February 23, 2024

# Christian Hansen

University of Chicago
Booth School of Business
5807 South Woodlawn Avenue
Chicago, Illinois 60637
Phone: 773-834-1702
Email: chansen1@chicagobooth.edu
http://chicagobooth.edu/fac/christian.hansen/

## Employment

- University of Chicago Booth School of Business
  January 2014 – present: Wallace W. Booth Professor of Econometrics and Statistics
  July 2009 – December 2013: Professor of Econometrics and Statistics
  July 2008 – June 2009: Associate Professor of Econometrics and Statistics
  July 2004 – June 2008: Assistant Professor of Econometrics and Statistics

## Education

- Ph. D. in Economics, Massachusetts Institute of Technology, Cambridge, MA, May 2004

- B.A. in Economics, Brigham Young University, Provo, UT, April 2000

## Book

Applied Causal Inference Powered by ML and AI (with V. Chernozhukov, N. Kallus, M. Spindler, and V. Syrgkanis)

## Published and Forthcoming Articles

"Inference for Dependent Data with Learned Clusters" (with J. Cao, D. Kozbur, and L. Villacorta), forthcoming *Review of Economics and Statistics*.

"Inference for Low-Rank Models" (with V. Chernozhukov, Y. Liao, and Y. Zhu), *Annals of Statistics*, 2023, 51(3), 1309-1330.

"Targeted Undersmoothing" (with D. Kozbur and S. Misra), *Review of Economics and Statistics*, 2023, 105(1), 101-112.

"High-dimensional linear models with many endogenous variables" (with A. Belloni and W. Newey), *Journal of Econometrics*, 2022, 228(1), 4-26.

"Pre-event trends in the panel event-study design" (with S. Freyaldenhoven and J. Shapiro) *American Economic Review*, 2019, 109(9), 3307-3338.

"The Factor-Lasso and K-Step Bootstrap Approach for Inference in High-Dimensional Economic Applications" (with Y. Liao) *Econometric Theory*, 2019, 35(3), 465-509.

"Double/Debiased Machine Learning for Treatment and Structural Parameters" (with V. Chernozhukov, D. Chetverikov, M. Demirer, E. Duflo, W. Newey, and J. Robins), *Econometrics Journal*, 2018, 21(1), C1-C68.

"A Lava Attack on the Recovery of Sums of Dense and Sparse Signals" (with V. Chernozhukov and Y. Liao), *Annals of Statistics*, 2017, 45(1), 39-76.

"Program Evaluation with High-Dimensional Data" (with A. Belloni, V. Chernozhukov, and I. Fernandez-Val), *Econometrica*, 2017, 85(1), 233-298.

"Inference in High Dimensional Panel Models with an Application to Gun Control" (with A. Belloni, V. Chernozhukov, and D. Kozbur), *Journal of Business and Economic Statistics*, 2016, 34(4), 590-605.

"Fixed-b Asymptotics for Spatially Dependent Robust Nonparametric Covariance Matrix Estimators" (with C. A. Bester, T. Conley, and T. Vogelsang), *Econometric Theory*, 2016, 32(1), 154-186.

"Grouped Effects Estimators in Fixed Effects Models" (with C. A. Bester), *Journal of Econometrics*, 2016, 190(1), 197-208.

"Instrumental Variables Estimation with Many Weak Instruments Using Regularized JIVE" (with D. Kozbur), *Journal of Econometrics*, 2014, 182(2), 290-308.

"Inference on Treatment Effects after Selection among High-Dimensional Controls" (with A. Belloni and V. Chernozhukov), *Review of Economic Studies*, 2014, 81(2), 608-650.

"Sparse Models and Methods for Optimal Instruments with an Application to Eminent Domain" (with A. Belloni, D. Chen, and V. Chernozhukov), *Econometrica*, 2012, 80(6), 2369-2429.

"Plausibly Exogenous" (with T. Conley and P. Rossi), *Review of Economics and Statistics*, 2012, 94(1), 260-272.

"Inference with Dependent Data Using Cluster Covariance Estimators" (with C. A. Bester and T. Conley), *Journal of Econometrics*, 2011, 165(2), 137-151.

"Instrumental Variables Regression with Flexible Distributions" (with J. B. McDonald and W. Newey) *Journal of Business and Economic Statistics*, 2010, 28(1), 13-25.

"Finite Sample Inference in Econometric Models via Quantile Restrictions" (with V. Chernozhukov and M. Jansson) *Journal of Econometrics*, 2009, 152(2), 93-103.

"Admissible Invariant Similar Tests for Instrumental Variables Regression" (with V. Chernozhukov and M. Jansson) *Econometric Theory*, 2009, 25(3), 806-818.

"Identification of Marginal Effects in a Nonparametric Correlated Random Effects Model" (with C. A. Bester) *Journal of Business and Economic Statistics*, 2009, 27(2), 235-250.

"A Penalty Function Approach to Bias Reduction in Nonlinear Panel Models with Fixed Effects" (with C. A. Bester) *Journal of Business and Economic Statistics*, 2009, 27(2), 131-148.

"Estimation with Many Instrumental Variables" (with J. Hausman and W. Newey) *Journal of Business and Economic Statistics,* 2008, 26(4), 398-422.

"The Reduced Form: A Simple Approach to Inference with Weak Instruments" (with V. Chernozhukov) *Economics Letters,* 2008, 100(1), 68-71.

"A Semi-Parametric Bayesian Approach to the Instrumental Variable Problem" (with T. Conley, R. McCulloch, and P. Rossi) *Journal of Econometrics*, 2008, 144(1), 276-305.

"Instrumental Variable Quantile Regression: A Robust Inference Approach" (with V. Chernozhukov) *Journal of Econometrics*, 2008, 142(1), 379-398.

"Asymptotic Properties of a Robust Variance Matrix Estimator for Panel Data when T is Large" *Journal of Econometrics,* 2007, 141(2), 597-620.

"Inference Approaches for Instrumental Variable Quantile Regression" (with V. Chernozhukov and M. Jansson) *Economics Letters*, 2007, 95(2), 272-277.

"Generalized Least Squares Inference in Panel and Multilevel Models with Serial Correlation and Fixed Effects" *Journal of Econometrics,* 2007, 140(2), 670-94.

"Instrumental Quantile Regression Inference for Structural and Treatment Effect Models", (with V. Chernozhukov) *Journal of Econometrics*, 2006, 132(2), 491-525.

"An IV Model of Quantile Treatment Effects", (with V. Chernozhukov) *Econometrica,* 2005, 73(1), 245-261.

"The Impact of 401(k) Participation on the Wealth Distribution: An Instrumental Quantile Regression Analysis", (with V. Chernozhukov) *Review of Economics and Statistics,* 2004, 86(3), 735-751.

**Other Publications**

"ddml: Double/debiased machine learning in Stata" (with A. Ahrens, M. Schaffer, and T. Wiemann), forthcoming *Stata Journal.*

"pystacked: Stacking generalization and machine learning in Stata" (with A. Ahrens and M. Schaffer), *Stata Journal*, 2023, 23(4), 909-931.

"lassopack: Model selection and prediction with regularized regression in Stata" (with A. Ahrens and M. Schaffer), *Stata Journal*, 2020, 20(1), 176-235.

"Inference with Dependent Data in Accounting and Finance" (with T. Conley and S. Goncalves), *Journal of Accounting Research*, 2018, 56(4), 1139-1203.

"Instrumental Variable Quantile Regression" (with V. Chernozhukov and K. Wuthrich), in Handbook of Quantile Regression, Koenker, Chernozhukov, He, and Peng eds., 2017.

"Double/Debiased/Neyman Machine Learning of Treatment Effects" (with V. Chernozhukov, D. Chetverikov, M. Demirer, E. Duflo, and W. Newey), *American Economic Review: Papers and Proceedings*, 2017, 107(5), 261-265.

"Valid Post-Selection and Post-Regularization Inference: An Elementary, General Approach" (with V. Chernozhukov and M. Spindler), *Annual Review of Economics,* 2015, 7, 649-688.

"Post-Selection and Post-Regularization Inference in Linear Models with Very Many Controls and Instruments" (with V. Chernozhukov and M. Spindler), *American Economic Review: Papers and Proceedings*, 2015, 105(5), 486-490.

"High-Dimensional Methods and Inference on Structural and Treatment Effects" (with A. Belloni and V. Chernozhukov), *Journal of Economic Perspectives*, 2014, 28(2), 29-50.

“Quantile Models with Endogeneity” (with V. Chernozhukov), *Annual Review of Economics*, 2013, 5, 57-81.

“Inference Methods for High-Dimensional Sparse Econometric Models” (with A. Belloni and V. Chernozhukov), in Advances in Economics and Econometrics, 10th World Congress of the Econometric Society, Volume III, Econometrics, Acemoglu, Johnson, and Dekel, eds., 2013, 245-295.

“Some Flexible Parametric Models for Partially Adaptive Estimators of Econometric Models” (with J. B. McDonald and P. Theodossiou) economics - The Open-Access, Open-Assessment E-Journal, 2007.

**Working Papers**

“Plausible GMM” (with V. Chernozhukov, L. Kong, and W. Wang)

“xtevent: Estimation and Visualization in the Linear Panel Event-Study Design” (with S. Freyaldenhoven, J. Perez Perez, J. Shapiro, and C. Carreto)

“Model Averaging and Double Machine Learning” (with A. Ahrens, M. Schaffer, and T. Wiemann)

“Identification, Estimation, and Visualization in the Linear Panel Event Study Design” (with S. Freyaldenhoven, J. Perez Perez, and J. Shapiro)

“High-Dimensional Econometrics and Regularized GMM” (with A. Belloni, V. Chernozhukov, D. Chetverikov, and K. Kato)

“Inference for Heterogeneous Effects Using Low-Rank Estimators” (with V. Chernozhukov, Y. Liao, and Y. Zhu)

“Using Double-Lasso Regression for Principled Variable Selection” (with O. Urminsky and V. Chernozhukov)

“Lasso Methods for Gaussian Instrumental Variables Models” (with A. Belloni and V. Chernozhukov)

“Flexible Correlated Random Effects Estimation in Panel Models with Unobserved Heterogeneity” (with C. A. Bester)

“Bias Reduction for Bayesian and Frequentist Estimators” (with C. A. Bester)

## Teaching

- Applied Regression Analysis, BUS 41100, University of Chicago Booth School of Business, 2004-2015

- Inference, BUS 41902, University of Chicago Booth School of Business, 2010-2015

- Applied Econometrics, BUS 41903, University of Chicago Booth School of Business, 2011-present

- Econometrics of Big Data, GSERM St. Gallen, 2016-2019, 2022; GSERM Ljubjana 2017-2019.

- Statistics, BUS 41800, University of Chicago Booth School of Business, 2015-present

## Awards, Honors, and Grants

- National Science Foundation, "Inference Methods for Machine Learning and High-Dimensional Data in Policy Evaluation and Structural Economics Models", Award Number: 1558636.

- National Science Foundation, Graduate Research Fellow, 2001 – 2004.

- William S. Fishman Scholar, University of Chicago, GSB, 2005 – 2006.

- IBM Corporation Scholar, University of Chicago, GSB, 2006 – 2007.

- Neubauer Family Faculty Fellow, University of Chicago, Booth School of Business, 2008 – 2012.

- Wallace W. Booth Professor, University of Chicago, Booth School of Business, 2014 – present.

## Professional Activities

- Co-Editor, *Journal of Political Economy: Microeconomics*, February 2022 - present

- Co-Editor, *Journal of Business and Economic Statistics,* January 2019 – January 2022

- Associate Editor, *Journal of Econometrics,* January 2017 – December 2019

- Associate Editor, *Quantitative Finance and Economics*, 2017 – July 2018

- Associate Editor, *Econometrics Journal*, 2007 – July 2018

- Associate Editor, *Journal of Applied Econometrics*, January 2011 – July 2018

- Associate Editor, *Journal of Econometric Methods*, January 2011 – January 2018

- Associate Editor, *Journal of Business and Economic Statistics*, July 2012 – July 2015.

- Conference organizer of the 2011 Meetings of the Midwest Econometrics Group

- Referee: *American Economic Journal: Macroeconomics, Annals of Applied Statistics, Bayesian Analysis, Computational Statistics and Data Analysis, Econometrica, Econometrics Journal, Econometric Theory, Economics and Human Biology, Economics Letters, European Economic Review,* European Research Council, *Journal of Accounting Research, Journal of Applied Econometrics, Journal of Business and Economic Statistics, Journal of Development Economics, Journal of Econometrics, Journal of Labor Economics, Journal of Political Economy, Journal of the Royal Statistical Society, Journal of Statistical Planning and Inference, Journal of Systems Science and Complexity, Journal of the American Statistical Association, National Tax Journal,* National Science Foundation, *Oxford Bulletin of Economics and Statistics, Quantitative Economics, Quantitative Marketing and Economics, Quarterly Journal of Economics, Review of Economics and Statistics, Review of Economic Studies,* Social Sciences and Humanities Research Council of Canada, *Studies in Nonlinear Dynamics and Econometrics*.

- Discussant: American Finance Association 2006 Winter Meetings; Journal of Accounting Research 2015 Conference; World Congress of the Econometric Society 2015; *Interactions: Bringing Together Econometrics and Applied Microeconomics,* September 2015; NBER Industrial Organization Program Meeting, *BLP Turns 21*, January 2016; Frontiers in Machine Learning and Economics: Methods and Applications, October 2022.

- Workshops/Short Courses:
    - "Econometric Methods for High-Dimensional Data", 2013 NBER Summer Institute in Econometrics Lectures (2 day short course, co-taught with Victor Chernozhukov, Matthew Gentzkow, Jesse Shapiro, and Matt Taddy);
    - "`Big Data' and High-Dimensional Econometrics," CIdE Summer School of Econometrics, 2015 (co-taught with Victor Chernozhukov);
    - "Introduction to Model Selection, Regularization, and Post-Model Selection Inference," University of Chile, September 2016;

- “High-Dimensional Econometrics,” Bank of Italy, March 2017;
- “Econometric Methods for High-Dimensional Data,” AAEA workshop, July 2017;
- “High-Dimensional Econometrics,” Bank of Chile, September 2017;
- “High-Dimensional Econometrics,” University of Chile, January 2020;
- “Econometrics of Big Data,” NIPE Summer School, June 2022;
- “Introduction to Machine Learning and Applications of Machine Learning to Causal Inference,” Northwestern Workshop on Research Design for Causal Inference, August 2022, August 2023;
- “Artificial Intelligence/Machine Learning Econometrics for Impact Evaluation of Policies and Programs” Inter-American Development Bank, October 2022.

**Other Invited Presentations**

- “Finite Sample Inference in Econometric Models via Quantile Restrictions” (with V. Chernozhukov): Winter Meetings of the Econometric Society – San Diego, January 2004; Northwestern University, May 2005; Purdue University, April 2006; University College London, June 2006.

- “Generalized Least Squares Inference in Panel and Multilevel Models with Serial Correlation and Fixed Effects”: Boston University, January 2004; Brigham Young University, January 2004; Brown University, January 2004; Stanford University, January 2004; University of Chicago, January 2004; University of Chicago, GSB, February 2004; University of Illinois – Urbana-Champaign, February 2004; University of Michigan, February 2004.

- “Plausibly Exogenous” (with T. Conley and P. Rossi): Brigham Young University, March 2007; University of Chicago, GSB, April 2007.

- “Weak Instruments, Many Instruments, and Microeconometric Practice” (with J. Hausman and W. Newey): University of Texas – Austin, September 2004; University of Virginia, April 2005.

- “Identification of Marginal Effects in a Nonparametric Correlated Random Effects Model” (with C. A. Bester): Econometric Society – NASM, June 2007; Measurement Matters Conference, University College London, June 2007; Indiana University, September 2007; University of Rochester, October 2007; University of Michigan, November 2007; University of California – Berkeley, November 2007; Penn. State, November 2007; Michigan State, November 2007.

- “Inference with Dependent Data Using Cluster Covariance Estimators” (with C. A. Bester and T. Conley): Arizona State University – April 2008; Syracuse University – April 2008; University of Pennsylvania – April 2008; Stanford University – May 2008.

- "Inference for Spatial Data Using a 'Fixed-b' Approximation" (with C. A. Bester, T. Conley, and T. Vogelsang): University of Wisconsin – Madison, December 2008; Harvard/MIT – April 2009; Boston University – April 2009; Princeton – April 2009; Hebrew University – October 2010.

- "Sparse Models and Methods for Optimal Instruments with an Application to Eminent Domain" (with A. Belloni, D. Chen, and V. Chernozhukov): Brown University – October 2010; Columbia University – October 2010; Hebrew University – October 2010; Tel Aviv University – November 2010; Georgetown – March 2011.

- "Instrumental Variables Estimation With Many Weak Instruments Using Regularized JIVE" (with D. Kozbur): Midwest Econometrics Group – September 2012.

- "Inference on Treatment Effects with High-Dimensional Controls" (with A. Belloni and V. Chernozhukov): University of Chicago Economics – November 2012; University of Chicago Booth School of Business – September 2012; University of Michigan – October 2012; University College London – November 2012; Oxford – November 2012; Cambridge – November 2012; ASSA Meetings – January 2013; University of Missouri – September 2013; University of Montreal – October 2013; CeMMAP Workshop on High-Dimensional Econometrics – November 2013.

- "Post-Selection and Post-Regularization Inference in Linear Models with Very Many Controls and Instruments" (with V. Chernozhukov and M. Spindler): ASSA Meetings – January 2015.

- "Program Evaluation with High-Dimensional Data" (with A. Belloni, V. Chernozhukov, and I. Fernandez-Val): University of Wisconsin – Madison – April 2014; University of Maryland – March 2014; Duke University – September 2014; University of Pennsylvania – November 2014; Cambridge – November 2015; CEMFI – December 2015.

- "Inference in High Dimensional Panel Models with an Application to Gun Control" (with A. Belloni, V. Chernozhukov, and D. Kozbur): University of Illinois Urbana-Champaign – October 2014; ETH Zurich – November 2014; Toulouse School of Economics – December 2014; Pennsylvania State University – April 2015; Northwestern – May 2015; University of California, Santa Barbara – May 2015; RAND – September 2015.

- "The Factor-Lasso and K-Step Bootstrap Approach for Inference in High-Dimensional Economic Applications" (with Y. Liao): Australasian Econometric Society Meetings, Sydney, July 2016; Bank of Chile – September 2016;

University of Chile – September 2016; National University of Singapore – October 2016; Xiamen University – November 2016.

- “Double Machine Learning for Treatment and Causal Parameters” (with V. Chernozhukov, D. Chetverikov, M. Demirer, E. Duflo, and W. Newey): Royal Economic Society Conference – March 2016; Kansas Econometrics Conference – May 2016; World Congress of Probability and Statistics, Toronto – July 2016; Joint Statistical Meetings – July 2016.

- “Targeted Undersmoothing” (with D. Kozbur and S. Misra): Brigham Young University – March 2017; University of Naples Federico II – March 2017; Vanderbilt – March 2017; University of Michigan ISQM – September 2017; Bank of Chile – September 2017; University of North Carolina, Chapel Hill – December 2017; Hebrew University, March 2018; University of Connecticut, April 2018.

- “Pre-event trends in the panel event-study design” (with S. Freyaldenhoven and J. Shapiro): Hebrew University, March 2018; Tel Aviv University, March 2018.

- “Inference for Heterogeneous Effects Using Low-Rank Estimators” (with V. Chernozhukov, Y. Liao, and Y. Zhu): Iowa State University, February 2019; University of North Carolina, Chapel Hill, April 2019; International Association of Applied Econometrics, July 2019; University of Pennsylvania, September 2019; Winter Meetings of the Econometric Society – San Diego, January 2020; University of Chile, January 2020; Georgetown, September 2020; Sao Paulo School of Economics, November 2020.

- “Inference for Dependent Data with Cluster Learning” (with J. Cao, D. Kozbur, and L. Villacorta): Philadelphia Federal Reserve, September 2019; University of Georgia, October 2021.

- “Identification, Estimation, and Visualization in the Linear Panel Event Study Design” (with S. Freyaldenhoven, J. Perez Perez, and J. Shapiro): World Congress of the Econometric Society, August 2020.