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Claudia Czado

Curriculum Vitae

Education

1984–1989 **Ph.D**, *Operations Research and Industrial Engineering, Cornell University*, Ithaca, U.S.A..

1984–1987 **M.Sc**, *Operations Research and Industrial Engineering, Cornell University*, Ithaca, U.S.A..

1978–1984 **Diplom**, *Mathematics (Statistics and Probability), Georg-August-Universität*, Göttingen, Germany.

Ph.D. thesis

title *Link Misspecication and Data Selected Transformations in Binary Regression Models*

supervisor Prof. T.J. Santner

Diplom thesis

title *Funktionale Gesetze vom Iterierten Logarithmus bei selbstähnlichen Prozessen*

supervisor Prof. Dr. M. Denker

Academic Positions

since 2011 **Associate Professor (C3)** , *Technical University of Munich*, Garching, Germany, Applied Mathematical Statistics.

2008–2011 **Full Professor for 3 years (C4)** , *Technical University of Munich*, Garching, Germany, Applied Mathematical Statistics.

1998–2008 **Associate Professor (C3)** , *Technical University of Munich*, Garching, Germany, Applied Mathematical Statistics.

1994–1998 **Associate Professor**, *York University*, Toronto, Canada, Department of Mathematics and Statistics.

1989–1994 **Assistant Professor**, *York University*, Toronto, Canada, Department of Mathematics and Statistics.

1989 **Post Doctoral Fellow**, *McGill University*, Montreal, Canada , Department of Mathematics and Statistics.

1987–1988 **Research Assistant**, *Cornell University*, Ithaca, U.S.A., Operations Research and Industrial Engineering.

1984–1985 **Teaching Assistant**, *Cornell University*, Ithaca, U.S.A., Operations Research and Industrial Engineering.

Honours and Awards

2001 Fulbright Travel Grant for Senior Scientists

1986–1987 Cornell University, Mathematical Sciences Institute Fellowship

Summers 1987,1988 Cornell University, Graduate School Summer Fellowship

1982–1983 Georg-August Universität - Cornell University, Graduate Exchange Fellowship

Current Reasearch Interests

- Multivariate Copulas and their Inference with Applications (web: `vine-copula.org`)
- High Dimensional Modeling
- Statistical Models for Ordinal Valued Regression Data and Applications
- State Space Models for Dependent Multivariate Responses
- Bayesian Analysis Using Monte Carlo Markov Chain Methods
- Model Selection

Articles and Refereed Book Chapters

1. Murad S Taqqu and Claudia Czado. Reproducing kernel Hilbert space for some non-Gaussian processes. In *Probability in Banach Spaces V*, pages 128–140. Springer, 1985.

2. Murad S Taqqu and Claudia Czado. A survey of functional laws of the iterated logarithm for self-similar processes. *Stochastic Models*, 1(1):77–115, 1985.

3. Claudia Czado. On link selection in generalized linear models. In *Advances in GLIM and Statistical Modelling*, pages 60–65. Springer New York, 1992.

4. Claudia Czado and Thomas J Santner. The effect of link misspecification on binary regression inference. *Journal of Statistical Planning and Inference*, 33(2):213–231, 1992.

5. Claudia Czado and Thomas J Santner. Orthogonalizing parametric link transformation families in binary regression analysis. *Canadian Journal of Statistics*, 20(1):51–61, 1992.

6. Claudia Czado. Norm restricted maximum likelihood estimators for binary regression models with parametric link. *Communications in Statistics-Theory and Methods*, 22(8):2259–2274, 1993.

7. Claudia Czado. Bayesian inference of binary regression models with parametric link. *Journal of Statistical Planning and Inference*, 41(2):121–140, 1994.

8. Claudia Czado. Parametric link modification of both tails in binary regression. *Statistical Papers*, 35(1):189–201, 1994.

9. Michael A Newton, Claudia Czado, and Rick Chappell. Bayesian inference for semiparametric binary regression. *Journal of the American Statistical Association*, 91(433):142–153, 1996.

10. Claudia Czado. On selecting parametric link transformation families in generalized linear models. *Journal of Statistical Planning and inference*, 61(1):125–139, 1997.

11. Claudia Czado and Axel Munk. Assessing the similarity of distributions-finite sample performance of the empirical Mallows distance. *Journal of Statistical Computation and Simulation*, 60(4):319–346, 1998.

12. Axel Munk and Claudia Czado. Nonparametric validation of similar distributions and assessment of goodness of fit. *Journal of the Royal Statistical Society: Series B (Statistical Methodology)*, 60(1):223–241, 1998.

13. Claudia Czado. Multivariate regression analysis of panel data with binary outcomes applied to unemployment data. *Statistical Papers*, 41(3):281–304, 2000.

14. Claudia Czado and Axel Munk. Noncanonical links in generalized linear models–when is the effort justified? *Journal of Statistical Planning and Inference*, 87(2):317–345, 2000.

15. Claudia Czado and Axel Munk. Bootstrap methods for the nonparametric assessment of population bioequivalence and similarity of distributions. *Journal of Statistical Computation and Simulation*, 68(3):243–280, 2001.

16. Claudia Czado and Florian Rudolph. Application of survival analysis methods to long-term care insurance. *Insurance: Mathematics and Economics*, 31(3):395–413, 2002.

17. Claudia Czado. Einführung zu Markov chain Monte Carlo Verfahren mit Anwendung auf Gesamtschadenmodelle. *Blätter der DGVFM*, 26(3):331–350, 2004.

18. Claudia Czado, Antoine Delwarde, and Michel Denuit. Bayesian Poisson log-bilinear mortality projections. *Insurance: Mathematics and Economics*, 36(3):260–284, 2005.

19. Claudia Czado and Aleksey Min. Consistency and asymptotic normality of the maximum likelihood estimator in a zero-inflated generalized Poisson regression. 2005.

20. Florian Helms, Claudia Czado, and Susanne Gschlößl. Calculation of ltc premiums based on direct estimates of transition probabilities. *Astin Bulletin*, 35(02):455–469, 2005.

21. Gernot Müller and Claudia Czado. An autoregressive ordered probit model with application to high-frequency financial data. *Journal of Computational and Graphical Statistics*, 14(2), 2005.

22. Claudia Czado and Adrian E Raftery. Choosing the link function and accounting for link uncertainty in generalized linear models using Bayes factors. *Statistical Papers*, 47(3):419–442, 2006.

23. Stephan Haug and Claudia Czado. Mixed effect models for absolute log returns of ultra high frequency data. *Applied Stochastic Models in Business and Industry*, 22(3):243–267, 2006.

24. Claudia Czado, Vinzenz Erhardt, Aleksey Min, and Stefan Wagner. Zero-inflated generalized Poisson models with regression effects on the mean, dispersion and zero-inflation level applied to patent outsourcing rates. *Statistical Modelling*, 7(2):125–153, 2007.

25. Claudia Czado and Andreas Kolbe. Model-based quantification of the volatility of options at transaction level with extended count regression models. *Applied Stochastic Models in Business and Industry*, 23(1):1–21, 2007.

26. Gudrun Freitag, Claudia Czado, and Axel Munk. A nonparametric test for similarity of marginals—with applications to the assessment of population bioequivalence. *Journal of Statistical Planning and Inference*, 137(3):697–711, 2007.

27. Susanne Gschlößl and Claudia Czado. Spatial modelling of claim frequency and claim size in non-life insurance. *Scandinavian Actuarial Journal*, 2007(3):202–225, 2007.

28. Stephan Haug and Claudia Czado. An exponential continuous-time GARCH process. *Journal of Applied Probability*, 44(4):960–976, 2007.

29. Claudia Czado and Carolin Pflüger. Modeling dependencies between rating categories and their effects on prediction in a credit risk portfolio. *Applied Stochastic Models in Business and Industry*, 24(3):237–259, 2008.

30. Claudia Czado and Sergij Prokopenko. Modelling transport mode decisions using hierarchical logistic regression models with spatial and cluster effects. *Statistical Modelling*, 8(4):315–345, 2008.

31. Claudia Czado and Peter X-K Song. State space mixed models for longitudinal observations with binary and binomial responses. *Statistical Papers*, 49(4):691–714, 2008.

32. Susanne Gschlößl and Claudia Czado. Does a Gibbs sampler approach to spatial poisson regression models outperform a single site MH sampler? *Computational Statistics & Data Analysis*, 52(9):4184–4202, 2008.

33. Susanne Gschlößl and Claudia Czado. Modelling count data with overdispersion and spatial effects. *Statistical Papers*, 49(3):531–552, 2008.

34. Kjersti Aas, Claudia Czado, Arnoldo Frigessi, and Henrik Bakken. Pair-copula constructions of multiple dependence. *Insurance: Mathematics and Economics*, 44(2):182–198, 2009.

35. Claudia Czado, Tilmann Gneiting, and Leonhard Held. Predictive model assessment for count data. *Biometrics*, 65(4):1254–1261, 2009.

36. Vinzenz Erhardt and Claudia Czado. Sampling count variables with specified Pearson correlation: A comparison between a naive and a C-vine sampling approach. *Dependence Modeling: Vine Copula Handbook*, pages 73–87, 2009.

37. Gernot Müller and Claudia Czado. Stochastic volatility models for ordinal-valued time series with application to finance. *Statistical Modelling*, 9(1):69–95, 2009.

38. Cristiano Varin and Claudia Czado. A mixed autoregressive probit model for ordinal longitudinal data. *Biostatistics*, pages 127–138, 2009.

39. Claudia Czado. Pair-copula constructions of multivariate copulas. In *Copula theory and its applications*, pages 93–109. Springer Berlin Heidelberg, 2010.

40. Claudia Czado, Florian Gärtner, and Aleksey Min. Analysis of Australian electricity loads using joint Bayesian inference of d-vines with autoregressive margins. *Dependence Modeling: Vine Copula Handbook*, page 265, 2010.

41. Claudia Czado and Stephan Haug. An ACD-ECOGARCH (1, 1) model. *Journal of Financial Econometrics*, 8(3):335–344, 2010.

42. Claudia Czado and Aleksey Min. Bayesian inference for D-vines: Estimation and model selection. *Dependence Modeling: Vine Copula Handbook*, page 249, 2010.

43. Claudia Czado, Gernot Müller, and T. Nguyen. Ordinal-and continuous-response stochastic volatility models for price changes: An empirical comparison. In *Statistical Modelling and Regression Structures*, pages 301–320. Physica-Verlag HD, 2010.

44. Rada Dakovic, Claudia Czado, and Daniel Berg. Bankruptcy prediction in Norway: a comparison study. *Applied Economics Letters*, 17(17):1739–1746, 2010.

45. Vinzenz Erhardt, Malgorzata Bogdan, and Claudia Czado. Locating multiple interacting quantitative trait loci with the zero-inflated generalized poisson regression. *Statistical Applications in Genetics and molecular Biology*, 9(1), 2010.

46. Aleksey Min and Claudia Czado. Bayesian inference for multivariate copulas using pair-copula constructions. *Journal of Financial Econometrics*, 8(4):511–546, 2010.

47. Aleksey Min and Claudia Czado. Testing for zero-modification in count regression models. *Statistica Sinica*, 20(1):323, 2010.

48. Aleksey Min, Hajo Holzmann, and Claudia Czado. Model selection strategies for identifying most relevant covariates in homoscedastic linear models. *Computational Statistics & Data Analysis*, 54(12):3194–3211, 2010.

49. Michael Smith, Aleksey Min, Carlos Almeida, and Claudia Czado. Modeling longitudinal data using a pair-copula decomposition of serial dependence. *Journal of the American Statistical Association*, 105(492), 2010.

50. Claudia Czado, Anette Heyn, and Gernot Müller. Modeling individual migraine severity with autoregressive ordered probit models. *Statistical Methods & Applications*, 20(1):101–121, 2011.

51. Rada Dakovic and Claudia Czado. Comparing point and interval estimates in the bivariate t-copula model with application to financial data. *Statistical Papers*, 52(3):709–731, 2011.

52. Aleksey Min and Claudia Czado. Bayesian model selection for D-vine pair-copula constructions. *Canadian Journal of Statistics*, 39(2):239–258, 2011.

53. Ran Zhang, Claudia Czado, and Aleksey Min. Efficient maximum likelihood estimation of copula based meta t-distributions. *Computational Statistics & Data Analysis*, 55(3):1196–1214, 2011.

54. Carlos Almeida and Claudia Czado. Efficient Bayesian inference for stochastic time-varying copula models. *Computational Statistics & Data Analysis*, 56(6):1511–1527, 2012.

55. Alexander Bauer, Claudia Czado, and Thomas Klein. Pair-copula constructions for non-Gaussian DAG models. *Canadian Journal of Statistics*, 40(1):86–109, 2012.

56. Eike C Brechmann, Claudia Czado, and Kjersti Aas. Truncated regular vines in high dimensions with application to financial data. *Canadian Journal of Statistics*, 40(1):68–85, 2012.

57. Claudia Czado, Rainer Kastenmeier, Eike Christian Brechmann, and Aleksey Min. A mixed copula model for insurance claims and claim sizes. *Scandinavian Actuarial Journal*, 2012(4):278–305, 2012.

58. Claudia Czado, Ulf Schepsmeier, and Aleksey Min. Maximum likelihood estimation of mixed C-vines with application to exchange rates. *Statistical Modelling*, 12(3):229–255, 2012.

59. Vinzenz Erhardt and Claudia Czado. Modeling dependent yearly claim totals including zero claims in private health insurance. *Scandinavian Actuarial Journal*, 2012(2):106–129, 2012.

60. Anastasios Panagiotelis, Claudia Czado, and Harry Joe. Pair copula constructions for multivariate discrete data. *Journal of the American Statistical Association*, 107(499):1063–1072, 2012.

61. Jakob Stöber and Claudia Czado. Pair copula constructions. In *Simulating copulas: stochastic models, sampling algorithms, and applications*, volume 4. World Scientific, 2012.

62. Carole Bernard, Eike Christian Brechmann, and Claudia Czado. Statistical assessments of systemic risk measures. *Handbook on Systemic Risk*, page 165, 2013.

63. Carole Bernard and Claudia Czado. Multivariate option pricing using copulae. *Applied Stochastic Models in Business and Industry*, 29(5):509–526, 2013.

64. Eike Christain Brechmann and Claudia Czado. Risk management with high-dimensional vine copulas: An analysis of the Euro Stoxx 50. *Statistics & Risk Modeling*, 30(4):307–342, 2013.

65. Eike Christian Brechmann, Claudia Czado, and Sandra Paterlini. Modeling dependence of operational loss frequencies. *The Journal of Operational Risk*, 8(4):105, 2013.

66. Claudia Czado, Eike Christian Brechmann, and Lutz Gruber. Selection of vine copulas. In *Copulae in Mathematical and Quantitative Finance*, pages 17–37. Springer Berlin Heidelberg, 2013.

67. Claudia Czado, Stephan Jeske, and Mathias Hofmann. Selection strategies for regular vine copulae. *Journal de la Société Française de Statistique*, 154(1):174–191, 2013.

68. Jeffrey Dissmann, Eike Christian Brechmann, Claudia Czado, and Dorota Kurowicka. Selecting and estimating regular vine copulae and application to financial returns. *Computational Statistics & Data Analysis*, 59:52–69, 2013.

69. Nicole Krämer, Eike C Brechmann, Daniel Silvestrini, and Claudia Czado. Total loss estimation using copula-based regression models. *Insurance: Mathematics and Economics*, 53(3):829–839, 2013.

70. Daniel Schmidl, Claudia Czado, Sabine Hug, Fabian J Theis, et al. A vine-copula based adaptive MCMC sampler for efficient inference of dynamical systems (with discussion and rejoinder). *Bayesian Analysis*, 8(1):1–42, 2013.

71. Jakob Stöber, Harry Joe, and Claudia Czado. Simplified pair copula constructions—limitations and extensions. *Journal of Multivariate Analysis*, 119:101–118, 2013.

72. Ran Zhang, Claudia Czado, Karin Sigloch, et al. A Bayesian linear model for the high-dimensional inverse problem of seismic tomography. *The Annals of Applied Statistics*, 7(2):1111–1138, 2013.

73. Eike Brechmann and Claudia Czado. Spatial modeling. *Predictive Modeling Applications in Actuarial Science: Volume 1, Predictive Modeling Techniques*, page 260, 2014.

74. Eike Brechmann, Claudia Czado, and Sandra Paterlini. Flexible dependence modeling of operational risk losses and its impact on total capital requirements. *Journal of Banking & Finance*, 40:271–285, 2014.

75. Eike Christian Brechmann and Claudia Czado. COPAR—multivariate time series modeling using the copula autoregressive model. *Applied Stochastic Models in Business and Industry*, 2014.

76. Claudia Czado and Eike Christian Brechmann. Bayesian risk analysis. In *Risk-A Multidisciplinary Introduction*, pages 207–240. Springer International Publishing, 2014.

77. Claudia Czado, Holger Schabenberger, and Vinzenz Erhardt. Non nested model selection for spatial count regression models with application to health insurance. *Statistical Papers*, 55(2):455–476, 2014.

78. Aleksey Min and Claudia Czado. SCOMDY models based on pair-copula constructions with application to exchange rates. *Computational Statistics & Data Analysis*, 76:523–535, 2014.

79. Jakob Stöber and Claudia Czado. Regime switches in the dependence structure of multidimensional financial data. *Computational Statistics & Data Analysis*, 76:672–686, 2014.

80. Carolin Baumgartner, Lutz F Gruber, and Claudia Czado. Bayesian total loss estimation using shared random effects. *Insurance: Mathematics and Economics*, 62:194–201, 2015.

81. Carole Bernard and Claudia Czado. Conditional quantiles and tail dependence. *Journal of Multivariate Analysis*, 138:104–126, 2015.

82. Eike Christian Brechmann and Claudia Czado. COPAR—multivariate time series modeling using the copula autoregressive model. *Applied Stochastic Models in Business and Industry*, 31(4):495–514, 2015.

83. Tobias Michael Erhardt, Claudia Czado, and Ulf Schepsmeier. R-vine models for spatial time series with an application to daily mean temperature. *Biometrics*, 2015.

84. Tobias Michael Erhardt, Claudia Czado, and Ulf Schepsmeier. Spatial composite likelihood inference using local C-vines. *Journal of Multivariate Analysis*, 138:74–88, 2015.

85. Lutz Gruber, Claudia Czado, et al. Sequential Bayesian model selection of regular vine copulas. *Bayesian Analysis*, 10(4):937–963, 2015.

86. Harry Joe, Jun Cai, Claudia Czado, and Haijun Li. Preface to special issue on high-dimensional dependence and copulas. *Journal of Multivariate Analysis*, 138:1–3, 2015.

87. Ulf Schepsmeier and Claudia Czado. Dependence modelling with regular vine copula models: a case-study for car crash simulation data. *Journal of the Royal Statistical Society: Series C (Applied Statistics)*, 2015.

88. Jakob Stöber, Hyokyoung Grace Hong, Claudia Czado, and Pulak Ghosh. Comorbidity of chronic diseases in the elderly: Patterns identified by a copula design for mixed responses. *Computational Statistics & Data Analysis*, 88:28–39, 2015.

89. Carlos Almeida, Claudia Czado, and Hans Manner. Modeling high-dimensional time-varying dependence using dynamic D-vine models. *Applied Stochastic Models in Business and Industry*, 32(5):621–638, 2016.

90. Alexander Bauer and Claudia Czado. Pair-copula Bayesian networks. *Journal of Computational and Graphical Statistics*, 25(4):1248–1271, 2016.

91. Matthias Killiches and Claudia Czado. Block-maxima of vines. *Extreme Value Modeling and Risk Analysis: Methods and Applications*, page 109, 2016.

92. Thomas Nagler and Claudia Czado. Evading the curse of dimensionality in non-parametric density estimation with simplified vine copulas. *Journal of Multivariate Analysis*, 151:69–89, 2016.

93. Guilherme Pereira, Álvaro Veiga, Tobias Erhardt, and Claudia Czado. Spatial r-vine copula for streamflow scenario simulation. In *Power Systems Computation Conference (PSCC), 2016*, pages 1–7. Power Systems Computation Conference, 2016.

94. Ran Zhang, Claudia Czado, and Karin Sigloch. Bayesian spatial modelling for high dimensional seismic inverse problems. *Journal of the Royal Statistical Society: Series C (Applied Statistics)*, 65(2):187–213, 2016.

95. Nicole Barthel, Candida Geerdens, Claudia Czado, and Paul Janssen. Modeling recurrent event times subject to right-censoring with D-vine copulas. *arXiv preprint arXiv:1712.05845, in revision for Biometrics*, 2017.

96. TM Erhardt, C Czado, and TL Thorarinsdottir. Evaluation of time series models under non-stationarity with application to the comparison of regional climate models. *arXiv preprint arXiv:1702.00728*, 2017.

97. Tobias M Erhardt and Claudia Czado. Standardized drought indices: a novel univariate and multivariate approach. *Journal of the Royal Statistical Society: Series C (Applied Statistics)*, 2017.

98. Holger Fink, Yulia Klimova, Claudia Czado, and Jakob Stöber. Regime switching vine copula models for global equity and volatility indices. *Econometrics*, 5(1):3, 2017.

99. Matthias Fischer, Daniel Kraus, Marius Pfeuffer, and Claudia Czado. Stress testing german industry sectors: Results from a vine copula based quantile regression. *Risks*, 5(3):38, 2017.

100. Lukas Höhndorf, Claudia Czado, Huanglei Bian, Jennifer Kneer, and Florian Holzapfel. Statistical modeling of dependence structures of operational flight data measurements not fulfilling the iid condition. In *AIAA Atmospheric Flight Mechanics Conference*, page 3395, 2017.

101. Matthias Killiches, Daniel Kraus, and Claudia Czado. Examination and visualisation of the simplifying assumption for vine copulas in three dimensions. *Australian & New Zealand Journal of Statistics*, 59(1):95–117, 2017.

102. Matthias Killiches, Daniel Kraus, and Claudia Czado. Using model distances to investigate the simplifying assumption, model selection and truncation levels for vine copulas. *Preprint*, 2017.

103. Daniel Kraus and Claudia Czado. D-vine copula based quantile regression. *Computational Statistics & Data Analysis*, 110:1–18, 2017.

104. Daniel Kraus and Claudia Czado. Growing simplified vine copula trees: improving Dissmann's algorithm. *arXiv preprint arXiv:1703.05203*, 2017.

105. Dominik Müller and Claudia Czado. Dependence modeling in ultra high dimensions with vine copulas and the graphical lasso. *arXiv preprint arXiv:1709.05119*, 2017.

106. Dominik Müller and Claudia Czado. Representing sparse Gaussian DAGs as sparse r-vines allowing for non-Gaussian dependence. *Journal of Computational and Graphical Statistics*, (in Press), 2017.

107. Dominik Müller and Claudia Czado. Selection of sparse vine copulas in high dimensions with the lasso. *arXiv preprint arXiv:1705.05877*, 2017.

108. Thomas Nagler, Christian Schellhase, and Claudia Czado. Nonparametric estimation of simplified vine copula models: comparison of methods. *Dependence Modeling*, 5(1):99–120, 2017.

109. Anastasios Panagiotelis, Claudia Czado, Harry Joe, and Jakob Stöber. Model selection for discrete regular vine copulas. *Computational Statistics & Data Analysis*, 106:138 – 152, 2017.

110. Guilherme AA Pereira, Álvaro Veiga, Tobias Erhardt, and Claudia Czado. A periodic spatial vine copula model for multi-site streamflow simulation. *Electric Power Systems Research*, 152:9–17, 2017.

111. Benedikt Schamberger, Lutz F Gruber, and Claudia Czado. Bayesian inference for latent factor copulas and application to financial risk forecasting. *Econometrics*, 5(2):21, 2017.

112. Elif Acar and Claudia Czado. Flexible dynamic vine copula models for multivariate time series data. *Econometrics and Statistics, submitted*, 2018.

113. N. Barthel, C. Czado, and Y. Okhrin. A partial correlation vine based approach for modeling and forecasting multivariate volatility time-series. *submitted*, 2018.

114. N. Barthel, C. Geerdens, C. Czado, and P. Janssen. Dependence modeling for recurrent event times subject to right-censoring with d-vine copulas. *submitted*, 2018.

115. Nicole Barthel, Candida Geerdens, Matthias Killiches, Paul Janssen, and Claudia Czado. Vine copula based likelihood estimation of dependence patterns in multivariate event time data. *Computational Statistics & Data Analysis*, 117:109–127, 2018.

116. Claudia Czado, Eugen Ivanov, and Yarema Okhrin. Modelling temporal dependence of realized variances with vines. *Econometrics and Statistics, submitted*, 2018.

117. Lutz Gruber and Claudia Czado. Bayesian model selection of regular vine copulas. *Bayesian Analysis (in Press)*, 2018.

118. Lukas Höhndorf, Thomas Nagler, Phillip Koppitz, Claudia Czado, and Florian Holzapfel. Statistical dependence analyses of operational flight data used for landing reconstruction enhancement. In *2018 ATRS*, ATRS World Conference, Seoul, Republic of Korea, 2018. Air Transport Research Society (ATRS).

119. Lukas Höhndorf, Chong Wang, Phillip Koppitz, Sebastian Weiß, Sergio Olmos, Claudia Czado, and Florian Holzapfel. Integration of vine copula dependence structures into subset simulation for accident probability quantifications. In *31st Congress of the International Council of the Aeronautical Sciences*. Belo Horizonte, Brazil, 2018.

120. W.S. Jaeger, T. Nagler, C. Czado, and R.T. McCall. A statistical simulation method for joint time series of non-stationary hourly wave parameters. *Coastal Engineering, in revision*, 2018.

121. Matthias Killiches and Claudia Czado. A D-vine copula based model for repeated measurements extending linear mixed models with homogeneous correlation structure. *Biometrics (in Press)*, 2018.

122. Matthias Killiches, Daniel Kraus, and Claudia Czado. Model distances for vine copulas in high dimensions. *Statistics and Computing*, 28(2):323–341, 2018.

123. Thomas Nagler, Christian Bumann, and Claudia Czado. Model selection in sparse high-dimensional vine copula models with application to portfolio risk. *arXiv preprint arXiv:1801.09739, in revision for Journal of Multivariate Analysis*, 2018.

Book

1. Czado, Claudia and Schmidt, Thorsten. *Mathematische Statistik*. Springer Verlag, Berlin, 2011.

2. Czado, Claudia. *Analyzing Dependent Data with Vine Copulas*. submitted, 240 pages 2018.

Conference Presentations last 5 years

2018: C. Czado
Nonparametric vine models with application.
Invited talk at the 4th Conference of the International Society for Nonparametric Statistic June 11-15, 2018, Salerno, Italy.
C. Czado
Non parametric D-vine quantile regression with application,
Invited talk at the atms workshop "Multi- and high-dimensional statistics - Copulas - Survival analysis - Model selection", August 22-24, 2018, Leuven, Belgium.
C. Czado
Analyzing dependent data with vine copulas,
Invited six hour course at the Swiss doctoral school in Statistics, September 2-5, 2018, Villars-sur-Ollon, Switzerland.
N. Barthel and C. Czado
Estimating dependence patterns in right-censored event time data using R-vine copula models,

invited talk at CMStatistics 2018 December 14-16, 2018, Pisa, Italy.

2017: C. Czado
D-vine based quantile regression with application to stress testing.
Invited talk at the 61st World Statistics Congress - ISI2017, July 16-21, 2017, Marrakech, Morocco.
C. Czado
D-vine based quantile regression with application to stress testing.
Invited talk at the European Meeting of Statisticans, July 24-28, 2017, Helsinki, Finland.
C. Czado
D-vine quantile regression with extensions.
Invited talk at the 10th International Conference of the ERCIM on Computational and Methodological Statistics (CMStatistics 2017), Dec. 16-18, 2017, London, U.K.

2016: C. Czado
High dimensional dependency analysis using vine copulas.
Invited talk and section organizer at the 12th German Probability and Statistics Days, March 1-4, 2016, Bochum, Germany.
Invited talk at workshop "Applied Statistics", March 9-11, 2016, Dresden, Germany.
Stress testing using vine copulas.
Invited talk at the workshop "Flexible Statistical Modelling", (Ghent, Sep. 15-16, 2016, Ghent, Belgium.
Predicting conditional quantiles using D-Vine copulas.
Invited talk and session organizer at 9th International Conference of the ERCIM on Computational and Methodological Statistics (CMStatistics 2016), Dec. 9- 11, 2016, Seville, Spain.

2015: C. Czado
Invited talk at workshop "Copulae: On the Crossroads of Mathematics and Economics", April 12-18, 2015, Oberwolfach, Germany.
Conditional copula simulation for systemic risk stress testing.
Invited talk at the 8th International Conference of the ERCIM on Computational and Methodological Statistics (CMStatistics 2017), Dec. 12-14, 2015, London, U.K.

2014: C. Czado
Keynote speaker at the International Workshop on High-Dimensional Dependence and Copulas: Theory, Modeling, and Applications January 3-5, 2014, Beijing, China.
C. Czado
Vines: Building multivariate copulas using pair copula constructions.
Invited talk at the 42th Annual Meeting of the Statistical Society of Canada, May 25–28, 2014, Toronto, Canada.
C. Czado
Invited talk at the 2014 Joint Statistical Meetings, August 2 - 7, 2014, Boston, USA.

Talks

I have given talks at numerous German and international universities.

Extended Research Visits

March 4 -31, 2015	Faculty of Business and Economics, Monash University, Caulfield, Australia invited by Prof. Anastasios Panagiotelis
Sept. 20 - Oct. 1, 2010	C.A.S.E. Centre for Applied Statistics and Economics, Humboldt-Universität, Berlin invited by Prof. O. Okhrin

Apr. 26 - May 12, 2010	Norwegian Computing Center, Oslo, Norway, invited by Prof. A. Frigessi
July 10 - 30, 2010	Department of Statistics University of British Columbia, Vancouver, Canada, invited by Prof. Harry Joe
Sept. 1 - 9, 2007	Department of Econometrics and Business Statistics, University of Sydney, Sydney, Australia, invited by Prof. R. Gerlach
Sept. 10 - 25, 2007	School of Finance and Applied Statistics, Australian National University, Canberra, Australia, invited by Prof. R. Maller
Mar. 20 - Apr. 20, 2006	Department of Statistics, Washington State University, Seattle, U.S.A., invited by Prof. T. Gneiting
Feb. 20 - Mar. 19, 2006	Department of Statistics and Actuarial Science, University of Waterloo, Waterloo, Canada, invited by Prof. P. X-K. Song
Oct. 10 - Oct. 24, 2005	Department of Mathematical Sciences, Norwegian University of Science and Technology, Trondheim, Norway, invited by Prof. H. Rue
Aug. 25 - Sep. 26, 2005	Norwegian Computing Center, Oslo, Norway, invited by Prof. A. Frigessi
Sept. 27 - Oct. 8, 2004	Centre for Statistics, Georg August-Universität, Göttingen, invited by Prof. Dr. A. Munk
Apr. 2001	Department of Mathematics and Statistics, York University, Toronto, Canada, invited by Prof. P. X-K. Song
May - Aug. 2001	Department of Statistics, Washington State University, Seattle, U.S.A., invited by Prof. A. E. Raftery
June - Aug. 1995	Institut für Mathematische Stochastik, Georg-August-Universität, Göttingen, invited by Prof. Dr. M. Denker
Sep. 1995 - Apr. 1996	Institut für Statistik, Ludwig-Maximillians-Universität, München , invited by Prof. Dr. L. Fahrmeir
May - Aug. 1996	Institut für Quantitative Methoden, Technische Universität, Berlin, invited by Prof. Dr. G. Tutz

Research Support

NSERC	Natural Sciences and Engineering Research Council of Canada
DFG	German Research Foundation
SFB	Special Research Unit sponsored by the DFG
BMDF	German Ministry for Education and Research
IGGSE	International Graduate School for Science and Engineering, TUM

Personal

2018-2021	DFG Project "Statistical Learning with Vine Copulas", submitted
2014-2017	Allianz Ph. D. Stipends, three 80% Stipends for 3.5 years
2010-2013	Allianz Ph. D. Stipends, two 50% Stipends for 3.5 years

2008-2010 DFG Project "Statistical Inference for high dimensional Dependence Models using Pair Copulas", salary for 1 research position

2003-2006 DFG Project "Statistical Methods of Model Choice for Regression, salary for 1 research position

1996-2000 NSERC Individual Research Grant (4 years), CAD $13.400 (each year)

1995 Sabbatical Leave Fellowship, CAD $3000

1993-1995 NSERC Individual Research Grant (3 years), CAD $8000 (each year)

1992-1993 Academic Initiative Fund Grant York University, CAD $4000

1991 President's NSERC Grant York University, CAD $2891

1990-1992 NSERC Operating Grant (3 years),CAD $12.500 (each year)

1989 President's NSERC Grant York University, CAD $1500

1989 Faculty of Arts Minor Research Grant York University, CAD $1464

Joint

2016-2019 DFG Project "Copula based dependence analyser for functional data for validation and calibration of dynamic aircraft models", one 50% position (joint with Prof. Dr.-Ing. Florian Holzapfel, Institute of Flight System Dynamics, TUM), Euro 128.000 (3 years)

2017-2018 DFG Project "Vine Copula based modeling and forecasting of multivariate realized volatility time-series", one 75% Ph.D. position (joint with Prof. Dr. Yarema Okhrin, Faculty of Business and Economics, Augsburg), Euro 62.500 (1 year)

2015-2017 DFG Project "Vine Copula based modeling and forecasting of multivariate realized volatility time-series", one 75% Ph.D. position (joint with Prof. Dr. Yarema Okhrin, Faculty of Business and Economics, Augsburg), Euro 1.111.600 (2 years)

2013-2016 IGGSE Focus Area Water "Drought modeling and monitoring by novel statistical and analytical methods", (Project coordinator: A. Menzel, TUM),1 Ph.D. stipend

2010-2013 BMBF "SIMDATA-NL: "Nichtlineare Charakterisierung und FEM-Simulationsergebnissen für Autobauteile und Crash-Tests" (Project coordinator: M. Griebel, Bonn), 1 Ph.D. stipend

2008-2012 Forschungsverbund "Munich Centre of Advanced Computing" (Principal Investigator: H.J. Bungartz), 1 Ph.D. Stipend

2003 SFB 386 Project A6 (3 years) (joint with C. Klüppelberg), Euro 60.000 (each year)

2002 BMBF "Initiative Notebook-University" (Interactive Statistic Education with SPlus and SAS), Euro 60000

2000 SFB 386 Project A6 (3 years) (joint with C. Klüppelberg), Euro 113.312 (each year)

1995 NSERC Equipment Grant (Principal Investigator: C. Czado) , CAD $32.521

1993 NSERC Infrastructure Grant (Principal Investigator: J. Fox) , CAD $25.000

1992 NSERC Equipment Grant (Principal Investigator: S. Fienberg), CAD $44.705

1991-1994 NSERC Infrastructure Grant (Principal Investigator: S. Kochman) ,CAD $25.000 (each year)

1990-1993 NSERC Infrastructure Grant (Principal Investigator: J. Fox) ,CAD $25.000 (each year)

Contributions to the Profession

Advisory Board *S*tatistical Papers

Referee for *T*he Journal of the American Statistical Society, *T*he Canadian Journal of Statistics, *M*etrika *T*he Australian Journal of Statistics. *T*he Journal of Statistical Computation and Simulation, *T*he American Statistician, *S*tatistical Papers. *J*ournal of Multivariate Analysis *J*ournal of Computational and Graphical Statistics *B*iometrical Journal *Q*uantitative Finance

Reviewer for NSERC, DFG, Czech Science Foundation, FWF Austria grant applications

Statistical Consulting

Solid Experience in statistical consulting for researchers in economics, psychology and sociology as *A*ssociate Coordinator of the *S*tatistical Consulting Service of the *I*nstitute of Social Research, York University

Graduiertenkolleg (Graduate Education)

Senior member of the Graduiertenkolleg "Applied Algorithmic Mathematic" at the Zentrum Mathematik, Technische Universität München. Supervision of the Ph.D. fellowship students S. Prokopenko (Nov. 2000 - June 2004) and S. Gschlößl (Sep. 2002 - Jan. 2006)

Teaching

Undergraduate

Apr.–July 2013, Apr.–July 2014, Apr.–July 2018
Computational Statistics, Technische Universität München
Apr.–July 2009, Apr.–July 2012, Apr.–July 2015, Apr.–July 2017
Statistik: Grundlagen, Technische Universität München
Apr.–July 2016
Statistik für Betriebswirtschaftslehre (Einführung mit R), Technische Universität München
Apr.–July 2007, Apr.–July 2008
Lineare Modelle mit Anwendungen in Wirtschaft und Finanz, Technische Universität München
Nov. 1999–Feb. 2000; Nov. 2000–Feb. 2001; Oct. 2004–Feb. 2005
Einführung in die Wahrscheinlichkeitstheorie und Statistik (Stochastik 1),
Technische Universität München
Apr. 2001–July 2001
Lineare Modelle mit Anwendungen, Technische Universität München
Nov. 1998–Feb. 1999
Statistik für Naturwissenschaftler und Ingenieure, Technische Universität München
Jan.–May 1998
Bayesian Statistics, York University (MATH 4130/MATH 6639B)
Jan.–May 1993, Jan.–May 1994, Jan.–May 1995, Jan.–May 1998
Modern Regression Analysis York University (MATH 3034.03)

Aug.–Dec. 1992, Aug.–Dec. 1993, Aug.–Dec. 1994, Aug.–Dec. 1996, Aug.–Dec. 1997
Classical Regression Analysis, York University (MATH 3033.03)
Jan.–May 1992; Jan.–May 1993
Analysis of Variance, York University (MATH 3230.03)
Aug.–Dec. 1991
Regression Analysis, York University (MATH 3330.03)
Jan.–May 1990, Jan.-May 1991
Elementary Statistics II, York University (MATH 2570.03)
Aug.–Dec. 1989, Aug.–Dec. 1990
Elementary Statistics I, York University (MATH 2560.03)
Jan. 1989–May 1989
Mathematics for Biologists, McGill University, Montreal, Quebec
Introduction to Statistics, McGill University, Montreal, Quebec

Graduate

Oct. 2002–Feb. 2003, Apr.–July 2005, Apr.–July, 2011, Apr.–July 2012, Apr.–July 2013, Apr.–July 2014, Apr.–July 2016, Apr.–July 2018
Computational Statistics, Technische Universität München
Apr.–July 2013, Apr.–July 2018
Stochastik für Lehramt an Beruflichen Schulen, Technische Universität München
Apr.–July 2014, Oct. 2017–Feb. 2018
Survival Analysis, Technische Universität München
Oct. 2017–Feb. 2018
Markov Chain Monte Carlo Methoden und Datenanwendungen, Technische Universität München
Oct. 2001–Feb. 2002, Oct. 2003–Feb. 2004, Oct. 2006–Feb. 2007, Oct. 2007–Feb. 2008, Oct. 2009–Feb. 2010, Oct. 2010–Feb. 2011, Oct. 2011–Feb. 2012, Oct. 2012–Feb. 2018
Generalized Linear Models, Technische Universität München
Apr.–July 2013, Apr.–July 2017
Statistical Analysis of Copula, Technische Universität München
Apr.–July 2017
Funktionale Datenanalyse, Technische Universität München
Oct. 2016–Feb. 2017
Mathematical Introduction to Neural Networks, Technische Universität München
Oct. 2015–Feb. 2016
Statistical Modelling with Copulas, Technische Universität München
Oct. 2015–Feb. 2016
Nichtparametrische statistische Methoden, Technische Universität München
Apr.–July 2015
Statistical Modelling with Copulas, Technische Universität München
Apr.–July 2015
Learning Gaussian Bayesian Networks, Technische Universität München
Apr.–July 2014
Statistische Modellbildung für große Daten mit Anwendungen in der Krankenversicherung und globaler ökonomischer Aktivität, Technische Universität München
Apr.–July 2007, Apr.–July 2008, Apr.–July 2009
Stochastic Simulation and Algorithms with Applications, Technische Universität München

Apr.–July 1999, Apr.–July 2000, Apr.–July 2002, Apr. - July 2003, Apr.–July 2004, Apr. - July 2006
Mathematische Statistik (Stochastik 4), Technische Universität München
Jan.–May 1990, Jan.–May 1991, Jan.–May 1997
Statistical Techniques, York University (MATH 6622.03)
Aug.–Dec. 1989, Aug.–Dec.1990, Aug.–Dec. 1993, Aug.–Dec.1994, Aug.–Dec.1996
Linear Models and Regression, York University (MATH 6621.03)
Aug. 1991–May 1992
Mathematical Statistics, York University (MATH 6620.06)

Supervision at the Technische Universität München

Habilitation

PD. Dr. Aleksey Min	Dependence Modelling: From regressions to copulas, Jan. 2011

Post Doctoral Students

Dr. Rada Dakovic	Oct. 2006–Oct. 2008
Dr. Aleksey Min	Juli 2004–Mar. 2010
Dr. Carlos Almeida	Sept. 2008–Aug. 2011
Dr. Mathias Hofmann	Nov. 2008–Dec. 2011
Dr. A. Panagiotelis	Humboldt Postdoctoral Stipend, Aug. 2009–July 2011

Ph.D. Students

Gernot Müller	Regression Models for Ordinal Valued Time Series: Estimation and Applications in Finance, Oct. 2000–July 2004
Sergij Prokopenko	Hierarchical Binary Spatial Regression Models with Cluster Effects, Nov. 2000–June 2004
Ralf Högn	Multiresolution Analysis of Long Time Series with Applications to Finance, Oct. 2001–June 2005
Susanne Gschlößl	Hierarchical Bayesian spatial regression models with applications to non-life insurance, Sep. 2002–Feb. 2006
Stephan Haug	Exponential COGARCH and other continuous time models, Feb. 2003–Feb. 2007
Vinzenz Erhardt	Modeling different dependence structures involving count data with applications to insurance, economics and genetics, Sep. 2006–June 2010
Alexander Bauer	Pair-copula constructions for non-Gaussian Bayesian networks, Oct. 2008–Feb. 2013
Jakob Stöber	Regular vine copulas with the simplifying assumption, time-variation, and mixed discrete and continuous margins, May 2010–June 2013, TopMath student
Eike Brechmann	Hierarchical Kendall copulas and the modelling of systematic and operational risk, Dec. 2010–Oct. 2013
Ran Zhang	Efficient parameter estimation in the high-dimensional inverse problem of seismic tomography, May 2009–Jan. 2014
Ulf Schepsmeier	Estimating standard errors and effcient goodness-of-fit tests

	for regular vine copula models, Dec. 2010–Feb. 2014
Lutz Gruber	Bayesian Modeling of General Multivariate Problems and High-Dimensional Time Series, Apr. 2012–July 2015
Tobias Erhardt	Development of Vine Copula based Drought Indices and Model Evaluation under the Presence of Non-Stationarity, Oct. 2013- Feb. 2017
Daniel Kraus	D-vine copula based quantile regression and the simplifying assumption for vine copulas, Mar. 2014–Oct. 2017
Matthias Killiches	Model distances, block maxima and repeated measurements in the context of vine copulas, Mar. 2014–Sept. 2017
Dominik Müller	Selection of Sparse Vine Copulas in Ultra High Dimensions , June 2014-Dec. 2017
Alexander Kreuzer	since Jan. 2017
Nicole Barthel	since Aug. 2015
Thomas Nagler	since Sep. 2014

Curriculum Development

2005 Development of lectures notes for *Computational Statistics*

2005 Development of lecture slides on generalized linear models in English

2003 Development of web pages for students (Introduction to the statistical programs S-Plus and R, Time series analysis with S-Plus, Modern Methods for Regression, S-Plus GARCH Documentation)

1991 Developed honour's stream lectures in regression [MATH3033.03 and MATH3034.03]

Service at the Technischen Universität München

Oct. 2008–Nov. 2011
Managing director (Human Resources) at the Faculty Mathematik, Technische Universität München

May 2008–May 2009, Nov. 1998–May 2007
Women's Representative at the Faculty Mathematik, Technische Universität München

Since March 2007
Development and Organisation of Faculty Gender Initiative Program **W**OMEN FOR MATH SCIENCE supported by the **E**xecellence Initiative "Unternehmerische Hochschule" and the Faculty of Mathematics of the Technischen Universität München (2008-2010 Euro 45,000, 2011 Euro 16,000)

May 2007–Apr. 2008, since May 2009
Vice Women's Representative at the Faculty Mathematik, Technische Universität München

Apr. 1999–Oct. 2002
Member of Examination Committee of the Faculty Mathematik

Oct. 2002–Sept. 2009
Vize head of Examination Committee of the Faculty Mathematik

Dec. 1999–Jan. 2002
Head of the Selection Committee for the John-von-Neumann Professorship

Jan. 2002–March 2005, since Oct. 2008
Member of the Executive Committee of the Faculty Mathematik

Extra University/Community Service and Conference Organisation

March 2002–March 2006
Elected Member of the Executive Committee of the Stochastikgruppe of the German Mathematical Society

Dec. 2002
Member of the Program Committee of the SFB Workshop *S*tochastic volatility and risk management - temporal and spatial dependence (Dec. 4-6, 2002)

Nov. 2004
Organization of the SFB 386 Workshop *S*patial and Spatial Temporal and Statistics (Nov. 22, 2004)

Oct. 2005
Member of the Program Committee of the SFB 386 Workshop *M*odel hoice and Validation (Oct. 6–8, 2005)

Oct. 2006
Member of the Program Committee of the SFB 386 Workshop *S*tatistical Modelling of Complex Systems (Oct. 12–14, 2006)

June 2010
Organisation of the Section "Statistics in Finance" at the 23rd Nordic Conference on Mathematical Statistics, Voss, Norway

May–June 2011
Invitation and Organisation of visit to Munich of the John von Neumann Professor Harry Joe, Vancouver, Canada

May 11/12, 2011
Organisation of the 4th Workshop on Vine Copula Distributions and Applications Munich, `/www-m4.ma.tum.de/lect-conf/vinesworkshop/`

July 10/11, 2012
Member of the Scientic Programm Committee for the workshop: Copulae in Mathematical and Quantitative Finance Krakow - Przegorzaly

July 9, 2012
Short course in Kraków - Przegorzaly: "Vine copulae; Simulation; Estimation methods; Model selection; Truncation; Vine sector models" together with E. Brechmann.

July 30 to August 3, 2012
Co-organizer of the ISAM - TopMath Summer School on "Dependence Modeling" at the Technische Universität München.

Oct 2012–Dec. 2014
Host for Humboldt Experienced Researcher Prof. Carol Bernard, University of Waterloo, Canada.

Jan. 2–5, 2014
Co-organizer of the workshop "High-Dimensional Copulas: Theory, Modeling, and Applications" at the Central University of Finance and Economics (CUFE), Beijing, China

December, 14-16, 2018
Member of the Scientific Program Committee and Organizer of the session “New developments in vine copulas and their applications” at CMStatistics 2018, Pisa, Italy.

July 2018