

Rustam Ibragimov

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Current Position

Professor of Finance and Econometrics, Imperial College Business School, September 2012 - Present

Research Interests

Econometrics, Finance, Insurance, Risk Management, Economic Theory, Statistics and Probability

Education

Ph.D., Economics, Yale University, 2005; Dissertation: “New Majorization Theory in Economics and Martingale Convergence Results in Econometrics”;

M. Phil., Economics, Yale University, 2003;

M. A., Economics, Central Michigan University, 2000;

Ph.D. (Kandidat Nauk), Mathematics, Institute of Mathematics of Uzbek Academy of Sciences, 1997, Dissertation: “Estimates for Moments of Symmetric Statistics”;

M.S., Mathematics, Tashkent State University, Tashkent, 1996, Graduated with Distinction.

Grants & Awards

Russian Science Foundation grant 16-18-10432 “Modern methods of robust inference in finance and economics, with applications to the study of crises and their propagation in financial and economic markets” (with St. Petersburg State University, St. Petersburg, Russia and Innopolis University, Kazan, Russia), 2016-2018, 2019-2020 (extension);

US NSF grant SES-0820124 “Correlation and heterogeneity robust inference using conservativeness of test statistics”, 2008-2012;

Multa Scripsit Award, *Econometric Theory*, 2009;

Global Development Network Southeast Europe and Commonwealth of Independent States (GDN-SEE and CIS) Research Competition Grant, “Measuring inequality in CIS countries: Theory and Empirical Studies”, 2009-2010 (with M. Ibragimov and R. Khamidov);

Harvard Academy Junior Faculty Development Grant, 2007-2009;

Warburg Research Funds, Harvard University, 2007-2009;

Clark/Cooke Fund, Harvard University, 2005, 2007-2009;

University of California at Berkeley-National University of Singapore Risk Management Institute Research Grant (with J. Walden), 2007-2008;

Annual Cowles Prize, Yale University, 2004;

C.A. Anderson Fellowship, Yale University, 2003-2004;

Dissertation Fellowship, Yale University, 2003-2004;

Cowles Foundation Summer Prize, Yale University, 2000-2004;

University Fellowship, Yale University, 2000-2005;

E. Muskie Fellow in Applied Econometrics and Mathematical Economics, 1998-2000;

National Ulugbek Award for the Support of Talented Youth, Uzbekistan, 1996;

Prizes on National University Students' Olympiads on Mathematics, Uzbekistan, 1992-1994;

Second Prize, 29th National High School Students' Mathematical Olympiad, Uzbekistan, 1991.

Previous Positions

Associate Professor, Department of Economics, Harvard University, July 2009 -August 2012;

Assistant Professor, Department of Economics, Harvard University, July 2005 - July 2009.

Courses Taught

MSc Financial Econometrics in R/Python; MSc Advanced Financial Statistics; MSc Risk Management Management and Valuation; MRes Econometrics I (Imperial College Business School);

Ph.D. Financial Econometrics; Ph.D. Time Series Econometrics, Ph.D. Econometrics 2 - Panel Data Econometrics (Imperial College Business School);

Undergraduate course Introduction to Econometrics (Department of Economics, Harvard University);

Ph.D. courses on Topics in Financial Econometrics, Time Series Analysis, and Introductory Probability and Statistics for Economists (Department of Economics, Harvard University);

Mini-course on Heavy-Tailed and Dependent Models and Robust Inference in Finance and Economics (Laboratory of Stochastic Analysis and its Applications, Higher School of Economics, Moscow, Russia, April 2019);

Master courses on Statistical Analysis of Big Data and Decision Making Under Uncertainty (Innopolis University, Kazan, Russia, 2014-2015);

MPhil course on Time Series Analysis (Oxford University, Fall 2012);

Mini-course on Financial Markets and Their Modelling (Tashkent State University of Economics, Tashkent, Uzbekistan, March-April, 2009);

Mini-course Introduction to Econometrics (Center for Economic Research of the Republic of Uzbekistan, Tashkent, Uzbekistan, September 2008);

- Lectures on Heavy-Tailedness and Dependence: Implications for Economic Decisions, Risk Management and Financial Markets, Harvard Statistics Summer Course on Modern Perspectives on Quantitative Financial Modeling (Department of Economics, Harvard University, June 2007);
- Lectures on Copulas and Their Applications in Risk Management and Finance, Harvard Statistics Summer Course on Recent Advances in Computational Finance: Statistical Methods in Credit Risk Modeling and Risk Management (Department of Statistics, Harvard University, June 2006);
- Undergraduate and Graduate courses in Economics, Probability and Statistics (Teaching Assistant, Yale University, 2002-2005); Math & Science Tutor, Yale College, 2003-2005);
- Undergraduate course Introduction to Statistics; Graduate course on Mathematical Statistics II (Department of Mathematics, Central Michigan University, 1999-2000);
- Undergraduate course on Mathematics for Economists (International Business School at Tashkent State Economics University, Tashkent, Uzbekistan, 1996 -1997).

Publications

Books

- “Heavy-tailed distributions and robustness in economics and finance” (with M. Ibragimov and J. Walden), Lecture Notes in Statistics **214**, Springer, 2015;
- “Heavy Tails and Copulas: Topics in Dependence Modelling in Economics and Finance” (with A. Prokhorov), World Scientific 2017;
- “Inequalities and Extremal Problems in Probability and Statistics: Selected Topics” (with I. Pinelis, V. de la Peña, A. Osękowski and I. Shevtsova), Academic Press, 2017.

Overview Articles

- “Heavy-tailed densities”. *The New Palgrave Dictionary of Economics Online*. Eds. S. N. Durlauf and L. E. Blume. Palgrave Macmillan, 2009;
- “Measurement of economic progress” (with M. Ibragimov). *International Encyclopedia of Statistical Science*, 1st Ed. (M. Lovric, Ed.), Springer, 2011.

Statistics and Econometrics

- “Sign Tests for Dependent Observations” (with D. Brown). *Econometrics and Statistics* **10** (2019), 1-8;
- “Copulas and Long Memory” (with G. Lentzas). *Probability Surveys* **14**, 289-327;
- “Inference with Few Heterogeneous Clusters” (with U. K. Müller). *Review of Economics and Statistics* **98** (2016), 83-96;
- “ t -statistic based correlation and heterogeneity robust inference” (with U. K. Müller). *Journal of Business and Economic Statistics* **28** (2010), 453-468;
- “ $RANK-1/2$: A simple way to improve the OLS estimation of tail exponents” (with X. Gabaix). *Journal of Business and Economic Statistics* **29** (2011), 24-39;
- “Efficiency of linear estimators under heavy-tailedness: Convolutions of α -symmetric distributions”. *Econometric Theory* **23** (2007), 501-517;
- “On the robustness of location estimators in models of firm growth under heavy-tailedness”. *Journal of Econometrics* **181** (2014), 25-33;
- “Copula-based dependence characterizations for higher-order Markov processes”. *Econometric Theory* **25** (2009), 819-846;
- “Regression asymptotics using martingale convergence methods” (with P. C. B. Phillips). *Econometric Theory* **28** (2008), 1-60;
- “Copula estimation” (with B. Choros and E. Permiakova). *Workshop on Copula Theory and Its Applications. Lecture Notes in Statistics - Proceedings*. Springer, 2010 (F. Durante, W. Haerdle, P. Jaworski, and T. Rychlik, eds.), 77-92;
- “Characterizations of joint distributions, copulas, information, dependence and decoupling, with applications to time series” (with V. H. de la Peña and S. Sharakhmetov). *2nd Erich L. Lehmann Symposium - Optimality*, IMS Lecture Notes -- Monograph Series 49 (J. Rojo, Ed.), 183-209, 2006.

Statistics and Probability

- “On extremal distributions and sharp L_p -bounds for sums of multilinear forms” (with V. H. de la Peña and S. Sharakhmetov). *Annals of Probability* **31** (2003), 630-675;
- “A characterization of joint distribution of two-valued random variables and its applications” (with S. Sharakhmetov). *Journal of Multivariate Analysis* **83** (2002), 389-408;
- “On sharp Burkholder-Rosenthal-type inequalities for infinite-degree U -statistics” (with V. H. de la Peña and S. Sharakhmetov). *Annales de l'Institut H. Poincaré-Probabilités et Statistiques* **38** (2002), 973-990;
- “Optimal constants in the Rosenthal inequality for random variables with zero odd moments” (with M. Ibragimov). *Statistics and Probability Letters* **78** (2008), 186-189;
- “Bounds on moments of symmetric statistics” (with S. Sharakhmetov). *Studia Scientiarum Mathematicarum Hungarica* **39** (2002), 251-275;
- “The exact constant in the Rosenthal inequality for random variables with mean zero” (with S. Sharakhmetov). *Theory of Probability and Its Applications* **46** (2002), 127-131;
- “On extremal problems and best constants in moment inequalities” (with S. Sharakhmetov). *Sankhya Ser. A* **64** (2002), 42-56;
- “Exact estimates for moments of random bilinear forms” (with S. Sharakhmetov and A. Cecen). *Journal of Theoretical Probability* **14** (2001), 21-37;

- “The best constant in the Rosenthal inequality for nonnegative random variables” (with S. Sharakhmetov). *Statistics and Probability Letters* **55** (2001), 367-376;
- “Analogues of Khintchine, Marcinkiewicz-Zygmund and Rosenthal inequalities for symmetric statistics” (with S. Sharakhmetov). *Scandinavian Journal of Statistics* **26** (1999), 621-633;
- “On an exact constant for the Rosenthal inequality” (with S. Sharakhmetov). *Theory of Probability and Its Applications* **42** (1997), 294-302.

Finance, Insurance & Risk Management

- “Equilibrium with Monoline and Multiline Structures” (with Dwight Jaffee and Johan Walden), *Review of Finance* **22** (2018), 595-63;
- “Heavy tails and copulas: Limits of diversification revisited” (with A. Prokhorov). *Economics Letters* **149** (2016), 102-107;
- “Bounds for path-dependent options” (with Donald Brown and Johan Walden), *Annals of Finance* **11** (2015), 433-451;
- “Diversification disasters” (with D. Jaffee and J. Walden). *Journal of Financial Economics* **99** (2011), 333-348;
- “Nondiversification traps in markets for catastrophic risk” (with D. Jaffee and J. Walden). *Review of Financial Studies* **22** (2009), 959-993.
- “Emerging markets and heavy tails” (with M. Ibragimov and P. Kattuman). *Journal of Banking and Finance* **37**, 2546-2559.
- “Pricing and capital allocation for multiline insurance firms” (with D. Jaffee and J. Walden). *Journal of Risk and Insurance* **77** (2010), 551-578;
- “Portfolio diversification and value at risk under thick-tailedness”. *Quantitative Finance* **9** (2009), 565-580;
- “The limits of diversification when losses may be large” (with J. Walden). *Journal of Banking and Finance* **31** (2007), 2551-2569;
- “Portfolio diversification under local, moderate and global deviations from power laws” (with J. Walden). *Insurance: Mathematics and Economics* **42** (2008), 594-599;
- “Value at risk under dependence and heavy-tailedness: Models with common shocks” (with J. Walden). *Annals of Finance* **7** (2011) 285-318;
- “Option bounds” (with V. H. de la Peña and S. Jordan). *Journal of Applied Probability* **41A** (2004), 145-156.

Empirical Analysis of Emerging Markets and Transition Economies

- “One country, two Systems? The heavy-tailedness of Chinese A- and H- share markets” (with Z. Chen). *Emerging Markets Review* **38** (2019), 115-141;
- “Heavy tails and upper-tail inequality: The case of Russia” (with M. Ibragimov), *Empirical Economics* **54** (2018), 823-837;
- “Unemployment and output dynamics in CIS countries: Okun’s law revisited” (with M. Ibragimov), *Applied Economics* **49** (2017), 3453-3479;
- “Heavy tails and asymmetry of returns in the Russian stock market” (with A. Ankudinov and O. Lebedev), *Emerging Markets Review* **32** (2017), 200-219;
- “The ‘Cubic Law of Stock Returns’ in Emerging Markets” (with Z. Gu). *Journal of Empirical Finance* **46** (2018), 182-190;
- “Sanctions and the Russian stock market” (with A. Ankudinov and O. Lebedev), *Research in International Business and Finance* **40** (2017), 150-162.

Economic Theory

- “Income inequality and price elasticity of market demand: the case of crossing Lorenz curves” (with M. Ibragimov, P. Kattuman and J. Ma). *Economic Theory* **65** (2018), 729-750;
- “Optimal bundling strategies under heavy-tailed valuations” (with J. Walden). *Management Science* **56** (2010), 1963-1976;
- “Market demand elasticity and income inequality” (with M. Ibragimov). *Economic Theory* **32** (2007), 579-587.

Work in progress

- “New approaches to robust inference on market (non-)efficiency, volatility clustering and nonlinear dependence” (with R. S. Pedersen and A. Skrobotov). Under revision for the *Journal of Business & Economic Statistics*. Available at <https://ssrn.com/abstract=3580916>
- “New robust inference for predictive regressions” (with J. Kim and A. Skrobotov). Under revision for *Econometric Theory*. Available at <https://arxiv.org/abs/2006.01191>
- “Predictability of cryptocurrency returns: Evidence from robust tests” (with S. He). Under submission.
- “Optimal bundling strategies for complements and substitutes with heavy-tailed valuations” (with A. Prokhorov and J. Walden). Under submission.
- “COVID-19: Tail risk and predictive regressions” (with W. Distaso, A. Semenov and A. Skrobotov). Working paper, Imperial College Business School. Available at <https://www.imperial.ac.uk/business-school/faculty-research/our-research/coronavirus-covid-19-related-research/financial-intermediaries-and> and <https://arxiv.org/abs/2009.02486>

Professional Activities

Associate Editor, *Econometric Theory* (2010-Present); *Journal of Empirical Finance* (2020-Present); *Journal of Banking and Finance* (2013-2018); *Journal of Statistical Planning and Inference* (2012-2017); Editorial Counsel, *Quantile* - International econometric journal in Russian language.