

Hao Fang

Home Address

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Business Address

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RESEARCH INTERESTS

Financial Econometrics, Risk Management, Nonparametric Statistics, Volatility Modeling and Empirical Asset Pricing

EDUCATION

University of Amsterdam & Tinbergen Institute, Amsterdam, NL

- Ph.D. Candidate in Financial Econometrics Sep 2014 - Aug 2017 (expected)
- Promoter: **Prof. Cees Diks**, Co-director of the Center for Nonlinear Dynamics in Economics and Finance
 - Co-Promoter: **Prof. Dick van Dijk**, Erasmus School of Economics, Erasmus University Rotterdam

Tinbergen Institute, Amsterdam & Rotterdam, NL

- Mphil. in Economics Sep 2012 - Aug 2014
- Thesis: "Information-Theoretical Measures for Detecting Granger Causality"

Dongbei University of Finance and Economics, Dalian, CN

- M.Res. in Financial Engineering Sep 2009 - Mar 2012
- Thesis: "Empirical Analysis of the Volatility of Copper Futures Price with MS-GARCH Models"
- B.Sc. in Economics Sep 2005 - Jul 2009
- Thesis: "A New Explanation in Public Economics for Widening Gaps between Urban and Rural Areas"

SKILLS

Computer Languages: Matlab (daily), C/ C++, Python, R, Mathematica, MySQL, \LaTeX .

Human Languages: English (fluent), Dutch(basic), Mandarin (native).

Certification: Global Association of Risk Professionals (GARP) FRM part II.

RESEARCH PROJECTS

Comparing Density Forecasts in a Risk Management Context, with **Cees Diks**:

We compare multivariate and univariate approaches to assessing the accuracy of competing density forecasts of a portfolio return in the downside part of the support. We argue that the common practice to perform multivariate forecast comparisons can be problematic in the context of assessing portfolio risk, since better multivariate forecasts do not necessarily correspond to better aggregate portfolio return forecasts. This is illustrated by examples involving (skew) elliptical distributions and an application to daily returns of a number of US stock prices. Additionally, time-varying test statistics and Value-at-Risk forecasts provide empirical evidence for regime changes over the last decades.

Detecting Granger Causality with a Nonparametric Information-based Statistic, with **Cees Diks**:

This paper introduces a novel nonparametric test based on the first order Taylor expansion of an information theoretic measure: transfer entropy. This new test statistic is shown to have an information-based interpretation for Granger noncausality. Attributed to the U-statistic representation, the asymptotic normality of our test statistic is achieved when all densities are estimated with appropriate sample-size dependent bandwidth. Finally two applications to the data sets of daily and intraday frequency justify the usefulness of our method for detecting Granger causality and/or information spillovers in financial markets.

Transfer Entropy for Nonparametric Granger Causality Detection: An Evaluation of Different Resampling Methods, with [Cees Diks](#):

The information-theoretical concept transfer entropy is an ideal measure for detecting conditional independence. The recent literature indeed witnesses an increased interest in applications of entropy-based tests in this direction. However, those tests are typically based on nonparametric entropy estimates for which the development of formal asymptotic theory turns out to be challenging. In this paper, we provide numerical comparisons for simulation-based tests to gain some insights into the statistical behavior of nonparametric transfer entropy-based tests. In particular, surrogate algorithms and smoothed bootstrap procedures are described and compared. We conclude this paper with a financial application to the detection of spillover effects in the global equity market.

Implied Distribution of Volatility: Expectations and Realizations, with [Roy van der Weide](#) (*working in progress*):

We put forward an option pricing model that accommodates both stochastic and asymmetric volatility in this paper which fits the data well and preserves analytical convenience. Instead of treating volatility as a deterministic process, the volatility is stochastic in our framework. The proposed implied pdf of volatility can be estimated by the option pricing model for each trading day in the sample. The time-series of the implied pdf describes how market expectations about future volatility evolve over time.

CONFERENCE PRESENTATION	25th Annual Symposium of the SNDE	Paris, Mar 30 - 31, 2017
	10th Conference on Computational and Financial Econometrics	Seville, Dec 09 - 11, 2016
	69th European Meeting of the Econometric Society	Geneva, Aug 22 - 26, 2016
	5th Annual Lithuanian Conference on Economic Research	Vilnius, Jun 30, 2016
	36th Dynamics Days Europe	Corfu, Jun 6 - 10, 2016
	Quantitative Economics Doctorate Jamboree Conference	Amsterdam, May 14, 2016
	9th Conference on Computational and Financial Econometrics	London, Dec 12 - 14, 2015
	Tinbergen PhD Seminar	Amsterdam, Oct 27, 2015
CeNDEF Seminar	Amsterdam, Jun 29, 2015	
PRACTICAL EXPERIENCE	Research Assistant	Mar 2012 - Jul 2012
	Antai College of Economics and Management, Shanghai Jiao Tong University, CN	
	Quantitative strategist	Dec 2011 - Mar 2012
	GuoYuan Trust Corporation, Anhui, CN	
TEACHING EXPERIENCE	Quantitative analyst	Mar 2010 - Jul 2010
	Standard Consulting Company, DaLian, CN	
	Mathematics I (T1010)	Sep 2013 - Oct 2013
	Mphil Economics, Tinbergen Institute, Lecturer Dr. Florian Wagener	
	Statistics (TI012)	Oct 2013 - Dec 2013
	Mphil Economics, Tinbergen Institute, Lecturer Dr. Peter Spreij	
Probability and Statistics 3 (6012B0286Y)	Oct 2014, 2015, 2016 - Dec 2014, 2015, 2016	
B.Sc. Actuarial Science, University of Amsterdam, Lecturer Prof. Cees Diks		
Time Series Analysis (6012B0334Y)	Oct 2014, 2015, 2016 - Dec 2014, 2015, 2016	
B.Sc. Econometrics and Operations Research, University of Amsterdam, Lecturer Prof. Cees Diks		
Statistics (6011P0154Y)	Feb 2015 - Apr 2015	
B.Sc. Business and Economics, University of Amsterdam, Lecturer Dr. Wim van Beers		
Intermediate Mathematics (6012B0339Y)	Mar 2016, 2017	
B.Sc. Business and Economics, University of Amsterdam, Lecturer Dr. J.W.T. Bogers		