

January 9, 2019



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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

Published and Forthcoming Articles

“[The Factor-Lasso and K-Step Bootstrap Approach for Inference in High-Dimensional Economic Applications](#)” (with Y. Liao) forthcoming *Econometric Theory*.

“[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

- [“High-Dimensional Econometrics and Regularized GMM”](#) (with A. Belloni, V. Chernozhukov, D. Chetverikov, and K. Kato) forthcoming *Handbook of Econometrics*.
- [“Inference with Dependent Data in Accounting and Finance”](#) (with T. Conley and S. Goncalves), forthcoming *Journal of Accounting Research*.

[“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

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

[“Pre-event trends in the panel event-study design”](#) (with S. Freyaldenhoven and J. Shapiro)

[“Simultaneous Confidence Intervals for High-Dimensional Linear Models with Many Endogenous Variables”](#) (with A. Belloni, V. Chernozhukov, and W. Newey)

[“Targeted Undersmoothing”](#) (with D. Kozbur and S. Misra)

[“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
- 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)
- Econometrics of Big Data, GSERM St. Gallen, 2016, 2017, 2018; GSERM Ljubjana 2017.
- 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 Business and Economic Statistics*, January 2019 – present
- 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.
- Workshops: “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.

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 Microeconomic 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.