Curriculum Vitae – Prof. Dr. Martin Spindler

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Personal Information

Date of birth: 25th of March 1979

Citizenship: German

Marital status: single

Fields of Interest

Data Science, Econometrics, Statistics, Causal Inference, Machine Learning / AI, in particular Causal Machine Learning

Fields of Application: Economics and Business Administration, in particular Finance, Health Economics, IO, Marketing and Operations Research

Current Position

Professor for Statistics and Machine Learning, Institute of Statistics, University of Hamburg, since 6/2016

Professional Experience

Visiting Professor for Microeconometrics (substitution for Professor van den Berg), University Mannheim, Spring term 2016

Senior Researcher, Max Planck Society / Munich Center for the Economics of Aging, 5/2012 – 5/2016

Visiting Professor, Boston College, Boston, USA and Visiting Scholar, Massachusetts Institute of Technology, Cambridge, USA, 10/2015–12/2015

Research Fellow / Visiting Scholar, Massachusetts Institute of Technology, Cambridge, USA, Sponsor: Prof. Victor Chernozhukov, 8/2013–7/2014

Research Stay, Singapore Management University, Singapore, Sponsor: Prof. Liangjun Su, 5/2012–6/2012

Visiting Scholar, Columbia University, Sponsor: Prof. Bernard Salanié, 1/2011–4/2011

Education

PhD in Economics, Munich Graduate School of Economics, University of Munich, 5/2012

Title: Essays in Econometrics

Grade: summa cum laude

Master in Mathematics ("Diplom"), University of Munich, 2008.

Fields of specialization: Probability Theory, Mathematical Statistics, Mathematical Finance

Average grade 1.1, (scale: 1.0-5.0)

best 10 % of class

B.A. Mathematics ("Vordiplom"), University of Regensburg, 2005.

Average grade 1.3, (scale: 1.0-5.0)

Master in Economics ("Diplom"), University of Regensburg, 2003.

Fields of specialization: Industrial Organisation, Statistics, Public Finance

Average grade 1.3, (scale: 1.0-5.0)

best of class

Abitur (approximately equivalent to a High School Diploma), 1998.

Average grade 1.1, (scale: 1.0-5.0)

Research Affiliations

Hamburg Center for Health Economics (hche), Head of "Big Data & Digital Health"

Committee "Econometrics" of the German Economic Association, member (since 2018)

CESifo Area "Economics of Digitization", Research Network Fellow (since 2017)

Honors, Awards, & Fellowships

GENEVA Research Grant 2011 (10,000 SFR)

Scholarship of the German Research Foundation (DFG) (10/2008–9/2011)

Best 10 % of class in Mathematics (2008) (waiver of tuition fees)

Best of class in Economics (2003)

Grant of the German Academic Exchange Service 1/2011–4/2011

Travel grant of the German Statistical Association 2010, 2011, 2012

Scholarship for highly gifted students (10/1999–10/2003)

Scholarship for the summer school "Asymmetric Information and Learning in Financial Markets" (2008)

Research Grants

Completed and Ongoing

DFG-Graduiertenkolleg "Managerial and economic perspectives on quality of health care", PI for Machine Learning Methods in Health Economics (jointly with HCHE; in total 6 Mio. Euro)

"Mathematical methods and algorithms for learning effective embeddings from unstructured information for anomaly detection problems" jointly with Prof. Burnaev (Skoltech, Russia) (DFG, 2021-2025; ca. $250,000$ Euro)

"Learning from high-dimensional, heterogeneous Data: Machine Learning in Econometrics" jointly with Helmut Farbmacher (TUM) (DFG, 2020-2023; ca. $300,000$ Euro)

"Causal Reinforcement Learning" jointly with Economic AI and Osram (Bayerisches Wirtschaftsministerium, 2021-2024; ca. $350,000$ Euro)

Nomination of Prof. Victor Chernozhukov for the Bessel Prize of the Humboldt Foundation for further cooperation on projects in Machine Learning (granted for the year 2018, ca. $50,000$ Euro)

DFG Grant "Initiation of International Collaboration" 7/2015

DFG Research Grant 8/2013–7/2014

Submitted

Innovationsfond (Gemeinsamer Bundesausschuss) "personalAIze"(jointly with TK and HWR; 1 Mio. Euro)

Collaborative Reserach Group ("Forschungsgruppe") "Integration hochdimensionaler Nachfragemodelle der Zufallsnutzentheorie in mathematische Optimierungsprobleme der Angebotsplanung"(submitted)

DFG proposal "Erklärung von Antwortausfällen und Bekämpfung von Verzerrung durch Antwortausfälle in eigenständig auszufüllenden Panelumfragen"(joint with Barbara Felderer and Jannis Kück; submitted).

Internships

7/2008 - 9/2008 Internship, risklab Germany, a subsidiary of Allianz Global Investor

8/2006 - 9/2006 Internship, Stern Stewart & Co., Management Consultants

4/2006 Internship, Arthur D. Little, Munich

7/1998 - 5/1999 Military Service, Cham, Germany

Research

Publications

Causally Learning an Optimal Rework Policy (with Oliver Schacht, Sven Klaassen, Philipp Schwarz, Daniel Grünbaum, Sebastian Imhof), (*accepted at Proceedings of Machine Learning Research, Volume 218: The KDD'23 Workshop on Causal Discovery, Prediction and Decision, 07 August 2023, Long Beach, USA*).

DoubleML – An Object-Oriented Implementation of Double Machine Learning in R (with Philipp Bach, Victor Chernozhukov, Sven Klaassen and Malte Kurz) (*accepted at Journal of Statistical Software*).+

Closing the U.S. Gender Wage Gap requires Understanding its Heterogeneity (with Philipp Bach and Victor Chernozhukov), 2024, *Journal of the Royal Statistical Society, Series A*, Volume 187, Issue 1, 209–230.

Uniform Inference in High-Dimensional Gaussian Graphical Models (with Victor Chernozhukov, Sven Klaassen and Jannis Kück), 2023,*Biometrika*, Volume 110, Issue1, March 2023, Pages 51–68 (presented at ICML 2018, CausalML Workshop).

L_2Boosting for Estimation of Treatment Effects in a High-Dimensional Setting (with Jannis Kück and Ye Luo), 2023, *Journal of Econometrics*, Volume 234, Issue 2, Pages 714–731.

Causal mediation analysis with double machine learning (with Helmut Farbmacher, Martin Huber, Lukas Laffers, Henrika Langen), 2022, *Econometrics Journal*, Volume 25, Issue 2, Pages 277-300.

Using Double Machine Learning to Understand Nonresponse in the Recruitment of a Mixed-Mode Online Panel(with Barbara Felderer and Jannis Kück), 2023, *Social Science Computer Review*, Volume 41, Issue 2, Pages 461–481.

Sequence Embeddings help to identify fraudulent cases in healthcare insurance (with I. Fursov, A. Zaytsev, R. Khasyanov, E. Burnaev), 2022, *IEEE Access*, Volume 10, 32060-32074.

DoubleML – An Object-Oriented Implementation of Double Machine Learning in Python (with Philipp Bach, Victor Chernozhukov and Malte Kurz), 2022, *Journal of Machine Learning Research*, 23 (53), 1–6.

An Explainable Attention Network for Fraud Detection in Claims Management (with Helmut Farbmacher and Leander Löw), 2022, *Journal of Econometrics*, Volume 228, Issue 2, 244–258.

Machine Learning for Financial Forecasting, Planning and Analysis: Recent Developments and Pitfalls (with Helmut Wasserbacher), 2022, *Digital Finance*, 4, 63–88.

Transformation Models in High-Dimensions (with Sven Klaassen and Jannis Kück), 2021, *Journal of Business and Economic Statistics*, 1168-1178.

Heterogeneous Effects of Poverty on Cognition (with Helmut Farbmacher and Heinrich Kögel), 2021, *Labour Economics* Volume 71.

Semiparametric count data modeling with an application to health service demand (with Philipp Bach and Helmut Farbmacher), *Econometrics and Statistics* (Special Issue on Nonparametric and Quantile Regression), 8, 125-140, 2018.

L_2Boosting for Economic Applications (with Ye Luo), 2017, *American Economic Review, Papers and Proceedings*, 107(5), 270–73.

hdm: High-Dimensional Econometrics (with Victor Chernozhukov and Christian Hansen), 2016, *R Journal* 8(2), 185–199.

Stock Market Volatility: Identifying Major Drivers and the Nature of Their Impact (with Stefan Mittnik and Nikolay Robinzonov), 2015, *Journal of Banking and Finance*, 58, 1–14.

Post-Selection Inference in Linear IV Models with very many Controls and Instruments (with Victor Chernozhukov and Christian Hansen), 2015, *American Economic Review, Papers and Proceedings*, 105(5), 486–90.

Valid Post-Selection and Post-Regularization Inference: An Elementary, General Approach (with Victor Chernozhukov and Christian Hansen), 2015, *Annual Review of Economics*, Vol. 7: 649–688.

Lasso for Instrumental Variable Estimation, 2015, *Journal of Applied Econometrics* 31(2), 450–454.

How do unisex rating regulations affect gender differences in insurance premiums? (with Vijay Aseervatham and Christoph Lex), 2016, *The Geneva Papers on Risk and Insurance - Issues and Practice* 41, 128-160.

Asymmetric Information in (private) Accident Insurance, *Economics Letters*, 130, May 2015, 85–88.

Asymmetric Information in the Automobile Insurance: Evidence from Germany (with Steffen Hagmayer and Joachim Winter), 2014, *Journal of Risk and Insurance* 81 (4), 781–801.

Econometric Methods for Testing for Asymmetric Information – A Comparison of Parametric and Nonparametric Methods with an Application to Hospital Daily Benefits, 2014, *The Geneva Risk and Insurance Review* 39, 254–266.

Nonparametric Testing for Asymmetric Information (with Liangjun Su), 2013, *Journal of Business and Economic Statistics* 31 (2), 208–225.

Asymmetric Information in Insurance Markets: Does it really exist? Insurance Economics 64, July 2011, 6–8.

Essays in Econometrics, Dissertation, University of Munich, 2012.

Working Papers

Uniform Inference in High-Dimensional Additive Models (with Philipp Bach, Sven Klaassen, Jannis Kück) (*revise & resubmit at Journal of Econometrics*).

L_2Boosting in High-Dimensions: Rate of Convergence (with Ye Luo) (*reject & resubmit at Journal of Machine Learning Reserach*).

Bernstein-type Inequalities and Nonparametric Estimation under Near-Epoch Dependence (with Zihao Yuan) (*revise & resubmit at Journal of Econometrics*).

An Improved Bernstein-type Inequality for C-Mixing-type Processes and Its Application to Kernel Smoothing (with Zihao Yuan), arxiv.

Valid Simultaneous Inference in High-Dimensional Settings (with Victor Chernozhukov and Philipp Bach) (*reject & resubmit at Statistical Science*).

Label Attention Network for sequential multi-label classification (with Elizaveta Kovtun, Galina Boeva, Artem Zabolotnyi, Evgeny Burnaev, Alexey Zaytsev), arxiv.

Insights from Optimal Pandemic Shielding in a Multi-Group SEIR Framework (with Philipp Bach and Victor Chernozukov).

Self-Attention Network for Sequence Classification with Application to Claims Processing (with Leander Löw and Eike Brechmann).

Work in Progress

How does Nonresponse Change over Time? Determining Dynamic and Heterogenous Causal Effects of Personal Characteristics in Panel Surveys (with Barbara Felderer and Jannis Kück).

L_1Boosting: Theoretical Results (with Sven Klassen and Ye Luo).

Adaptive Non-Parametric Smoothing of Discrete Variables (with Xi Chen, Victor Chernozhukov and Ye Luo).

Estimation of Nonlinear Panel Data Models with Machine Learning Methods (with Xi Chen, Victor Chernozhukov and Ye Luo).

High-Dimensional Varying Coefficient Models (with Zihao Yuan).

Knock-offs for Randomized Control Trials and Heterogenous Treatment Effects (with Sven Klaassen).

Demand Estimation: A comparison and Combination of Econometric and Machine Learning Methods (with Philipp Bach, Victor Chernozhukov, Sven Klaassen, Jannis Kück and Leander Löw).

Estimation of a High-dimensional Mincer Equation (with Philipp Bach, Victor Chernozhukov and Christian Hansen).

Estimation of Interest Rate Curves in a High-dimensional Setting (with Andreas Fuest).

Nonlinear and High-dimensional Modeling of VARs (with Stefan Mittnik and Nikolay Robinzonov).

Books

Causal Machine Learning (with Victor Chernozhukov, Chris Hansen, Nathan Kallus and Vasilis Syrgkanis; in preparation).

Moderne Verfahren der Angewandten Statistik (with Jan Gertheiss und Matthias Schmid; in preparation for Springer)

Chapters in Books

Long–term care insurance across Europe (with T. Bucher-Koenen and J. Schütz), Chapter 32, in: SHARE First Results Book 5, Börsch-Supan, A., T. Kneip, H. Litwin and G. Weber (Eds.).

Digital Finance – Die Zukunft der Finanzplanung in Unternehmen (with Heinrich Kögel and Helmut Wasserbacher), in: Arbeitswelt und KI 2030, Springer Gabler.

Software

R package "hdm" (on CRAN)

R package "DoubleML" (on CRAN) (with Malte Kurz and Philipp Bach)

Python module "DoubleML" (with Malte Kurz and Philipp Bach)

Miscellaneous

"Rechtliche Gestaltung von Datentreuhändern" (with Simon Kempny and Heike Krüger), Neue Juristische Woche, 2022.

"Ein Lockdown für alle ist eine schlechte Idee" (with Philipp Bach and Victor Chernozhukov) in FAZ, December 6th 2020.

"Dynamic Pricing mit Künstlicher Intelligenz – Eine Fallstudie aus dem Ride-Sharing-Markt" (with Philipp Bach and Ye Luo) in Marketing Review St Gallen, May 2019.

"Korrelationen müssen auch kausal sein" (with Victor Chernozhukov and Ye Luo) in FAZ, June 16th 2019, p. 16 .

"Dynamic Pricing mit Maschinellem Lernen und KI" in absatzwirtschaft, February 2019.

"Raus aus der Black Box" in Versicherungswirtschaft (73), June 2018, p. 70–72.

Conference and Seminar Presentations

Seminar Presentations

2023: Tübingen, Heidelberg
2022: KU Eichstätt-Ingolstadt, Mannheim
2021: Düsseldorf, Regensburg, KU Eichstätt-Ingolstadt, Konstanz, Passau, Luxembourg, Heidelberg, Konstanz, Bonn
2020: LMU
2019: UCL (Louvain)
2018: Max Planck Institute for Intelligent Systems, Tübingen; Committee "Econometrics" of the German Economic Association; Marburg, Konstanz; Bitkom joint meeting of committee AI & Logistics
2017: LMU (Statistics Seminar), University of St. Gallen, Tilburg University, Alfred Weber Institute (Heidelberg)
2016: University of Heidelberg (Math Department), Boston College (Econometrics Seminar), MIT (Econometrics Lunch Seminar)
2015: LMU (Statistics Seminar)
2014: MIT (Econometrics Lunch Seminar)
2012: Goethe-Universität, Frankfurt am Main, MEA – Max Planck Institute for Social Law and Social Policy, LMU (Financial Econometrics Seminar)

Conference Presentations

2023: Econometric Society European Meeting, Barcelona (scheduled); Verein für Socialpolitik, Regensburg (scheduled)
2022: UAI, Eindhoven, Tutorial on Causal Machine Learning; DAGSTAT, Hamburg (3 presentations); Statistische Woche, Münster (2 presentations, scheduled); Verein für Socialpolitik, Basel.
2021: 1st Victoria Peak Conference (online)
2019: DAGSTAT, Munich; Mathematics of Data Science, Turing Institute, London; Verein für Socialpolitik (Leipzig); Internationale Biometrische Gesellschaft, Region Schweiz-Österreich (Lausanne, CH, Annual Meeting); Graphical Models: Conditional Independence and Algebraic Structures (TUM)
2018: CESifo Area Conference on Digitization; ICML 2018, CausalML Workshop, Stockholm, Sweden; 10th ECB Workshop on Forecasting Techniques: Economic Forecasting with Large Datasets, Frankfurt am Main
2017: CESifo Area Conference on Digitization, AEA Annual Meeting (Chicago, organized session)
2016: EC2 conference, "Big Data", Toulouse
2015: Boston College /Boston University Econometrics Workshop, Boston; Econometric Society World Congress, Montreal, Canada; CeMMAP Big Data Conference 2015, Cambridge, UK; North American Winter Meeting of the Econometric Society, Boston, USA*; Annual Meeting of the American Economic Association, Boston, USA*
2014: Statistische Woche (German Statistical Society Annual Meeting), Hannover; North American Summer Meeting of the Econometric Society, Minneapolis, USA (two presentations)

2013: Boston College /Boston University Econometrics Workshop, Boston; 1st Vienna Workshop on High Dimensional Time Series in Macroeconomics and Finance , Vienna; 3rd Humboldt Copenhagen Conference on Financial Econometrics, Berlin

2012: Statistische Woche (German Statistical Society Annual Meeting), Vienna; Jahrestagung des Vereins für Socialpolitik (German Economic Society Annual Meeting) Göttingen; EEA-ESEM 2012, Malaga; 2nd SMU-ESSEC Symposium on Empirical Finance and Financial Econometrics, Singapore; North American Summer Meeting of the Econometric Society, Evanston, USA

2011: EEA-ESEM, Oslo; Jahrestagung des Vereins für Socialpolitik (German Economic Society Annual Meeting), Frankfurt am Main; EGRIE Annual Seminar, Vienna; Statistische Woche (German Statistical Society Annual Meeting), Leipzig; Hamburg-München-Hohenheimer versicherungswissenschaftliches Kolloquium, Munich; R/Rmetrics Workshop, Meielissalp, Switzerland

2010: Statistische Woche (German Statistical Society Annual Meeting), Nuremberg; Nachwuchsworkshop (Workshop for young researchers) of the German Statistical Society, Nuremberg; CEQURA Conference on Advances in Financial and Insurance Risk Management , Munich

* presented by coauthor

Professional Activities

Associate Editor, AStA Advances in Statistical Analysis, since 2019.

Organization of the Workshop "Econometrics in the Castle: Machine Learning in Economics and Econometrics", May 2018, Munich

Organization of an invited session at the AEA annual meeting 2017 on Machine Learning in Economics, Chicago, US

Member, Verein für Socialpolitik (German Economic Association)

Member, German Statistical Association

Teaching Experience

University of Hamburg (since 2016)

Bachelor: Einführung in die kausale Inferenz, Introduction to Data Science, Digital Causality Lab - Dem „Warum" in den Daten auf der Spur (interaktive Lehrveranstaltung gefördert durch die Stiftung Innovation in der Hochschullehre), Statistik I/II

Master: Introduction to Deep Learning, Machine Learning with Applications in Economics, Business Administration and Health, Causal Machine Learning

PhD: Computer Age Statistical Inference, Econometrics of Big Data (Summer School, jointly taught with Chris Hansen, University of Chicago), Advanced Econometrics

Seminars (BA and MA) on topics in Machine Learning, Statistical Learning, Causal Inference and Econometrics

Supervision of Bachelor and Master Thesis

University of Mannheim (Spring 2016)

Bachelor: Machine Learning

Master: Advanced Microeconometrics

Seminar (Master / PhD level): Topics in High-dimensional Statistics

Boston College

Master / PhD: ECON8822: Cross Section & Panel Econometrics

MEA, LMU and TUM

Master / PhD: Advanced Topics in Econometrics (LMU),

Seminar (PhD level): Causal Inference in Statistics, Social, and Biomedical Sciences: An Introduction (TUM and MEA)

Summer Schools and Short Courses

"Machine Learning with Applications in Economic and Finance" University of Regensburg (2019), LMU (2018)

"Machine Learning with Applications in Health Economics" HCHE Summer School (2018, 2019, 2022)

"Econometrics of Big Data" at the Global School in Empirical Research Methods 2019–2022 (GSERM) (St. Gallen and Ljubljana, joint with Chris Hansen, University of Chicago)

13th Summer Academy on "Innovation in a digitalized world" Jena (2019)

Referee

Annals of Statistics, ASTIN Bulletin, BMC Bioinformatics, BMC Medical Research Methodology, DAAD, DGGÖ (Annual Meeting), Econometrics Journal, Econometrics Review, Entropy, Fritz Thyssen Foundation, German-Israeli Foundation for Scientific Research and Development, Health Economics, Journal of Applied Econometrics, Journal of Business and Economic Statistics, Journal of Econometrics, Journal of Economic Inequality, Journal of Empirical Legal Studies, Journal of Multivariate Analysis, Journal of Risk and Insurance, Journal of the Royal Statistical Society (Series B), Labour Economics, Management Science, National Science Foundation, Netherlands Organisation for Scientific Research, Russian Science Foundation, Deutsche Forschungsgemeinschaft (DFG), National Research Foundation (South Africa), Quantitative Economics, Review of Economic Studies, Russian Science Foundation, Southern Economic Journal, Studienstiftung des Deutschen Volkes,The B.E. Journal of Economic Analysis & Policy, The Geneva Papers on Risk and Insurance – Issues and Practice, Verein für Socialpolitik (Annual Meeting), Zeitschrift für die gesamte Versicherungswissenschaft

Language Skills

German - native language

English - fluent (internet-based TOEFL: 108/120)

Qualification in Latin ("Latinum")

Computer Skills

Operating systems: Windows, Linux, Unix

Software packages: Microsoft Office, LaTex

Statistical / scientific software packages: R, Matlab, Python, MySQL

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