Thibault Vatter

Country and Date of Birth: Switzerland — January 9th 1988
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Research statement

My main research interest is at a crossroads between two fields, namely multivariate statistics and semiparametric regression. For instance, I work on copula-based extensions of generalized additive models to let multivariate distributions depend smoothly on the values of covariates/predictors. I also study a nonparametric copula-based solution to classification, least-squares and quantile regression problems.
Apart from statistical methodology, I have a strong interest in applied research, which encourages learning about the broadest diversity of topics and collaborating with the widest variety of people. For instance, I have had the opportunity to work with a molecular biologist on the analysis of gene expression in the context of breast cancer research, with financial engineers on foreign exchange rate prices with applications to high frequency trading, with operations researchers on intra-daily sales of grocery stores in order to optimize a supply-chain, or with a civil engineer and climatologists on meteorological records with the aim of improving the risk management of hydraulic structures like dams.
Not believing in off-the-shelf solutions, I enjoy discovering a wide array of modeling approaches and I like to think of myself as a swiss army knife of statistics.

Education

2012 – 2016	**PhD in Statistics, University of Lausanne** Faculty of Business and Economics (**HEC Lausanne**) Specialization: multivariate statistics and financial econometrics Advisor: Prof. Valérie Chavez-Demoulin Thesis: "Generalized Additive Modeling for Multivariate Distributions"	Lausanne (Switzerland)
2010 – 2012	**MSc in Physics, Swiss Federal Institute of Technology (EPFL)** Minor in Financial Engineering, Swiss Finance Institute	Lausanne (Switzerland)
2006 – 2010	**BSc in Physics, Swiss Federal Institute of Technology (EPFL)**	Lausanne (Switzerland)

Professional and research experiences

2016 (3 months)	**HEC Lausanne – Post-doctoral researcher with Suzanne de Treville** Tasks: operational research. Outcomes: a framework to forecast the intra-daily demand of >100 products in 10 retail stores using quantile regression forests.	Lausanne (Switzerland)
2016 (6 months)	**EPFL – Post-doctoral researcher with Anthony C. Davison** Tasks: research on the homogenization of climate records. Outcomes: a method combining robust statistics and generalized additive models to detect/correct non-climatic inhomogeneities (e.g., relocations or instrumentation upgrades).	Lausanne (Switzerland)
2015 – 2016 (8 months)	**swissQuant Group AG – junior quant engineer** Tasks: (a) consulting for the Chicago Mercantile Exchange, and (b) quantitative asset management. Outcomes: (a) a risk model for >1'000 futures, vanilla, and exotic products on energy commodities using EWMAs and moving PCAs, and (b) strategy development and day-to-day handling of a quant fund.	Zurich (Switzerland)
2013 – 2015 (2 years)	**HEC Lausanne – Graduate teaching assistant** Tasks: teaching statistics to 900 students. Outcomes: emphasis on statistical computing using a browser-based RStudio interface running on a Linux server.	Lausanne (Switzerland)
2012 – 2013 (6 months)	**University of California, Berkeley – Visiting scholar** Tasks: research on intra-daily foreign exchange returns. Outcomes: development of a MATLAB tool to model trends and periodic patterns in high-frequency financial data using time-frequency decompositions (CWT, STFT and SST).	Berkeley (USA)
2012 (6 months)	**Swissquote Bank Ltd – Graduate research intern (master thesis)** Tasks: investigating the combination of investor's subjective views and quantitative portfolio allocations. Outcomes: prototyping methods (Black-Litterman, Meucci, etc.) in R to integrate them in a digital wealth management tool.	Gland (Switzerland)
2010 – 2011 (1 year)	**Swissquote Bank Ltd – Two semester projects** Tasks: modeling the dependence structure of daily asset returns with minimum spanning trees and maximally planar graphs. Outcomes: development in C and R of filtering and visualization tools for large correlation matrices.	Gland (Switzerland)

Publications

In preparation:

2016 Vatter, T., and Ackerer, D. Vine Forests: A Copula-Based Solution to Estimating Equations.

2016 De Treville, S., Hoffstetter, J. and Vatter, T. Using Point-of-Sale Data To Improve Shelf Replenishment Performance.

2016 Vatter, T., and Davison, A. C. The Homogenization of Climatic Records: a New Approach.

Submitted:

2016 Vatter, T., and Nagler, T. Generalized Additive Models for Pair-Copula Constructions.

2016 Ackerer, D., and Vatter, T. Dependent Defaults and Losses with Factor Copula Models.

Published:

2015 Vatter, T., and Chavez-Demoulin, V. (2015). Generalized Additive Models for Conditional Dependence Structures. *Journal of Multivariate Analysis*, 141:147-167.

2015 Vatter, T., Wu, H.-T., Chavez-Demoulin, V., and Yu, B. (2015). Non-Parametric Estimation of Intraday Spot Volatility: Disentangling Instantaneous Trend and Seasonality. *Econometrics*, 3(4):864.

Conferences and seminars

2016	Dependence Modeling in Finance, Insurance and Environmental Science	Munich (Germany)
2015	Quant Seminar, swissQuant Group AG	Zurich (Switzerland)
2015	Young Researchers' Conference in Applied Probability and Statistics	Neuchâtel (Switzerland)
2014	Conference of the ERCIM WG on Methodological and Computational Statistics	Pisa (Italy)
2014	Mathematische Statistik Seminar, Technische Universität München	Munich (Germany)
2014	PhDNet Seminars, HEC Lausanne	Lausanne (Switzerland)
2014	ISI PhD Days, HEC Lausanne	Lausanne (Switzerland)
2013	International Conference on Computation and Financial Econometrics	London (U.K.)
2013	Young Researchers' Conference in Applied Probability and Statistics	Lausanne (Switzerland)
2013	Séminaires Statistiques de l'IRAM, Université de Strasbourg	Strasbourg (France)
2013	Bin Yu Research Group, UC Berkeley	Berkeley (USA)
2013	Coleman Fung Risk Management Research Center, UC Berkeley	Berkeley (USA)

Languages and computer skills

Languages	French (native), English (full professional proficiency), German (basic)
Computer skills	Engineering softwares – R, Mathematica and MATLAB/GNU Octave Programming languages – Python, C, C++, LaTeX and SQL

References

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