer, jointly with Nuttanan Wichitaksorn (School of Mathematics and Statistics, University of Canterbury, New Zealand; and Thailand Development Research Institute, Bangkok, Thailand); Financial Econometrics and Quantitative Risk Management, August 21, 2015, Bangkok.
- Program Chair, 2016 International Conference on Management, Education, Economics and Humanity Innovation (ICMEEHI), March 26-27, Wuhan, China.
- Organizer, jointly with David Veredas (Free University of Brussels): Latest Developments in Heavy-Tailed Distributions, March 26-27, 2010, Brussels, Belgium.
- Scientific Programme Committee Member: 3rd International Conference on Computational and Financial Econometrics, October 29-31, 2009, Limassol, Cyprus.
- Co-Chair: 2nd International workshop on Computational and Financial Econometrics (CFE'08) 19-21 June 2008, Neuchâtel, Switzerland.
- Scientific Programme Committee Member: International Workshop on Computational and Financial Econometrics, April 20-22, 2007, Geneva, Switzerland.

Invited Conference Presentations:

"A COMFORT-Able Paradigm for Large Scale Portfolio Optimization: Smooth FREE COMFORT and LASSO for GARCH Groups"

- The 3rd International Conference on Econometrics and Statistics (EcoSta 2019), National Chung Hsing University (NCHU), Taichung, Taiwan, 25-27 June 2019.
- The 12th International Conference on Computational and Financial Econometrics (CFE 2018), Pisa, Italy, December, 2018.

"Robust Normal Mixtures for Financial Portfolio Allocation"

- The First International Econometric Conference of Vietnam (ECONVN2018), Hochiminh City, Vietnam, January 2018.
- The 11th International Conference of the Thailand Econometric Society (TES2018) Chiang Mai, Thailand, January 2018.
- Dependence Modeling Tools for Risk Management, Montréal, Québec, October 2017.
- 2nd International Conference on Economics and Management Innovations (ICEMI), Bangkok, Thailand, July 2017
- 1st International Conference on Econometrics and Statistics (EcoSta), Hong Kong, HKUST, June 2017.

"Asymmetric Stable Paretian Distribution Testing"

- The 10th International Conference on Computational and Financial Econometrics (CFE 2016), Seville , Spain, December 9-11, 2016.
- International Conference on Statistical Distributions and Applications (ICOSDA), Niagara Falls, Canada, October 14-16, 2016.
- The 4th Institute of Mathematical Statistics Asia Pacific Rim Meeting, The Chinese University of Hong Kong, June 27-30, 2016.
- The 9th International Conference of the Thailand Econometric Society (TES2016), Chiang Mai, Thailand, January 6-8, 2016.

"COMFORT: A New Paradigm for Improved Portfolio Performance"

- 9th Annual Society for Financial Econometrics (SoFiE) Conference, Hong Kong, June 15-17, 2016
- The International Conference on Engineering and Technology Innovations (ICETI), Wuhan, China, March 26-27, 2016

"Fast Methods for Large-Scale Non-Elliptical Portfolio Optimization"

- The 8th International Conference of the Thailand Econometric Society (TES2015), Chiang Mai, Thailand, January 7-9, 2015.
- CEQURA Conference 2014 on Advances in Financial and Insurance Risk. Munich, Germany, October 1-2, 2014.
- Keynote Speech. The Annual Meeting of the Taiwan Finance Association, National Tsing Hua University, Hsinchu, Taiwan, May 23-24, 2014

"Large Scale Multivariate Non-Elliptical Asset Return Density Prediction and Fast Portfolio Construction"

- The Seventh International Conference Of the Thailand Econometric Society, Chiang Mai, Thailand, January, 2014.
- The Ninth ICSA International Conference: Challenges of Statistical Methods for Interdisciplinary Research and Big Data, Hong Kong, 20-23 December, 2013
- Workshop Zurich–Kyoto, Session "Financial Risks and Related Problems", Zurich, November 21, 2013
- 20th International Conference on Computational Statistics (COMPSTAT 2012), August 2012, Limassol, Cyprus.

"COMFORT-CCClass: A Common Market Factor Non-Gaussian Returns Model"

- The 59th World Statistics Congress, Hong Kong, 25-30 August 2013.
- Third Joint Statistical Meeting of the Deutsche Arbeitsgemeinschaft Statistik, Statistics under one umbrella, March 18-23, 2013
- Financial Management Association (FMA) Asian Conference, Phuket, Thailand, July, 2012.
- The Fifth Conference of Thailand Econometric Society, Chiang Mai, Thailand, January, 2012.
- International Workshop on Statistical Computing in Quantitative Finance and Biostatistics, Feng Chia University, Taichung, Taiwan, December 2011.

"Stable Mixture GARCH Models and Portfolio Allocation", 7th IASC-ARS, Academia Sinica, Taipei, Taiwan, December, 2011.

"Multivariate Asset Return Prediction with Mixture Models"

- Conference on Latest Developments in Financial Econometrics, Brussels, Belgium, March 2011.
- The Fourth Conference of Thailand Econometric Society, Chiang Mai, Thailand, January, 2011.

"Asymmetric Multivariate Student's t Distributions Endowed with Different Degrees of Freedom", Rmetrics Conference, Singapore, February, 2010.

"Chicago: A Fast and Accurate Method for Portfolio Risk Calculation", The Third Conference of Thailand Econometric Society, Chiang Mai, Thailand, January, 2010.

"Modern GARCH Models and VaR Prediction", International Summer School on Risk Measurement and Control 2006, Rome, Italy; June, 2006.

"Stable Mixture GARCH Models", Deutsche Bundesbank Conference on: Heavy tails and Stable Paretian Distributions in Finance and Macroeconomics – in Celebration of the 80th birthday of Professor Benoit B. Mandelbrot, Eltville, Germany; November, 2005.

"Analyzing and Exploiting Asymmetries in the News Impact Curve", Workshop on Financial Risk and Time Series Analysis (Satellite Workshop of the 2005 NBER/NSF Time Series Conference), Munich, Germany; September, 2005.

"Bias–Adjusted Autoregressive Point Estimation in the ARMAX(1,q) Model", Ausshuß für Ökonometrie (Verein für Socialpolitik), Marburg, Germany; March, 2005

"Bias–Adjusted Autoregressive Point Estimation in the ARMAX(1,q) Model", Workshop on Risk Analysis in Finance and Insurance, Munich, Germany; June, 2004.

"Value-at-Risk Prediction: A Comparison of Alternative Strategies", Center for Financial Studies workshop on New Directions in Financial Risk Management, Frankfurt, Germany; November, 2003.

"Diagnosing and Treating the Fat Tails in Financial Returns Data", Journal of Empirical Finance Conference on Risk Management, Algarve, Portugal; November, 1999.

Regular Conference Presentations:

"Dynamic COMFORT: A Common Market Factor Non-Gaussian Returns Model with Dynamic Conditional Correlations", The 2013 IMS-FPS Workshop, June 19-21, 2013, National University of Singapore.

4th Annual International Conference on Mathematics & Statistics, Athens, Greece, June 14-17, 2010.

Stochastic Modeling Techniques and Data Analysis, Chania, Crete, Greece, June 8-11, 2010.

Forecasting in Rio, Rio de Janeiro, Brazil, July 29-31, 2008.

International Workshop on Computational and Financial Econometrics, Geneva, Switzerland, April 20-22, 2007.

Swiss Society Of Economics And Statistics (SSES) Annual Meeting: Finance And Financial Econometrics, University of St. Gallen, Switzerland, March 22-23, 2007

Swiss Statistics Meeting, Lugano, Switzerland, November 15-17, 2006.

61$^{\text{st}}$ European Meeting of the Econometric Society (ESEM), Vienna, August 24-28, 2006.

International Association for Statistical Computing 3rd World Conference on Computational Statistics & Data Analysis, Cyprus, Greece; October, 2005.

Mixtures 2001, Hamburg, Germany; July, 2001.

Euroworkshop on Statistical Modelling—Mixed Models, Munich, Germany; November, 2000.

10$^{\text{th}}$ European Conferences of the Econom[etr]ics Community (EC^2), Financial Econometrics, Madrid, Spain; December, 1999.

52$^{\text{nd}}$ Session of the International Statistical Institute, Helsinki, Finland; August, 1999.

14$^{\text{th}}$ International Workshop on Statistical Modelling, Graz, Austria; July, 1999.

19$^{\text{th}}$ International Symposium on Forecasting, Washington D.C., USA; June, 1999.

5$^{\text{th}}$ International Conference of the Society for Computational Economics, MA, USA; June, 1999.

4$^{\text{th}}$ Spring Meeting of Young Economists, Amsterdam, The Netherlands; April, 1999.

9$^{\text{th}}$ European Conferences of the Econom[etr]ics Community (EC^2), Forecasting in Econometrics, Stockholm, Sweden; December, 1998.

Econometric Society European Meeting (ESEM), Berlin, Germany; August, 1998.

Barcelona Finance Meeting, Barcelona, Spain; September, 1997.

51$^{\text{st}}$ Session of the International Statistics Institute, Istanbul, Turkey; August, 1997.

2$^{\text{nd}}$ International Conference on Computing in Economics and Finance, Geneva, Switzerland; June, 1996.

Referee Work:

Advances in Statistical Analysis,
Annals of Operations Research,
Computational Statistics,
Computational Statistics and Data Analysis,
Econometric Theory,
Empirical Economics,
Energy Economics,
European Journal of Finance,
International Journal of Forecasting
Journal of Applied Econometrics,
Journal of Business and Economic Statistics,
Journal of Econometrics,
Journal of Economic Dynamics and Control,
Journal of Empirical Finance,
Journal of Financial Econometrics,
Journal of International Financial Markets, Institutions, and Money,
Journal of International Money and Finance,
Journal of Multivariate Analysis,
Journal of the Royal Statistical Society Series A,
Journal of Risk,
Journal of Statistical Computation and Simulation,
Journal of Statistical Distributions and Applications,
Journal of Statistical Planning and Inference,
Mathematics and Computers in Simulation,
Mathematical Finance,
Nonlinear Dynamics,
North American Journal of Economics and Finance,
Physica A,
Research in International Business and Finance,
Risks,
Signal Processing,
Stat (online-only, rapid communication research journal of the International Statistical Institute),
Statistica Neerlandica,
Studies in Nonlinear Dynamics & Econometrics,
Swiss Journal of Economics and Statistics,
Quantitative Finance.