Jozef Baruník

vitae 2017 (updated October)

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Research Interests

Main fields	Quantitative Finance, Financial Econometrics, Applied Econometrics
Sub-fields	(Multivariate) Volatility, Long Memory, Big Data, Wavelets, Stochastic Catastrophe Theory, Multifractal models, Neural Networks.

Full list of publications can be found here

Education

2007/9 – 2011/9	PhD in Economics, Charles University, Prague Institute of Economic Studies
2004 – 2006	Mgr. (MSc. equivalent) in Economics, PhDr., Charles University, Prague Institute of Economic Studies
2001 – 2004	Bc. (BSc. equivalent) in Economics, Charles University, Prague Institute of Economic Studies

Academic Experience

2013 – Current	Research Fellow (Deputy Head of the Department from 2014) at Academy of Sciences of the CR *Institute of Information Theory and Automation* Department of Econometrics
2011 – 2012	PostDoc at Academy of Sciences of the CR *Institute of Information Theory and Automation* Department of Econometrics
2007 – 2011	Research Assistant at Academy of Sciences of the CR *Institute of Information Theory and Automation* Department of Econometrics
2011/10 – 2017/3	Assistant Professor at Charles University in Prague, *Institute of Economic Studies* Department of Macroeconomics and Econometrics, Researcher, Lecturer (Advanced Econometrics, Econometrics II, Quantitative Finance I, Quantitative Finance II, Applied Econometrics)

2017/4 –	Associate Professor (habilitation) at CHARLES UNIVERSITY in Prague, *Institute of Economic Studies* Department of Macroeconomics and Econometrics, Researcher, Lecturer (Advanced Econometrics, Econometrics II, Quantitative Finance I, Quantitative Finance II, Applied Econometrics)

PUBLICATIONS

CITATIONS (SCOPUS): 333, h-INDEX (SCOPUS): 7
CITATIONS (GOOGLE SCHOLAR): 822, h-INDEX (GOOGLE SCHOLAR): 14

SELECTED RESEARCH PUBLICATIONS

1. Do co-jumps impact correlations in currency markets? (with L.Vacha) *Journal of Financial Markets* (forthcoming) DOWNLOAD
2. Modeling and Forecasting Persistent Financial Durations (with F.Zikes and N.Shenai) *Econometric Reviews*, 36:10, 1081-1110 (2017) DOWNLOAD
3. Asymmetric connectedness of stocks: How does bad and good volatility spill over the U.S. stock market? (with E. Kocenda and L.Vacha) *Journal of Financial Markets*, 27, 55–78, (2016). DOWNLOAD
4. Semiparametric Conditional Quantile Models for Financial Returns and Realized Volatility, (with F.Zikes) *Journal of Financial Econometrics*, 14 (1), 185–226, (2016). DOWNLOAD
5. Estimation of Financial Agent-Based Models with Simulated Maximum Likelihood (with J.Kukacka) *Journal of Economic Dynamics and Control* (forthcoming) DOWNLOAD
6. Asymmetric volatility connectedness on forex markets (with E. Kocenda and L.Vacha) *Journal of International Money and Finance*, 77C, pp. 39-56, (2017). DOWNLOAD
7. Cyclical properties of supply-side and demand-side shocks in oil-based commodity markets (with T. Krehlik) *Energy Economics*, 65:208-218 (2017) DOWNLOAD
8. Good volatility, bad volatility: Which drives the asymmetric connectedness of Australian electricity markets? (with N.Apergis and M.C.Lau) *Energy Economics*, 66:108-115 (2017) DOWNLOAD
9. Modeling and forecasting exchange rate volatility in time-frequency domain, (with T.Krehlik and L.Vacha) *European Journal of Operational Research*, 251 (1), pp. 329 -340, (2016) DOWNLOAD
10. How does bad and good volatility spill over across petroleum markets? (with E. Kocenda, and L. Vacha) *The Energy Journal*, 36 (3), 309–329, (2015) DOWNLOAD
11. Realized wavelet-based estimation of integrated variance and jumps in the presence of noise, (with L. Vacha) *Quantitative Finance* 15 (8), pp. 1347-1364, (2015) DOWNLOAD
12. Realizing stock market crashes: stochastic cusp catastrophe model of returns under the time-varying volatility, (with J. Kukacka) *Quantitative Finance* 15 (6), pp. 959–973, (2015) DOWNLOAD

13. Are benefits from oil – stocks diversification gone? A new evidence from a dynamic copulas and high frequency data, (with K. Avdulaj) *Energy Economics* , 51, pp. 31–44, (2015) Download
14. Are Bayesian Fan Charts Useful for Central Banks? Uncertainty, Forecasting and Financial Stability Stress Tests, (with M. Franta, R. Horvath, K. Smidkova) *International Journal of Central Banking* 10 (1), pp.159–187 (2014) Download
15. Comovement of energy commodities revisited: Evidence from wavelet coherence analysis, (with L. Vacha) *Energy Economics*, 34(1), pp. 241–247, (2012) Download
16. Can a stochastic cusp catastrophe model explain stock market crashes? (with M.Vosvrda) *Journal of Economic Dynamics and Control* 33, pp. 1824–1836 (2009) Download

Submissions / In Preparation

17. Measuring the frequency dynamics of financial and macroeconomic connectedness (with T.Krehlik) (under revision Download) in the Journal of Financial Econometrics
18. Quantile Cross-Spectral Measures of Dependence between Economic Variables (with T.Kley) (Submitted Download)
19. Measurement of Common Risk Factors: A Panel Quantile Regression Model for Returns (wit F.Cech) (Submitted Download)
20. Common Cycles in Volatility and Cross Section of Stock Returns (with L.Kraicova) (Submitted Download)

Other Research Publications (including Czech refereed journals)

21. On the modelling and forecasting multivariate realized volatility: Generalized Heterogeneous Autoregressive (GHAR) model (with F.Cech) *Journal of Forecasting*, 36, pp.181 206 (2017) Download
22. Estimation of Long Memory in Volatility Using Wavelets (with L.Kraicova) *Studies in Nonlinear Dynamics & Econometrics* (forthcoming) Download
23. A semiparametric nonlinear quantile regression model for financial returns (with K.Avdulaj), *Studies in Nonlinear Dynamics & Econometrics*, 21(1), pp. 81 97 (2017)
24. Combining high frequency data with non-linear models for forecasting energy market volatility (with T.Krehlik) *Expert Systems with Applications*, 55, pp. 222-242 (2016) Download
25. Revisiting the long memory dynamics of the implied-realized volatility relationship: New evidence from the wavelet regression (with M.Hlinkova) *Economic Modelling*, 54, pp.503-514 (2016) Download
26. Gold, Oil, and Stocks: Dynamic Correlations (with E. Kocenda, and L. Vacha) *International Review of Economics and Finance* 42, pp. 186 201 (2016) (Download)
27. An Empirical Model Of Fractionally Cointegrated Daily High And Low Stock Market Prices (with S.Dvorakova) *Economic Modelling*, 45, pp. 193 206, (2015)
28. Can we still benefit from international diversification? The case of the Czech and German stock markets (with K.Avdulaj) *Czech Journal of Economics and Finance*, 63(5):425-442 (2013) (Download)
29. Contagion among Central and Eastern European stock markets during the financial crisis (with L.Vacha) *Czech Journal of Economics and Finance*, 63(5):443-453 (2013) (Download)

30. How do skilled traders change the structure of the market (with L. Vacha, and M. Vosvrda) *International Review of Financial Analysis*, 23, pp. 66-71, (2012) (Download)
31. Neural Networks as Semiparametric Option Pricing Tool (with M. Barunikova) *Bulletin of the Czech Econometric Society, Czech Econometric Society*, 18(28), pp. 66-83 (2011) (Download)
32. Tail Behavior of the Central European Stock Markets During the Financial Crisis (with L. Vacha, and M. Vosvrda) *AUCO Czech Economic Review 3* 4(3) pp. 281-294 (2010) (Download)
33. Vplyv roznych foriem vlastnictva na efektivitu Ceskych a Slovenskych bank: Pristup analyzy stochastickych hranic (with B. Sotak) *Politicka Ekonomie 2*, pp. 207-224
34. Smart Predictors in the Heterogeneous Agent Model (with L. Vacha, and M. Vosvrda) *Journal of Economic Interaction and Coordination*, vol. 4(2), pp. 163-172, (2009) Springer (Download)
35. Sentiment Patterns in the Heterogeneous Agent Model (with L. Vacha, and M. Vosvrda) *Prague Economic Papers* 3, pp. 209-219 (2009) (Download)
36. How Do Neural Networks Enhance the Predictability of Central European Stock Returns? , *Finance a uver-Czech Journal of Economics and Finance* 58, pp. 359-376 (2008) Download)
37. Modelovani Krachu na kapitalovych trzich: Aplikace teorie stochastickych katastrof (with M. Vosvrda) *Politicka ekonomie* 6, pp. 759-771 (2008)

Multidisciplinary Research Publications

38. Forecasting the term structure of crude oil futures prices with neural networks, (with B.Malinska) *Applied Energy*, 164, pp.366 -379, (2016) Download
39. Behavioural breaks in the heterogeneous agent model: the impact of herding, overconfidence, and market sentiment, (with J.Kukacka) *Physica A*, 392 (23), pp. 5920–5938, (2013) Download
40. Understanding the source of multifractality in financial markets (with T. Aste, T. Di Matteo and R. Liu) *Physica A* 391 (17), pp. 4234–4251, (2012) Download
41. On Hurst exponent estimation under heavy-tailed distributions (with L. Kristoufek) *Physica A* 389 (18), pp. 3844-3855, (2010) Download
42. Monte Carlo-based tail exponent estimator (with L. Vacha) *Physica A* 389 (21), pp. 4863-4874 (2010) Download

Chapter in Book

43. Wavelet-Based Correlation Analysis of the Key Traded Assets (with E. Kocenda, and L. Vacha) in *Wavelet Applications in Economics and Finance*. Springer International Publishing, pp. 157-183, (2014) Download

Grant Support *(main researcher only)*

2016 – 2018	*(Principal Investigator)* Grant Agency of the Czech Republic (GA CR) New measures of dependence between economic variables
2016 – 2018	*(Investigator, joint with L. Vacha)* Grant Agency of the Czech Republic (GA CR) Measurement of frequency-dependent financial risk factors

2014 – 2016	*(Local Coordinator)* of the collaborative project under the 7th FP for EU research Financial Distortions and Macroeconomic Performance: Expectations, Constraints and Interaction of Agents
2014 – 2016	*(Principal Investigator, (joint with E.Kočenda from CERGE-EI)* Grant Agency of the Czech Republic (GA CR) Dynamic correlations and financial market risk
2013 – 2015	*(Principal Investigator)* Grant Agency of the Czech Republic (GA CR) Multivariate spectral analysis of financial markets
2013 – 2015	*(Investigator, joint with L.Vacha)* Grant Agency of the Czech Republic (GA CR) Wavelet analysis of nonstationary and long memory economic time series.
2008 – 2010	*(Principal Investigator)* Grant Agency of Charles University (GA UK) New Nonlinear Capital Markets Theories: Fractal, Bifurcational & Behavioral Approach

Teaching Experience

Institute of Economic Studies, Charles University in Prague

2013 – current	Advanced Econometrics – *Lectures*	(Masters)
2011 – 2013	Econometrics II – *Lectures*	(Bachelors)
2007 – current	Applied Econometrics – *Lectures / Seminars*	(Masters)
2007 – current	Quantitative Finance I – *Lectures / Seminars*	(Masters)
2007 – current	Quantitative Finance II – *Lectures / Seminars*	(Masters)
2007 – 2011	Advanced Econometrics – *Seminars*	(Masters)

My lectures and seminars consecutively rank among "Best courses taught at the IES" in years 2010 – 2017, see Awards section for details.

Theses Supervision

Current PhD students	M.Hronec, J.Kurka, M.Nevrla, F.Cech, L.Kraicova, B.Malinska
PhD students (finished)	T.Krehlik (Sept 2017), K.Avdulaj (Feb 2016), J.Kukacka (April 2016)
External Examiner	PhD Dissertation of N.Nava, ULC, London, UK.
Master Theses	41 supervised (17 awarded)
Bachelor Theses	3 supervised

Research Visits

july 2017	Humboldt-Universit t zu Berlin, School of Business and Economic, C.A.S.E.
february 2015	Ruhr-Universitaet Bochum, Department of Mathematics, Institute of Statistics
february 2012 september 2013	(Invited) ECARES - Solvay Brussels School of Economics and Management, Université libre de Bruxelles (prof. D.Veredas)
april 2009	CeNDEF - Center for Nonlinear Dynamics in Economics and Finance, Department of Quantitative Economics, University of Amsterdam (prof. C. Hommes)

Professional services

Current

Editorial Board	Journal of Economic Interaction and Coordination
Editorial Board	Czech Journal of Economics and Finance

Past

Committees	Grant Agency of the Czech Republic, Evaluation Committee (Member)
refereeing	(approximately 60 times) Selected list of journals: Annals of Finance, Computational Statistics & Data Analysis, Energy Economics, International Journal of Forecasting, Journal of Econometrics, Journal of Economic Behavior & Organization, Journal of Economic Dynamics and Control, Journal of Financial Markets, Journal of International Money and Finance, Neural Network World, Physica A, Quantitative Finance, Studies in Nonlinear Dynamics & Econometrics, The Energy Journal
Editor	The Czech Economic Review
Editor	Bulletin of the Czech Econometric Society

Selected Presentations by invitation

- Text, Herding and Sentiment, 2017, Cambridge (Invited talk)
- Haindorf Seminar 2017, Hejnice (Invited talk)
- International Conference on Computational and Financial Econometrics 2017, London UK (Invited to organize Session)
- International Conference on Computational and Financial Econometrics 2016, Sevilla (Invited to organize Session)
- International Conference on Computational and Financial Econometrics 2015, London UK (Invited Talk)
- Technische Universitat Dortmund, Faculty of Statistics, 2015 (Invited Seminar Talk)
- Non- and Semiparametric Volatility and Correlation Models, Paderborn 2014, Germany (Invited Talk)
- Econophysics Colloquium 2015, Prague (Invited Talk)
- International Conference on Computational and Financial Econometrics 2012, London UK (Invited Talk)
- ECARES - Solvay Brussels School of Economics and Management, Universit libre de Bruxelles, 2013 (Invited Seminar Talk)
- ECARES - Solvay Brussels School of Economics and Management, Universit libre de Bruxelles, 2012 (Invited Seminar Talk)
- International Scientific Conference, European Integration of S.E.E. Countries 2011, Eqrem abej University of Gjirokastra, Albania (Invited Talk)

Awards

2017	"Golden course taught at the FSV" for Quantitative Finance I Lectures
2016	"Golden course taught at the FSV" for Quantitative Finance I Lectures
2016	"Best courses taught at the IES" for Quantitative Finance I Lectures
2015	"Energy Economics Contest Award" 1st place (joint work with B.Malinska)
2015	"Golden course taught at the FSV" for Quantitative Finance I Lectures
2015	"Best courses taught at the IES" for Advanced Econometrics and QF I Lectures
2014	"Best courses taught at the IES" for Applied Econometrics Lectures
2014	"Economic Research Award" (Czech National Bank)
2014	"Best courses taught at the IES" for Advanced Econometrics Lectures
2013	"Energy Economics Contest Award" 1st place (joint work with K.Avdulaj)
2013	"Best courses taught at the IES" for Quantitative Finance I Lectures
2012	"Golden course taught at the FSV" for Applied Econometrics Lectures
2012	"Otto Wichterle award by the Academy of Sciences of the Czech Republic"
2012	"ČEZ Corporate Chair holder (2012+) "
2012	"Best courses taught at the IES" for Quantitative Finance I Lectures
2011	"Energy Economics Contest Award" 1st place (joint work with L.Vacha)
2011	"Czech Econometric Society Award" 1st place (Best Student Paper)
2011	"Best courses taught at the IES" for Advanced Econometrics and QF I Lectures
2010	"Best courses taught at the IES" for Applied Econometrics and QF I Lectures
2010	"Czech Econometric Society Award" 3rd place (Best Student Paper)

Languages

Slovak	Mothertongue
Czech	Mothertongue
English:	Fluent (English Language State Certificate, 2000)
Italian:	Basics
German:	Basics

Computer Skills

Basic Knowledge:	E-views, C++, html, php, mySQL
Intermediate Knowledge:	LaTeX, Mathematica, MATLAB, R, Ox, Excel, Word, PowerPoint

Interests and Activities

Technology, Programming, Econometrics
Road Cycling, Swimming, Cross-country Skiing, Jazz, Food, and Wine