



# ANNUAL FINANCIAL MARKET LIQUIDITY CONFERENCE

16TH-17TH NOVEMBER,  
CORVINUS UNIVERSITY OF BUDAPEST, HUNGARY

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CONFERENCE  
PROCEEDINGS

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**8<sup>th</sup> Annual Financial Market Liquidity Conference, 2017**  
**Budapest, Hungary**  
**16<sup>th</sup>-17<sup>th</sup> November, 2017**

CONFERENCE PROCEEDINGS

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## GREETINGS

I warmly welcome all the participants of the 2017 Annual Financial Market Liquidity (AFML) Conference. It is the eighth time that we are bringing together academics and practitioners to discuss state-of-the-art results in the broad field of financial market liquidity. These topics include:

- Market Liquidity and Funding Liquidity;
- Liquidity Aspects of Systemic Risk;
- Game Theoretic Aspects of Liquidity and Financial Risk;
- Global Liquidity (both Public and Private) and Regulations;
- Leverage and Macroeconomic Determinants;
- Market Microstructure with Emphasis on Liquidity;
- Asset Pricing and Management with Illiquid Assets;
- Illiquid Alternative Investments and Asset Innovations.

All the conditions are met to build and refresh your network, since more than 140 participants have registered, and also more than 20 selected students will visit the lectures.

Many people have contributed to this event. First of all, I would like to thank the speakers, poster session participants and the chairs for coming, and our sponsors for providing the resources.

I wish to thank the members of the scientific committee: Péter Csóka, Zsuzsa R. Huszár, László Á. Kóczy, Niklas Wagner; and the local organizing committee: Edina Berlinger, Zolt Bihary, Dániel Havran, Judit Lilla Keresztúri, Gábor Kondor, Anita Lovas, Dóra Gréta Petrőczy, Balázs Árpád Szűcs. Our assistants Judith Andaházy, Zsuzsa Fried, and Margit Hajnal also did an excellent job in taking care of ongoing tasks and challenges.

I trust everybody will contribute to the friendly and interactive atmosphere.

Enjoy the eighth AFML Conference and Budapest.

Kind regards,  
Barbara Mária Dömötör  
Chair of the Organizing Committee

Assistant Professor  
Corvinus University of Budapest  
Corvinus Business School  
Department of Finance  
Financial Research Centre

P.S.: See you also at the 9th AFML Conference on 15-16 November 2018 Budapest!



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## KEYNOTE SPEAKER

KAROLYI, Andrew

***Andrew Karolyi: The Home Bias Phenomenon Redux***

Financial markets are ever increasingly global. Barriers to cross-border capital flows have been falling steadily over the past four decades and for just about every country on earth. Scholars have long ago developed models of portfolio choice and asset pricing that capture a globally-integrated market in which an asset has the same price regardless of where it is traded and in which no finance is local. Yet, it is difficult to find much empirical support for those models even today. These models have severe limitations in explaining foreign portfolio holdings and how they change over time. Of particular interest is the so-called “home bias puzzle” by which investors overweight the securities of their home country relative to what one would expect in an integrated world. Explanations for the puzzle are plentiful. In this talk, I survey the most recent evidence with innovative sources of data and suggest we are ‘homing’ in on a single unifying explanation.



**KAROLYI, Andrew**

is an internationally-known scholar in the area of investment management, with a specialization in the study of international financial markets. He has published extensively in journals in finance and economics, including the *Journal of Finance*, *Journal of Financial Economics* and *Review of Financial Studies*, and has published several books and monographs. His research has been covered extensively in print and electronic media, including *The Wall Street Journal*, *Financial Times*, *The Economist*, *Time*, *New York Times*, *Washington Post*, *Forbes*, *BusinessWeek*, and *CNBC*. Professor Karolyi currently serves as editor of the *Review of Financial Studies*, one of the top-tier journals in finance. He is also an associate editor for a variety of journals, including the *Journal of Financial Economics*, *Journal of Empirical Finance*, *Journal of Banking and Finance*, *Review of Finance* and the *Pacific Basin Finance Journal*. He is a recipient of the Fama/DFA Prize for Capital Markets and Asset Pricing (2005), the William F. Sharpe Award for Scholarship in Finance (2001), the Journal of Empirical Finance's Biennial Best Paper Prize (2006), the Fisher College of Business' Pace Setter Awards for Excellence in Research and Graduate Teaching and Johnson's Prize for Excellence in Research in 2010. He joined Johnson in 2009, after teaching for 19 years at the Fisher College of Business of The Ohio State University. He leads various executive education programs in the U.S., Canada, Europe, and Asia, and is actively involved in consulting with corporations, banks, investment firms, stock exchanges, and law firms. He is a current trustee and past president of the Financial Management Association International and has served as a director of the American Finance Association. Karolyi received his BA (Honors) in economics from McGill University in 1983 and worked at the Bank of Canada for several years in its research department. He subsequently earned his MBA and Ph.D. degrees in finance at the Graduate School of Business of the University of Chicago.





## INVITED SPEAKERS

**BATTEN, Jonathan A.**

***Jonathan A. Batten, Harald Kinateder, Peter G. Szilagyi, and Niklas F. Wagner: Liquidity, Surprise Volume and Return Premia in the Oil Market***

We investigate the applicability of the Mixture of Distribution Hypothesis (MDH) to the oil market. The results highlight an important association between liquidity, surprise volume and oil market returns. The study period, from 1990 to 2016, includes the effects of recent supply-side shocks arising from technological innovations, including horizontal drilling and hydraulic fracking, as well as the demand-side shocks associated with the Asian Financial and Global Financial Crisis. The econometric model addresses autoregressive properties in the return series, the impacts of surprise volume and conditional oil market return volatility as well as market liquidity in the conditional return equation. Surprise volume as a proxy of private information flow is shown to be unrelated to a set of standard liquidity proxies. Return heteroskedasticity in oil returns is found to be partly explainable by surprise trading volume, a finding that is consistent with the MDH. Since both oil market liquidity, as well as surprise volume shocks, are priced in the oil markets, lower levels of lagged market liquidity relate to above average conditional oil market returns. Surprise volume shocks are jointly associated with lower conditional oil market returns and higher contemporaneous conditional return variance. Lagged market liquidity appears to matter more than conditional volatility in predicting conditional oil price returns.

**BATTEN, Jonathan A.**

is Professor of Finance in the Department of Banking and Finance at Monash University, Australia. Prior to this position he worked as a Professor in Finance at the Hong Kong University of Science & Technology and Seoul National University, Korea. He is the managing editor of *Emerging Markets Review*, *Journal of International Financial Markets Institutions and Money*, co-editor of *Finance Research Letters*, and on the editorial boards of a number of other journals including the *Journal of Banking & Finance*, *Journal of Multi-national Financial Management* and *International Review of Financial Analysis*. He is the current President of the Eurasian Business and Economics Society (EBES). His current research interests include: Financial market development and risk management; spread modelling arbitrage and market integration; and the investigation of the non-linear dynamics of financial prices.



**BOHÁK, András*****András Bohák: Liquidity Risk Management – A case study of the US Municipal Bond market***

MSCI's LiquidityMetrics model offers clients a standardized way to model liquidity risk across asset classes with different kind and amount of data available. After a short introduction to the model, we will focus on how the key parameters can be calibrated based on pre-trade (quote) and post-trade (trading) data. The presentation is centred around the US Municipal bond market. This market is particularly challenging with more than 2.5 million securities outstanding out of which the waste majority is never quoted or traded. We show that market structure knowledge and the right interpretation of the data is as important as getting the data itself for successful modelling of liquidity.

**BOHÁK, András**

is a Vice President in the Risk and Regulation Research team and is based in Budapest. He and his team is responsible for capital regulation, counterparty credit risk and liquidity risk. Mr. Bohak joined MSCI in 2012 and worked in the securitized products research team before transferring to his current role in 2013. Prior to joining MSCI, Mr. Bohak was a lecturer at the Budapest University of Technology and Economics, where he is still teaching Advanced Investments for finance majors. Mr. Bohak holds a degree in Computer Science and Industrial Engineering and Management, both from the Budapest University of Technology and Economics.



**HENS, Thorsten*****Thorsten Hens, Terje Lensberg, Klaus Reiner Schenk-Hoppé: Front-Running and Market Quality: An Evolutionary Perspective on High Frequency Trading***

We study front-running by high frequency traders (HFTs) in a limit order model with continuous trading. The model describes an evolutionary equilibrium of low frequency traders (LFTs) who compete in portfolio management services by offering investment styles. The introduction of front-runners inflicts heavy losses on speculators, while leaving passive investors relatively unscathed. This encourages investment in the market portfolio and markedly reduces overall turnover. Speculative trading persists despite its lower profitability. By most measures, market quality is not affected to any significant extent by front-running HFTs.

**HENS, Thorsten**

is a Professor of Financial Economics at the University of Zurich and Adjunct Professor of Finance at NHH in Bergen, Norway. He studied at Bonn and Paris and previously held professorships in Stanford and Bielefeld. His main research area is behavioural finance. Thorsten Hens has published more than fifty journal articles and is the co-author of seven books. Moreover, he has profound asset management experience from consulting pension funds in Switzerland.



**KASERER, Christoph*****Christoph Kaserer: How do Mutual Funds vs. ETFs Impact Stock Market Liquidity? Evidence from the German Market***

Open-ended equity funds often engage in liquidity-motivated trading when they are facing cash in-/outflows. This paper assesses the impact of equity funds' cash flows on overall stock market liquidity. A unique order volume-weighted spread measure considering the whole depth of the limit order book allows us more accurate measurement of stock market liquidity. In a sample of more than 3,000 trading days on the German stock market we find significant evidence that mutual funds' cash flows improve stock market liquidity. This supports the previous theories about liquidity-motivated trading and liquidity preference of mutual fund managers. At the same time, no effect of ETFs' net cash flows has been found on the stock market liquidity, which leads back to the mechanism of ETF's creation and redemption process as well as the involvement of market makers. Furthermore, mutual funds' contribution to the stock market liquidity has become stronger since the financial crisis in 2008-2009. In addition, we use two different approaches to assess the information processing ability of mutual fund managers and discover that liquidity contribution from mutual fund managers is driven by those with higher information processing ability.

**KASERER, Christoph**

is a full professor of finance at Technische Universität München (TUM). His area of expertise is corporate finance, banking, and asset management. Christoph published his research in leading international academic journals. He is also active as an expert for the German Government as well as for public and private institutions. Christoph is also a member of the Group of Economic Advisors at ESMA. Before joining TUM, he became Full Professor of Financial Management and Accounting at Université de Fribourg, Switzerland, in 1999. From 2005 to 2010 he was the Dean of TUM School of Management. According to recently published university rankings TUM School of Management is the top management school in Germany.



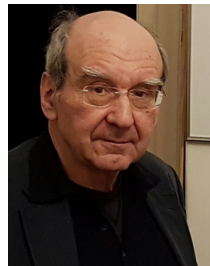
## KONDOR, Imre

### *Imre Kondor: Analytic approach to portfolio optimization under an $l_1$ constraint*

The optimization of the variance supplemented by a budget constraint and an asymmetric  $l_1$  regularizer is carried out analytically by the replica method borrowed from the theory of disordered systems. The asymmetric regularizer allows one to penalize short and long positions differently, so the present treatment includes the no-short-constrained portfolio optimization problem as a special case. Results are presented for the out-of-sample and the in-sample estimator of the variance, the relative estimation error, the density of the assets eliminated from the portfolio by the regularizer, and the distribution of the optimal portfolio weights. The dependence of these quantities on the ratio  $r$  of the portfolio's dimension  $N$  to the sample size  $T$ , and on the strength of the regularizer is presented. The analytic results are checked by numerical simulations, and general agreement is found. The regularization extends the interval where the optimization can be carried out, and suppresses the infinitely large sample fluctuations, but the performance of  $l_1$  regularization is disappointing: if the sample size is large relative to the dimension, i.e.  $r$  is small, the regularizer does not play any role, while for larger  $r$ 's where the regularizer starts to be felt the estimation error is already so large as to make the whole optimization exercise pointless. Beyond the critical ratio  $r = 2$  the variance cannot be meaningfully optimized: a continuum of solutions with vanishing variance and weight vectors lying in the simplex emerge.

### KONDOR, Imre

is faculty member of the Parmenides Foundation, Pullach b. Munich, external faculty of the London Mathematical Laboratory and the Complexity Science Hub, Vienna, and honorary professor of finance at Corvinus University of Budapest. In 1988-2011 he was professor of physics at the Department of the Physics of Complex Systems, Eötvös University, Budapest. In 1992 he founded Bolyai College, a school of excellence, from 1998 to 2002 he was the head of the Department of Market Risk Research at Raiffeisen Bank. In 2002-2008 he was the rector of Collegium Budapest – Institute for Advanced Study. He holds a Ph.D. and DSc, three academic and two government prizes. He has published 85 papers, 2 books and one e-volume. He is coeditor of *Fractals*, *JSTAT*, and was review editor of *Journal of Banking and Finance*. His research experience includes the theory of condensed Bose systems, critical phenomena, random systems and spin glasses, and, presently, the application of statistical physics methods to problems in economics and finance (especially the theory of portfolios, risk management and regulation). Professor Kondor organized about 20 international conferences and served as chairman or member on various grant committees and science policy making bodies.



**VÍGH, Gábor*****Dora Bagyinszki, Gabor Vigh, Norbert Hari: The impact of stochastic LIBOR-OIS basis on counterparty risk***

Before the onset of the credit crunch in 2007, the difference between London Interbank Offered Rate (LIBOR) and the Overnight Indexed Swap Rate (OIS) was negligible. In the crisis the spreads between the two rates suddenly started to widen due to material credit and risk premium incorporated in the LIBOR rate and since then it has been evolving randomly. Prices of instruments linked LIBOR rates started to reflect stochastic spreads, a new risk factor emerged. The disconnect between the two rates required the industry to revise the modeling assumptions, pricing formulas and hedging strategies. This research investigates the impact of the stochastic LIBOR-OIS spreads on future counterparty exposure distributions by comparing the results obtained from a stochastic spread model to the industry wide deterministic spread assumption. We considered the stochastic basis model proposed by Mercurio and Li (2016) with basis and OIS dynamics using the extended Vasicek model. The model is calibrated to two distinct historical basis time series: i.) to the financial crisis period and ii.) to a more recent and stable period. The analysis focuses on a single tenor, on a single currency and a Forward Rate Agreement.

**VÍGH, Gábor**

completed his Master's focusing on Mathematical finance at Corvinus University of Budapest. In 2014, he joined to Morgan Stanley where he is heading the Counterparty Exposure Modelling group. Prior to Morgan Stanley, he worked for MKB in the Credit Risk Methodology Group. He also holds a bachelor degree in Software Engineering from ELTE.





**WAGNER, Niklas**

***Patrizia Perras, Niklas Wagner: Is there a Trading Break Equity Premium?***

This paper addresses the relation between market risk and expected market returns with a particular focus on periodic market closures. We derive a modified version of the Merton intertemporal capital asset pricing model where asset prices are driven by a diffusive process during the trading day and jumps that are induced by price changes over the market closure. This enables us to derive distinct risk premia for trading and non-trading risk. Our empirical analysis shows that both components are important in explaining the equity market risk premium. Trading breaks entail a lack of market functionality and liquidity and our results document that investors ask for a premium to hold the market portfolio over the closure. Including additional state variables into the model, we find that stock market uncertainty and illiquidity are both significantly and positively priced on the market level and exhibit predictive power for aggregate stock returns.

**WAGNER, Niklas**

is Professor of Finance and Financial Control at the University of Passau, Germany. After receiving his Ph.D. in Finance, he held postdoctoral appointments at the Haas School of Business, U.C. Berkeley, and at Stanford GSB, thereafter finishing his habilitation doctoral degree at TU Munich. Professor Wagner has co-authored various contributions in finance, covering research in the areas of asset management, empirical asset pricing, applied financial econometrics as well as derivatives and risk management. Professor Wagner has co-edited book volumes on derivatives and risk management, currently is an associate editor of *Economic Modelling*, *Emerging Markets Review*, *Finance Research Letters*, the *Journal of International Financial Markets, Institutions and Money*, and the *International Review of Financial Analysis*, and is Editor-in-Chief of *Studies in Economics and Finance*.



**PERRAS, Patrizia**

Finance and Financial Control Research Group, University of Passau  
See pp. 31.



## SPEAKERS

### BARKAUSKAITĖ, Aida

#### *Ausrine Lakstutiene, Aida Barkauskaite, Justyna Witkowska: Is it Necessary to Measure Systemic Risk in Risk-Based Common European Union Deposit Insurance System?*

Scientific discussions stressed that the main problem with the current deposit insurance system is that in many EU countries, the current system does not evaluate the risks assumed by banks to calculate the deposit insurance premiums, and thus do not provide sufficient stability of the banking system. Scientific research shows that the deposit insurance system should take into account not only individual bank risk indicators, but also to systemic risk of banks that affects the stability of the banking system. Therefore, this article analyzed how contributions into insurance funds would change of the banks of Lithuania after the introduction of the EU's overall risk-based deposit insurance system and after including into assessment the additional systemic risk. The obtained research results show that the introduction of risk-based deposit insurance system would redistribute payments to the deposit insurance fund between banks operating in Lithuania and thus would contribute to the reduction of negative effects of deposit insurance system and to the financial system stability increase.

### BARKAUSKAITĖ, Aida

is a Ph.D. candidate at Kaunas University of Technology in Lithuania. Scientific researchers and papers started writing in her bachelor degree studies. Research interest is deposit insurance system, banking activities, systemic risk analysis. Ph.D. thesis is associated with systemic risk assessment in common European Union deposit insurance system model.



**BĘDOWSKA-SÓJKA, Barbara*****Barbara Będowska-Sójka, Krzysztof Echaust: Commonality in Liquidity and the Dynamics of a Liquidity Index***

There is an evidence in the literature that individual stock liquidity as well as market liquidity varies in time. Many attempts have been made already to measure liquidity: proxies are usually focused either on the transaction costs, or trading volume. So far less attention is paid to the aggregated liquidity market measure. The aim of the paper is to propose a calculation method for the liquidity index that captures the overall liquidity dynamics observed on the stock market. The sample consists of stocks listed on the Warsaw Stock Exchange constantly from 2006 through 2016. The various effective spread measures based on low-frequency data widely employed in the developed markets are calculated, namely the LOT measure, the high-low spread estimator, Quoted Close Spread and FHT measure. Furthermore we propose additional intuitive proxy based on the extreme market movements. We examine commonalities in liquidity measures across blue chips stocks, the behavior of liquidity measures at the time of extreme events and the determinants of potential interdependencies. We find significant interdependence between most considered proxies as well as linkages between large market downturns and illiquidity.

**BĘDOWSKA-SÓJKA, Barbara**

is an Associate Professor at the Department of Econometrics at Poznań University of Economics, Poland. Her main research interests are in financial market microstructure, financial econometrics, volatility modeling and forecasting. Recently she focuses on the measures of volatility and liquidity based on the high frequency data, coherence of the proxies and the volatility-liquidity dependencies. She has published a book on the impact of information on the intraday prices of financial instruments.

**ECHAUST, Krzysztof**

is an Associate Professor at the Department of Operations Research at Poznań University of Economics. His main research interests are in financial modelling, especially modelling extreme events and derivatives pricing. He also focuses on the measures of liquidity.



**BERLINGER, Edina*****Edina Berlinger, Barbara Dömötör, Ferenc Illés:  
Anti-cyclical versus Risk-sensitive Margin Strategies in  
Central Clearing***

We analyzed the effects of different margin strategies on the loss distribution of a clearinghouse during different crises. First, we developed a general one-period analytical model and proved the existence of a unique optimal margin which is not necessarily risk-sensitive even in a weaker sense. Then, we simulated the operation of a hypothetical clearinghouse active on the US stock futures market in the period 2008-2015. We found that anti-cyclical margin strategies might be optimal also for clearinghouses focusing on their micro-level financial stability, not only for regulators aiming to reduce systemic risk. Anti-cyclical margin strategies performed especially well in minor crises like Flash Crash.

**BERLINGER, Edina**

is an Associate Professor at Corvinus University of Budapest and she is also the Head of Department of Finance. Her expertise covers asset pricing and risk management and especially the financial management of student loan systems. She has participated in several research and consultancy projects including design and implementation of student loan schemes as World Bank consultant and a research fellowship at the Collegium Budapest in complex systems. She received her Ph.D. in Economics (2004) from Corvinus University.

**DÖMÖTÖR, Barbara**

Corvinus University of Budapest  
See pp. 18.

**ILLÉS, Ferenc**

is a Ph.D. student at Corvinus University of Budapest at the Department of Finance. He received his degree in mathematics at Eötvös Loránd University in 2008. Prior to his Ph.D. studies he worked in the banking industry.



BIHARY, Zsolt

***Edina Berlinger, Zsolt Bihary, Tamás Vadász: The emergence of core-periphery structures from bilateral partner limits***

In this paper, we characterize optimal interbank networks when lending is subject to bilateral partner limits. For an arbitrary partner limit structure, we show that when random liquidity shocks tend to be small, optimal trading networks exhibit homogeneity, while heterogeneity appears gradually as the noise of liquidity shocks increases. In the limit, optimal trading networks converge to the half of the partner limit network. We characterize this convergence using a plausible limitformation algorithm with numerical simulations. Our result can give a new insight into robust empirical results on the emergence of core-periphery interbank network structures.

***Zsolt Bihary, Péter Csóka, Dávid Zoltán Szabó: How Risky is it to Hold Stocks in the Long Run? Spectral Measures of Risk over Time***

We investigate how the spectral risk measure associated with holding a stock rather than cash depends on the holding period. The risk can be interpreted as the amount of the necessary cash reserve. Negative risk indicates that even a leveraged stock position is acceptable. In the limit of zero holding time, the risk is zero. As we increase the holding time from zero, at first the risk grows. The question is whether risk keeps growing indefinitely, or it plunges back below zero at a certain holding time. Previous papers have shown that within a limited class of spectral measures, and when the stock price follows a Geometric Brownian Motion, risk does become negative at long periods. In this paper, we arrive at more general results. We show that with all exponential Levy price processes that grow realistically fast, all spectral risk measures (also expected shortfall, except maximum loss), become negative at long periods. This result would suggest that holding stocks for long periods has a vanishing risk. However, using realistic price process models, we find numerically that the risk is increasing for about 30 years and starts to decrease only after that, reaching zero at around 100 years. Therefore, our final conclusion is that holding stocks is risky for all practically relevant periods.

**BIHARY, Zsolt**

is an Associate Professor of the Department of Finance at Corvinus University of Budapest (CUB). Prior to his recent position he worked as a researcher in physical chemistry, and as a financial modeler at Morgan Stanley. His research interest focuses on portfolio optimization, evolutionary finance, and financial networks.

**BERLINGER, Edina**

Corvinus University of Budapest

See pp. 14.

**CsÓKA, Péter**

Corvinus University of Budapest and Hungarian Academy of Sciences

See pp. 17.

**VADÁSZ, Tamás**

Warwick Business School

See pp. 36.

**CSÓKA, Péter*****Péter Csóka, P. Jean-Jacques Herings: Liability games***

A firm has liabilities towards a group of creditors. We analyze the question of how to distribute the asset value of the firm among the creditors and the firm itself. Compared to standard bankruptcy games, on top of the creditors, we introduce the firm as an explicit player and define a new class of cooperative games called liability games. Liability games are superadditive, constant sum, partially convex, and partially concave. We analyze the nucleolus of the game and show that allocating the asset value of the firm using the nucleolus satisfies efficiency, non-negativity and liabilities boundedness. We prove that at the nucleolus, the firm gets a strictly higher amount than its equity if and only if the firm is insolvent and has multiple liabilities. Thus the firm can use the threat to pay others to gain equity and get debt forgiveness, resulting in legally binding lower liabilities. This "threat to pay others" possibility is also necessary and sufficient for the core of the game to be empty. Finally, we provide conditions under which the nucleolus coincides with a generalized truncated proportional rule, assigning a non-negative payment to the firm and distributing the rest in proportional to the liabilities, truncated by the asset value of the firm.

**CSÓKA, Péter**

is an Associate Professor at the Corvinus University of Budapest, Department of Finance and a senior research fellow at the game theory research group of the Hungarian Academy of Sciences. He received his Ph.D. in economics from Maastricht University in 2008. His research topics include risk measures, risk capital allocation, various aspects of liquidity, and financial networks. He has papers published in journals like Management Science, European Journal of Operational Research, Games and Economic Behaviour, and Journal of Banking and Finance.





**DÖMÖTÖR, Barbara*****Zsolt Bihary, Barbara Dömötör: How do manager incentives influence corporate hedging?***

We explain the diversity of corporate hedging behavior in a single model. The hedging ratio is obtained by maximizing expected utility that is a combination of the corporate level utility and a component that models the incentives of the financial manager. We derive a theoretical model, and apply it for ex-post analysis of the corporate hedging decision. We investigate the effect of the manager's utility based component on corporate value.

**DÖMÖTÖR, Barbara**

is an assistant professor of the Department of Finance at Corvinus University of Budapest (CUB). She received her PhD in 2014 for her thesis modelling corporate hedging behaviour. Prior to her recent position she worked for several multinational banks treasury. Her research interest focuses on financial markets, financial risk management and financial regulation.

**BIHARY, Zsolt**

Corvinus University of Budapest  
See pp. 16.

**FLÅM, Sjur Didrik*****Sjur Didrik Flåm: On Measures, Pricing and Sharing of Risk***

Suppose each member of some syndicate applies a monetary measure to value risk. Then, how might they reasonably share risk? What premiums could apply to insurance policies? More basically: can modestly informed members - via exchange between themselves - eventually allocate risk efficiently and fairly? These questions are framed here below by convoluting the members' monetary measures. If the resulting inf-convolution admits a global subgradient at the aggregate risk, then any such gradient provides equilibrium pricing in a pure exchange economy. Most important, it is shown that clearing prices - and efficient sharing - might emerge after repeated bilateral exchanges.

**FLÅM, Sjur Didrik**

was 1986-2016 professor at the Economics Department, University of Bergen, Norway. He is now affiliated with the Informatics Department at the same university. He has his Ph.D. in applied mathematics 1984 from the University of Delaware, US. He has done extensive consulting for business and government. He is associate editor of *Journal of Convex Analysis*, and has published in top journals of economics and mathematics. His research interests revolve around finance, game theory, insurance, and optimization.



**HONKANEN, Pekka*****Pekka Honkanen, Daniel Schmidt: Price and Liquidity Spillovers during Fire Sale Episodes***

We study price and liquidity spillovers in U.S. stock markets around mutual fund fire sales. We find that the well-documented impact-reversal pattern for the returns of fire sale stocks (e.g., Coval and Stafford, 2007) spills over onto the stock returns of economic peers, with a magnitude that is around one fifth of the original effect. These spillovers extend to liquidity and do not seem to be driven by common funding shocks or the hedging activity of liquidity providers. We conclude that they represent information spillovers due to learning from prices, thus identifying cross-asset learning as an important driver for the commonality in returns and liquidity.

**HONKANEN, Pekka**

is a 4th year Ph.D. candidate at HEC Paris. His research interests include short selling and exchange traded funds. He is currently working on projects relating to changes in securities lending supply, and how this affects short selling activity. Pekka earned a BSc in Accounting and Finance from the London School of Economics and Political Science and a MSc in Economics from Paris School of Economics prior to joining HEC.



**JOHANN, Thomas**

***Thomas Johann, Erik Theissen: The Best in Town:  
A Comparative Analysis of Low-Frequency Liquidity  
Estimators***

In this paper we conduct the most comprehensive comparative analysis of low-frequency liquidity measures so far. We review a large number of estimators and use a broad range of procedures to evaluate them. We find that the performance of the estimators is highly dependent on the particular application, and that no single best estimator exists. Against this background, we further analyze which firm characteristics determine the accuracy of the low-frequency estimators, we analyze whether a composite low-frequency estimator can outperform the best individual measures, and we analyze whether changes in the trading protocol (such as a reduction of the minimum tick size or the introduction of NYSE Open Book and NYSE Hybrid) affect the performance of the low-frequency estimators. Our ultimate objective is to guide researchers in their search for the right measure for a particular application.

**JOHANN, Thomas**

is a Ph.D. student at the Chair of Finance of the University of Mannheim, where he also obtained a master with a major in finance. His research areas include empirical market microstructure, cryptocurrencies and mutual funds. Recently, he has been concerned with the accurate measurement of liquidity in the equity market and the microstructure of the Bitcoin market.



**KŐRÖSI, Gábor*****Gábor Kőrösi: Predicting the unpredictable***

This paper demonstrates that the great recession brought substantial changes to the operation of the Budapest stock exchange. It presents a trading strategy, which would have been highly profitable during the great recession and its immediate aftermaths, and would be mildly profitable ever since. However, this strategy is based on a selection of relatively short-run models; there does not seem to be any stable predictive model. The following section of this message contains a file attachment prepared for transmission using the Internet MIME message format. If you are using Pegasus Mail, or any other MIME-compliant system, you should be able to save it or view it from within your mailer. If you cannot, please ask your system administrator for assistance.

**KŐRÖSI, Gábor**

works at the KRTK Institute of Economics, Hungarian Academy of Sciences. His main field is applied econometrics. He uses various econometric techniques at different problems from finance, labour and IO.



**Kiss, Hubert János*****László Á. Kóczy, Ágnes Pintér, Balázs Sziklai, Hubert János Kiss: Does Risk Sorting Lead to Bubbles?***

In the last decades, experimental economics has proved to be a valuable tool to understand why and how bubbles form. The experimental asset market literature studied how traits of the traders, expectations and features of the market mechanism affected the emergence of bubbles. Two recent experimental results indicate that some kind of sorting may mitigate the formation of bubbles. Eckel and Füllbrunn (2015) find that markets formed by females have less/smaller bubbles than markets formed by males. Bosch et al. (forthcoming) report that on markets composed of subjects with better cognitive abilities no bubbles arise. There is an apparent paradox between these two results as males generally perform better in cognitive tasks (Frederick 2005). These results are less perplexing if we take into consideration the underlying risk attitudes of the participants - males are known to be less risk averse than females. In this paper, we investigate whether risk sorting is the driving force that leads to asset market bubbles.

**Kiss, Hubert János**

graduated at the Budapest University of Economic Sciences in 2003. After two years working as a financial analyst, he went on to study at the Universidad de Alicante to obtain a Ph.D. in Economics in 2009. After he worked as an assistant professor for two years at the Universidad Autónoma de Madrid. In 2011 he returned to Hungary and has been teaching in the Department of Economics at Eötvös Loránd University. He joined the Institute of Economics in 2013. His main research interests are bank runs, experimental and behavioral economics.



**KÓCZY, László Á.**

studied at the University of Cambridge and at the Catholic University of Leuven, where he also defended his Ph.D. theses. He has been affiliated with Maastricht University; since 2007 he is an Associate Professor at the Keleti Faculty of Business and Management, Óbuda University, Budapest. In 2010, he was the first social scientist grantee of the prestigious Momentum Programme of the Hungarian Academy of Sciences to set up a research team in Game Theory. He is currently a senior research fellow and the head of the Game Theory Research Group at the Institute of Economics, Centre for Economics and Regional Studies, Hungarian Academy of sciences. His research interests include cooperative game theory and its applications, allocation problems and methods, scientometrics. His latest book on partition function form games is forthcoming at Springer International.

**SZIKLAI, Balázs**

graduated as an economist at the Corvinus University of Budapest in 2005. He started to work as a market researcher at AGB Hungary (now: Nielsen Audience Measurement). One year later he began his mathematical studies at ELTE. In 2008 he was admitted in the fellowship program of the Central European University. He received his second degree in mathematics in 2010 and later that year he joined the Game Theory Research Group of the Institute of Economics. He also teaches as a senior lecturer at the Corvinus University of Budapest. He acquired his Ph.D. degree in applied mathematics at ELTE in 2016. His research interest involves fair division and social choice problems.



**KUMAR, Gaurav**

***Gaurav Kumar: Commonality in Liquidity- New Evidence from National Stock Exchange, India***

This article investigates hypothesis related to commonality in liquidity on National Stock Exchange (NSE), India using high frequency limit order book data. The empirical analysis shows that individual stock liquidity based on various spread and depth measures co-moves with market liquidity and industry liquidity. Market-wide commonality is found stronger than Industry-wide commonality on majority of the liquidity measures. The study captures the asymmetric behavior of commonality in up and down markets. Among four key sectors of the economy viz. Consumer Goods, Financial Services, Manufacturing, and Infrastructure –the strength of commonality is higher in Manufacturing sector. The study develops long run systematic liquidity measure to investigate commonality sources in long run and compares it with the short run. The results of this study can be used by traders in devising strategies, exchanges in designing trading platforms, and fund managers in engineering financial instruments.

**KUMAR, Gaurav**

is a Post-doctoral Research Fellow at the Quinn School of Business, University College Dublin, Ireland. Gaurav is awarded Ph.D. degree from Indian Institute of Technology (IIT), Kharagpur this year. The title for his thesis is "Intraday Liquidity, Commonality and Asset Pricing: A Study of Midcap Stocks on National Stock Exchange, India". His main research areas are Financial markets and Corporate Finance.





**LEI, Zhen*****Zhen Lei: Liquidity effects of institutional investment horizons***

We examine whether institutional investors with different investment horizons exert different influences on a stock's liquidity. Our findings show that stocks increased by short-term institutions become more liquid while stocks increased by long-term institutions become less liquid. Furthermore, short-term institutions pay more attention to changes in a firm's recent fundamentals than long-term institutions and changes in liquidity effects resulting from holding changes of short-term institutions have more explanation power on stock returns in the next quarter than those resulting from long-term institutions, suggesting short-term are more informed about a firm's short-term fundamentals than long-term institutions. Finally, we find increased holdings of both short-term and long-term institutions for a stock caused by improvement in a firm's fundamentals generally make the stock more liquid, suggesting institutional demand provides a channel through which a firm's fundamental can influence its stock liquidity.

**LEI, Zhen**

is a Ph.D. candidate in finance at the School of Accounting and Finance, The Hong Kong Polytechnic University. His research interests cover theoretical and empirical asset pricing, litigation risk, and dynamic principal-agent theory. His works and views have been presented in major finance and accounting conferences such as American Accounting Association annual conference, FMA Asia/Pacific Conference, and various conferences held by institutions and journals such as California Management Review, Journal of Accounting, Auditing and Finance, etc.

Zhen Lei (Arthur) earns his Bachelor of Arts in Finance from the Southwestern University of Finance and Economics, and M.S. in Finance from The Johns Hopkins University. Prior to studying at PolyU, his experience covered investment banking that deals with initial public offerings and Chinese outbound mergers & acquisitions.



**LEVANDO, Dmitry*****Dmitry Levando, M. Sakharov: Micro foundations for money demand as an ill-posed problem***

Following default in equilibrium approach of Shubik and Wilson (1977) we construct a numerical approximation for individually motivated demand for credit money. Mathematical properties of the first-order condition are: it is an ill-posed 1-st kind Fredholm equation with inter-dependence of strategy sets of players (a Generalized Nash Game). Resulting fluctuations produce sunspot equilibrium (extrinsic uncertainty), appearing from uncertainty of players about each others' beliefs, not from outside shocks.

**LEVANDO, Dmitry**

is with the National Research University Higher School of Economics, Moscow, Russian Federation. He holds MA in Computer Science, MA in Economic theory and Ph.D. from Ca Foscari University, Venezia, "Essays on trade and cooperation". His research focuses on non-cooperative games with applications to formation of multiple coalitions and to strategic macroeconomics with default. Along with Maxim Sakharov from Bauman MSTU they develop a computational approach for studying strategic market games with default as an equilibrium phenomenon, including endogenous demand for money.



**LIBICH, Jan**

***Jan Libich, Dat Thanh Nguyen: Running Out of Bank Runs***

People tend to change their mind upon observing what others do. This paper offers a way of modeling this feature, and applies it to banking crises. The game-theoretic framework allows depositors to (probabilistically) revise their decision about running on their bank. Specifically, depositors can join or leave the crowd in front of the bank, based on observing whether others are a part of this crowd. Each depositor may have a different probability of being able to change their mind, and this probability can be observed ex-ante by the other depositors. Depositors with a lower revision probability (e.g. due to holding term deposits rather than current deposits) become leaders in the game - in an expectational sense. We show how such 'Stochastic leadership' affects the occurrence of bank runs; both with and without deposit insurance. In particular, Stochastic leadership offers the depositors a coordination device and it may thus alleviate self-fulfilling bank runs without the need for government deposit insurance. Our results are consistent with the experimental evidence on the importance of observing other depositors' characteristics and decisions. We conclude by discussing the policy implications of our findings.

**LIBICH, Jan**

has completed his Ph.D. at the University of New South Wales in Sydney. His research focuses on monetary and fiscal policy, the financial and banking system, game theory and sports economics. Over the past decade he has published 25 papers in academic journals including European Journal of Political Economy, Macroeconomic Dynamics, Journal of Sports Economics, Journal of Economic Surveys and Economics Letters.



**LUBLÓY, Ágnes*****Edgars Rihards Indārs, Ágnes Lublóy, Alexei Savin:  
Herding Behaviour in an emerging market: Evidence  
from Moscow Exchange***

The authors examine herding towards the market– a type of investor behaviour, which leads investors to mimic each other's actions and results in lower-than-efficient dispersion of asset returns. This paper focuses on establishing whether herding exists in Russian stock market. Moreover, the authors examine liquidity, oil price, calendar effects and information environment as factors potentially associated with its emergence. Contrary to most of the studies in the field, the authors differentiate between rational and irrational forms of herding, and empirically show the importance of this distinction. To study herding phenomenon in the context of Moscow Exchange, the authors examine the relationship between market returns and dispersion of individual asset returns for the period of April 4, 2008 – December 30, 2015. The authors find evidence of regular herding in Moscow Exchange, especially during the days with negative market returns, extreme upward oil price movements and periods of turmoil, e.g. annexation of Crimea in 2014. The authors also find significant evidence of spurious herding during the days of important macroeconomic news releases, sanctions announcements and high-liquidity days. The results presented in the paper shall be of particular interest for investors in stocks traded on Moscow Exchange and relevant regulatory institutions.

**LUBLÓY, Ágnes**

is an Associate Professor in the Department of Finance and Accounting at Stockholm School of Economics in Riga. Ágnes holds a Master of Science in Finance and a Ph.D in Business Administration, both from Corvinus University of Budapest. She wrote her Ph.D dissertation on the systemic risk implications of the Hungarian interbank market. From 2005 to 2007, she was a Junior Fellow and later a Research Fellow with the Institute for Advanced Study at Collegium Budapest. Between 2004 and 2007, Ágnes worked on three distinct research projects related to financial networks at Magyar Nemzeti Bank, the central bank of Hungary. After receiving a two-year post-doctoral fellowship from AXA Research Fund in 2011, Ágnes turned her research focus to health economics (patient-sharing networks in healthcare).

**INDĀRS, Edgars Rihards**

is an Account Manager in the Corporate Client department in SEB bank Latvia. He holds a Diploma of Bachelor of Social Sciences in Economics (2017). In fall of 2016, he was a visiting bachelor student at Pompeu Fabra University under four-month Erasmus program. His research interests are essentially focused on impact of behavioral finance on securities markets.



**NESZVEDA, Gábor*****Gabor Neszveda: Aspiration Level Theory and Stock Returns: An Empirical Test***

According to aspiration level theory, stocks achieving an aspiration level return in the recent past more frequently earn a lower subsequent excess monthly return on average. To test this hypothesis in the cross-section of stock returns, I construct a measure for each stock as the probability of achieving the aspiration level return. I investigate several specifications for the aspiration level returns such as the zero return, the risk-free rate, the market return, and the industry average return. I find supporting evidence for the role of an aspiration level even after controlling for several known factors including size, book-to-market ratio, momentum, and short-term reversal. The results remain significant even among stocks with large market capitalization, with high liquidity, with high institutional ownership, and in both high and low sentiment time periods. Additional tests show that these results are not driven by microstructure effects.

**NESZVEDA, Gábor**

became an Assistant Professor at Corvinus University of Budapest in 2017. He studied quantitative economics at Corvinus University of Budapest and proceeded to do his Ph.D. at the Department of Finance at Tilburg University. His main research interests include behavioral empirical asset pricing, liquidity behavioral economics, and experimental economics.



**PERRAS, Patrizia**

***Patrizia Perras, Niklas Wagner: The Interaction of Equity and Bond Premia***

This paper investigates intertemporal variations and joint dynamics in equity and bond risk premia. Motivated by Merton's intertemporal asset pricing model, we use long-term government bonds to construct the hedging component in the conditional model. We find that the conditional covariance of stock market returns and long-term government bond returns plays a significant role in explaining the time variation in the risk premia of both, equities and bonds. To identify the factors that drive the stock-bond covariance, we apply a vector autoregressive model where endogenous regime shifts are triggered by stock market uncertainty, stock market illiquidity and the inflation rate. Our results show that especially inflation exhibits power in predicting aggregate stock returns over a short-term horizon and contributes to explaining the stock and bond co-movement. However, the predictability pattern varies across different states of the economy.

**PERRAS, Patrizia**

is research assistant at the Finance and Financial Control Research Group and Ph.D. candidate at the Department of Business Administration and Economics at the University of Passau, Germany. She earned a M.Sc. in Accounting, Finance and Taxation from the same institution in 2015. Her field of research is primarily related to dynamic asset pricing, capital markets and risk management.



**WAGNER, Niklas**

Passau University

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**SIGAUX, Jean-David*****Jean-David Sigaux: Trading Ahead of Treasury Auctions***

I develop and test a model explaining the gradual price decrease observed in the days leading to large anticipated asset sales such as Treasury auctions. In the model, risk-averse investors anticipate an uncertain increase in the net supply of a risky asset. I show that investors face a trade-off between hedging the supply uncertainty with a long position, and speculating on the price change. Due to hedging, the equilibrium price is above the expected price. As the date of the supply shock approaches, supply uncertainty decreases, short speculative positions increase and the price decreases. In line with the predictions, I find that the yield of Italian Treasuries increases by 1.2 bps after the release of auction information.

**SIGAUX, Jean-David**

is with the European Central Bank (Financial Research Division). His research focuses on asset pricing, fixed income, repo markets and market microstructure. In 2017, he defended his Ph.D. thesis "Sovereign Bond Markets" at HEC Paris (Advisor: Prof. Thierry Foucault). In 2016, he earned the CFA charter. He also holds a master degree from HEC Paris and from ESADE Barcelona.



**SIMON, Zorka*****Zsuzsa R. Huszár and Zorka Simon: The Liquidity and Welfare Implications of the Securities Lending Market for European Treasuries***

In low interest environments, pension and insurance funds struggle to generate returns on their treasury holdings. We propose that the expected future income from securities lending gives rise to a new form of convenience yield for high quality treasuries, such as German government bonds. The expected lending income not only influences secondary market yields but also auction outcomes by serving as a liquidity signal. Moreover, as banks engage in balance sheet window-dressing around reporting dates and withdraw from funding markets, the role of nonbank lenders becomes increasingly important to provide funding liquidity, which allows them to earn higher fees.

**SIMON, Zorka**

is an Assistant Professor at the Research Center SAFE of Goethe University Frankfurt. She earned her Ph.D. in Finance from Tilburg University, then held a position at the University of Mannheim. She is also a junior research fellow of Netspar. Her research areas include empirical asset pricing, sovereign debt pricing, as well as liquidity and credit risk. Her most recent research considers the effect of regulatory changes and monetary policy on long-maturity sovereign bonds and the interaction between market liquidity and repo and securities lending market utilization of sovereign bonds in the Eurozone.





## SOGO, Takeharu

### *Takeharu Sogo: Planned Opaqueness in Securitization*

Issuers of structured finance products can exploit the informational advantage over potential buyers via two ways. One way is to adopt lax screening standards, and simply pass off the risks to potential buyers. The other way is to make securities intentionally opaque and difficult to evaluate their risks and values through repackaging, and thereby amplifying informational advantage. When the screening standard is exogenously given, repackaging is welfare-reducing. However, we show not only that the issuer chooses to repackage, but also that repackaging mitigates the adverse selection and can be welfare-improving, because the incentive to enjoy additional informational advantage through repackaging improves screening standards.

## SOGO, Takeharu

is currently Associate Professor at Osaka University of Economics, Japan. He holds Ph.D. in economics from the University of Illinois at Urbana-Champaign. He has broad research interests, including auction theory, industrial organization, and finance.



**SØRENSEN, Peter Norman*****Peter Norman Sørensen: The Financial Transactions Tax in Markets with Adverse Selection***

I analyze theoretically how a financial transactions tax affects welfare in an imperfect market. Analysis of the benchmark Glosten-Milgrom model suggests two sets of results. First, the greater is the tax, the less liquid is the market, and the lower is total welfare. Second, realistic redistribution of the tax revenue lets uninformed, liquidity-motivated traders gain with the tax under a simple sufficient condition. This condition, that the tax reduces informed trading more than uninformed trading, can be easily verified in practice: the condition is that the half-spread respond less than one-for-one to tax changes.

**SØRENSEN, Peter Norman**

is professor of Finance at the University of Copenhagen, where he has worked since 1998. After receiving a Ph.D. from MIT, he was a post-doc at Nuffield College, Oxford. He works in the intersection of economic theory and finance, emphasising the communication and aggregation of private information. He has been awarded the Elite Researcher Prize in Denmark. He is a past coeditor of *Economica* and the *Scandinavian Journal of Economics*. He is currently a member of the FRIC Center for Financial Frictions and the CIBS Center for Information and Bubble Studies. He is a member of the council of the European Economic Association as well as the board of the newly established Danish Finance Institute.



**VADÁSZ, Tamás*****Kebin Ma, Tamás Vadász: Bank Signalling, Risk of Runs, and the Informational Impacts of Regulations***

Banks can take costly actions (such as higher capitalization, liquidity holding, and advanced risk management) to fend off runs. While such actions directly affect bank risks, they also carry informational content as signals of the banks' fundamentals. A separating equilibrium due to such signaling, however, involves two types of inefficiency: the high type chooses excessively costly signals, whereas the low type is vulnerable to runs. This provides a novel rationale for financial regulations: by restricting banks' actions, regulators can maintain a pooling equilibrium where the cross-subsidy among types promotes financial stability. We build a theoretical model to illustrate the point, and also obtain supporting evidence from the US capital and liquidity regulations.

**VADÁSZ, Tamás**

is a final year Finance Ph.D. candidate at Warwick Business School, his main research field is banking theory. His current works are related to financial stability and regulation in the banking sector, systemic risk using network analytics, and policy issues regarding market structure and competition in retail banking. Tamas has received his MSc in Finance from Corvinus University of Budapest, prior to returning to the academia he worked as a consultant in the EMEA banking sector.



**VARGA, György*****György Varga: Liquidity Premium and Buyback Auctions in Domestic Brazilian Government Bonds***

This article investigates the return differential between liquid and illiquid Brazilian Government bonds, to find out if there is a liquidity premium among this asset like the evidence for the United States. We also investigate the effect of the Brazilian Treasury buyback auctions on the liquidity premium and the market impact cost by the Treasury. The result does not show positive or negative significant premium even when the bonds object of the buyback were excluded.

**VARGA, György**

has a B.S. in Economics (UFRJ), an M.S. in Economy from EPGE/Fundação Getúlio Vargas and a Ph.D. in Economics from EPGE/Fundação Getúlio Vargas. Mr. Varga is currently a Partner at FCE Consultoria, where he conducts research and provides consulting and training in Applied Finances. His experience includes Brazilian and multinational banks and teaching at many Brazilian institutions. He has several articles published in scientific magazines. His interests include topics related to fixed income, derivatives, equity, and mutual funds.

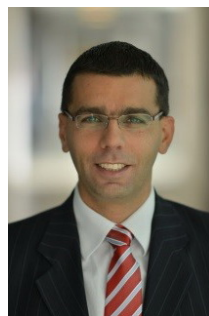


**WALTER, György*****György Walter: Are project loan prices properly risk adjusted?***

Basel regulation inspired commercial banks to apply appropriate risk adjusted price calculations for their exposures to create value for shareholders. Using the theoretical methodology elaborated in the literature practical applications usually calculate RAROC of corporate loans compared to the expected ROE. However project loans are special part of corporate loans, risk parameters are hard to measure, estimations of default probabilities rely on specific and complex cash flow simulations. We set the research questions whether project finance loans were properly priced based on their risk in the past, and what conclusions can be learnt under current market circumstances. First we define a model for appropriate risk adjusted pricing. Based on the model and its empirical input parameters, assuming different margins and leverages, we estimate the implied (anticipated) maximum probability of default (PD) of projects, where project loans could produce a value added to lenders. We compare these maximum PDs with reference points available from researches. We conclude that by the years of 2006-2007 several projects were very unlikely to produce any value added for shareholders and did not even reach the minimum margin. We also show that current market and regulatory circumstances significantly increased minimum margins and must shift lenders to a more conservative pricing and leverage policy.

**WALTER, György**

received his MSc in finance and later his Ph.D. in corporate finance from the Corvinus University of Budapest. Following his doctoral studies he spent 10 years in the banking sector in the management of several commercial banks in Hungary. He is currently an Associate Professor at the Corvinus University of Budapest, Faculty of Business Administration, at the Department of Finance. He is also the director of Corvinus MBA Center. He accomplished his habilitation in 2017. His main research fields are banking, corporate finance, financing decisions, and income contingency.



**WOSNITZA, Jan Henrik*****Jan Henrik Wosnitza, Elena Vakhtina: Alarm Index for Institutional Bank Runs***

Since the insolvency of Lehman Brothers in September 2008 brought the global financial system to the brink of collapse, there is an undiminished interest in properly understanding liquidity risks and the triggers of liquidity crises. Econophysicists recently developed an alarm index for institutional bank runs (IBRs) based on the log-periodic power law. The key innovation of this alarm index is that it measures the speculative interactions among professional creditors which can culminate in IBRs. The paper at hand extends this line of research, in particular, by applying new critical parameter ranges that were directly derived from credit default swap (CDS) spreads of defaulted banks by Wosnitza and Denz (2013). The better performance of the revised alarm index in comparison to the originally proposed alarm index underpins the hypothesis that the CDS market belongs to a different universality class than, for example, the stock market. Furthermore, the refined index outperforms a modification of the bank run probability index of Veronesi and Zingales (2010) which is treated as a benchmark in our analysis. This result further confirms the hypothesis that – under certain circumstances – financial markets are driven by investors whose investment decisions critically depend on the actions of other investors.

**WOSNITZA, Jan Henrik**

works as an on-site inspector in the field of banking supervision for Deutsche Bundesbank. In particular, he analyses bank internal risk measurement methods. Prior to his recent position, he was a member of the Joint Supervisory Team of a large European cross-border bank. He holds a diploma in physics and a doctorate degree in natural sciences from the University of Muenster. His current research interests include quantitative modeling of financial risks.



## POSTER PRESENTERS

**BERLINGER, Edina; DÖMÖTÖR, Barbara; POLLÁK, Zoltán**

***Edina Berlinger, Barbara Dömötör, Zoltán Pollák:  
Intermediary profit and coreness in the Hungarian interbank unsecured deposit market***

The unsecured HUF deposit market and the FX swap market are the most important and liquid interbank markets in Hungary. Besides managing their liquidity in HUF and foreign currency, institutions (i.e. nodes of the interbank network) do also significant intermediary activity. We estimated the profit from intermediation in different ways and found that these are closely related to the network position.

**BERLINGER, Edina**

Corvinus University of Budapest

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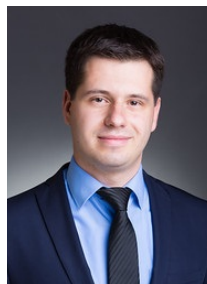
**DÖMÖTÖR, Barbara**

Corvinus University of Budapest

See pp. 18.

**ZOLTÁN, Pollák**

completed his MSc degree summa cum laude in Finance at Corvinus University of Budapest. He is currently doing a Ph.D. at the Department of Finance. He is lecturing financial courses such as Financial Calculations and Financial Risk Management. Beside Ph.D. he works as a partner consultant for the International Training Center for Bankers (ITCB), where he also teaches on banking and investment courses.



**BIHARY, Zsolt; VÍG, Attila András**

***Attila András Víg, Zsolt Bihary: Portfolio allocation under threat of a crash with limited liability***

We assume a financial market in continuous time with two assets: one is deterministic, and the other follows an exponential Lévy process. The underlying Lévy process is the sum of a drifting Brownian motion and a compound Poisson process, whose jumps follow a negative exponential distribution. The optimization is done from the point of view of an investor, who maximizes her expected utility of consumption on an infinite time horizon. We allow leveraged positions by assuming limited liability. This assumption broadens the strategy space compared to the usually discussed admissible strategies. Since limited liability is a free option for the consumer, the bank requires a spread above the risk-free rate, which covers its expected losses from the jumps. For certain parameters, the model shows two qualitatively different local optima: one with no leverage, which is admissible in the usual sense, and one with leverage, which is due to the limited liability assumption.

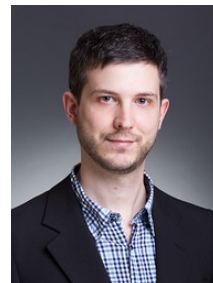
**BIHARY, Zsolt**

Corvinus University of Budapest

See pp. 16.

**VÍG, Attila András**

is a Ph.D. student at the Department of Finance of Corvinus University of Budapest. His main research area is pricing theory of financial derivatives, with emphasis on interest rate derivatives. He received his bachelor's degree in finance from Corvinus University of Budapest, and his master's degree in financial mathematics from Eötvös Loránd University.





## ČERNÍK, Ondřej; CERVENKA, Jan

### *Jan Cervenka, Ondřej Černík: Cooperative games and analysis of financial markets and their liquidity*

The contribution is an extension and completion of the previous articles. It covers multilateral applications of cooperative games in the analysis of financial markets. The cooperative game theory apparatus for financial markets, specifically for the analysis of supply and demand of investment funding and investment opportunities is original and innovative. Every act of exchange, any use of investment opportunity is an example of cooperative game. At the same time solving even the seemingly simple tasks is not trivial and clear. We meet also a need of repeated use of tools theory of cooperative games to the differently connected tasks. The aim of this contribution will be exploring the possibilities and prospects of cooperative games in the analysis of financial markets in the form of the procedure from simple to more complex cases, systematize various tasks encountered, and show the interconnectedness of some of them. As part of the defined objective, we identified several problems that arise in financial markets, like the conflict in individual and common rationality (we call it a “snag” in financial markets). Following this we formulate conclusions regarding greater interconnection between the theory of cooperative games and the analysis of financial markets.

#### ČERNÍK, Ondřej

is a Ph.D. candidate at the University of Economics Prague, and a member of the Game theory society. He is dealing with game theory and its booming research area in his free time. He has been working as a researcher in R&D for the automotive industry since 1997. He designs, develops and manufactures vehicles such as cars, buses and trucks and their engineering systems. He is designing now a satellite the SENTINEL-5P. The Sentinel Satellites are developed for the specific needs of the Copernicus program.



#### CERVENKA, Jan

is a Ph.D. candidate at University of Finance and Administration Prague, Czech Republic. He has rich experience from business and regional management of multinational corporation. His research interests are in the area of game theory, bargaining and its applications in business, economy and finance.



**ERCAN, Harun; SAYASENG, Saysi**

***Harun Ercan, Saysi Sayaseng: A Wavelet Coherence Analysis Contagion in Emerging Countries Stock Markets***

This study investigates the financial contagion because of its impact on global economy concerning portfolio risk management, the formulation of monetary and fiscal policy, and strategic asset allocation and pricing. To analyse contagion after Greek Crisis, the co-movements of six stock exchange markets have been studied for an 8-year term. Daily closing prices of stock market indices of six countries, Greece (ASE), UK (FTSE100), Germany (DAX), Hungary (BUX), Poland (WIG) and Turkey (BIST100) are used in this analysis between 06. March.2009 and 28. Feb.2017. This paper aims to show if there is a certain sign for a co-movement between markets during and after Greek Debt Crisis. For this study between countries' time series, bivariate wavelet technique called wavelet coherence is employed, and Matlab 2016a wavelet tool is used for the analysis. This paper eventually investigates the benefits or harm of integration in the financial markets by using Wavelet Method.

***Saysi Sayaseng, Harun Ercan: The Vulnerability Analysis of the Asian Pacific Banking Sector***

This study aims to illustrate the vulnerability analysis of the Asian banking sector. There have been increasing regulations aim to place controls rather than promoting the efficiency of the overall banking sector. The analysis adopted Ward's method and employed the Hierarchical Cluster Analysis to identify the clusters based on the bank's specific risk ratios as key variables. Secondly, we adopted Factor Analysis to determine the most relevant factors in the banking systems. The data for this analysis have extracted from the Bloomberg database between 2010 and 2015. We conclude that there was a clear grouping of the banking sector in Asia, it is an empirical study to observe the grouping of the Asian banks based on the return on equity, level of cash holding, the level of reserves percentage made for loan losses and the level of non-performing loans.

**ERCAN, Harun**

is a Ph.D. student at the Department of Finance at Corvinus University of Budapest. He completed his Master's Degree in International Economics, Banking and Finance at the Cardiff University in 2013. His working experiences prior to starting the Ph.D. studies include Ministry of Finance as an expert and Development Bank of Turkey as a financial risk expert. His researches are essentially focused on the Crises, Financial Markets and Banking Systems.



**SAYASENG, Saysi**

is a Ph.D. student at the Department of Finance at Corvinus University of Budapest. She completed her Master's Degree in Finance at the Monash University in 2010. Her working experiences include Commercial Banking experiences with the ANZ Bank, a financial controller of a Non-Profit Organisation for Rural Development Project in Laos and Financial Management Consultant at the World Bank Laos. Her researches are essentially focused on the Asian Financial Institutions and Banking Systems.



**KERESZTÚRI, Judit Lilla; TAMÁSNÉ VŐNEKI, Zsuzsanna*****Judit Lilla Keresztúri, Zsuzsanna Tamásné Vőneki:  
Forecasting Operation Losses – The Usability of Political Risk Ratings***

In the last few years we faced more organisational and social crisis events than ever. The financial institutions are eager to find a rating or indicator which can help in prediction of crisis events. Several organization publish political risk rating to predict political and operational risks and trends of the countries and to review the potential challenges the companies may face as they look to invest, grow and diversify on these markets. In this paper we focused on the crisis events of 131 countries in the last sixteen years and evaluated one forecasting rating method. For this purpose we analysed two databases: the SAS Global Data (public operational loss database) and the AON Political Risk Rating. The null hypothesis is that the political country rating at least at some extend predicts the big operational losses. We used Tobit panel regression method. The results show that the connection is negative in contrast with the expected positive one. The usage of the AON Political Risk Rating to forecast number or magnitude of operational risk events is questionable.

**KERESZTÚRI, Judit Lilla**

is currently an Assistant professor at Corvinus University of Budapest, Department of Finance. She received her Ph.D. in 2017 for her thesis network in health care. Her research interest focuses on health care economics. She has a solid statistical background and a good programming ability, both of them being crucial in this research.

**TAMÁSNÉ VŐNEKI, Zsuzsanna**

is currently the Head of Operational Risk Department of OTP Bank and meanwhile study at Doctoral School of Management and Business Administration at Corvinus University of Budapest. Her research area is operational risk management and crisis management. She has twenty years practical experience in these fields of financial and corporate sector as well.



## KONDOR, Gábor

### ***Gábor Kondor: The effects of modeling assumptions on the guarantees on Target Volatility Funds***

Target Volatility Funds are becoming a more and more popular asset class amongst Variable Annuity product designers. After the recent global crisis, these funds provided a decent way to assure the guarantees that investors find so attractive. However, pricing of these guarantees highly depends on the modeling assumptions we use. Although this is an exciting and demanding problem, not much attention has been shed on this topic in the academic literature. In my work, I extend the existing results to the Barndorff-Nielsen-Shephard model and to Lévy-processes with stochastic time.

## KONDOR, Gábor

is a Ph.D. student at the Department of Finance at the Corvinus University of Budapest. His research interests are primarily in volatility derivative pricing and stochastic models. He studied Financial Mathematics and Actuarial Sciences MSc with major in Quantitative Finance at the joint training of Eötvös Loránd University and the Corvinus University of Budapest. His Bachelor study was Applied Mathematics at Eötvös Loránd University as well.



**MAJOROS, Szabolcs; ZEMPLÉNI, András*****Szabolcs Majoros, András Zempléni: Applying Bivariate Stable Distributions to Daily Logreturns of Stocks***

Stable distributions are natural choices when modelling heavy-tailed observations - including the multivariate cases -, based on general limit theorems. However, the lack of the closed form of their densities makes likelihood-based inference difficult. The proposed estimation procedure is based on fitting the univariate projections and then by solving a quadratic programming problem. Having fitted a distribution to a sample of  $n$  observations, the next step is to check the goodness-of-fit. This is not obvious in the multivariate setting. We propose to use a statistics based on the Kendall function. The distribution of the statistics is not known, so we repeated the procedure for simulated samples from the fitted multivariate stable distribution and from these simulated values we estimated the empirical p-value. We apply the methods to daily logreturns of some stocks. We also present estimators for the contours of the high quantiles as well as for the time-dependence of the estimated parameters.

**MAJOROS, Szabolcs**

is a masters student at ELTE/Corvinus University of Budapest, studying quantitative finance and working as a financial controller at Generali Group. He received his Bachelor's degree in mathematics from ELTE and has been awarded at the institutional Scientific Student's Associations contest with second place and with a Morgan Stanley special prize. His main interests are financial risk management and financial controlling.

**ZEMPLÉNI, András**

is Associate Professor at ELTE. He has received his MSc in Mathematics in 1983 and CSc in 1989. He is currently head of the department of Probability Theory and Statistics. His research interests include statistics for extremes, multivariate models and industrial statistics. He is member of the council of the European Network for Industrial Statistics (EN-BIS).



## MATSUK, Zoriana

### ***Zoriana Matsuk: Christian Ethics and the Problems of Moral in Modern Financial Assets Trading***

The report will deal with conceptual aspects of financial assets trading; the need to take and fulfill obligations; the optimization of opportunistic behavior of the securities market participants; traders' trust to participants trading financial assets. Analysis of functioning and development of securities markets allowed us to conclude that the moral guidelines of its participants are lost. Today there is a rule in the securities market: if the law is not violated, it is not necessary to judge the morality of action. Informal rules under which commitments were made, where exists confidence between the partners, gradually die. As a result, opportunism and investment myopia gradually transform into the norms. But under such standards the capitalist market system cannot function well and may degrade in some other less efficient system. In the report I'll try to prove that Christian ethics and religion eventually become more distant from one another. Today Christian ethics has become a tool instilling religious principles while the teaching of moral values plays only secondary role. Church and religion trying to increase its power in the society more and more acquire the features of a bureaucratic institution. Under such conditions the erosion of Christian ethics and degradation of informal institutions remains an open problem.

## MATSUK, Zoriana

is an Associate Professor at the Department of Finance, Ivano-Frankivsk National Technical University of Oil and Gas (Ukraine). Prior to this position she worked financial analytic at Asset Management Company "IC-Holding". She graduated in Financial Market in 2007 from Kiev National Economic University after Vadym Hetman - Research University and was awarded a Ph.D. degree in 2011. Her research area is institutional and infrastructural provision of financial services development in the securities market. Besides doing research, she is active in teaching as well. She is teaching mainly Financial Market, Securities Market and Financial Services Market.



**SIERADZKI, Rafał*****Rafał Sieradzki, Michał Thlon: Negotiating position of companies in relations with commercial banks—survey results***

The number of commercial banks operating in Poland (35 entities) may suggest that this market is competitive. However, a closer look at the structure of the banking market indicates that few players control its large fraction and the market resembles an oligopoly. In theory, in such a market banks can choose one of the following strategies: price leadership – when there is one large player and which is not the case of the Polish market; price competition – which is not the best strategy with respect to the gains that banks can realize; cooperation with respect to setting prices – which is forbidden but at the same time the most profitable strategy banks can choose. And since banks are entities that aim to maximize their gains they will be inclined to “coordinate” their pricing strategies. What is more, due to their sizes, banks are in a better negotiating position than most of their clients, especially from the SME sector. Therefore banks may realize disproportionately high gains in relation to the risk they bear because they can easily raise prices of the products they offer. This conclusion is confirmed by results of our survey which showed that a significant majority of the surveyed companies considers its negotiating power in relations with banks as weak and they are not satisfied with results of the bargaining with their banks. In a wider perspective, this leads to an inefficiency in capital allocation and valuation in the real economy.

**SIERADZKI, Rafał**

is Assistant Professor at the Faculty of Finance and Law, Cracow University of Economics (Poland), where he delivers courses on macroeconomics and finance. He worked for several years in the National Bank of Poland where he performed analysis of the financial markets. His articles were published in various journals including *Argumenta Oeconomica* and *Bank & Credit*. His current scientific research covers the area of IPO underpricing, credit risk modelling, pension system design and links between financial market and the real economy.







## PRACTICAL INFORMATION

### Conference Venue

Corvinus University of Budapest, Main Building  
Registration, Plenary Sessions: Lecture room III (ground floor)  
Parallel Sessions: Lecture room III (ground floor), room 2001 (second floor, counting the ground floor as zero).  
8 Fővám tér  
Budapest  
1093  
Hungary

### Venue of Gala Dinner (by invitation or by registration)

Hungarian Academy of Sciences  
9 Széchenyi István tér  
Budapest  
1051  
Hungary

### Time Zone

Central European Time (CET) is used in Hungary, Budapest is 1 hour ahead of Greenwich Mean Time (GMT).

### Currency and Credit Cards

Hungarian Forint (HUF or Ft) is the currency of Hungary; the exchange rates are approximately EUR 1 = HUF 310 and USD 1 = HUF 270. Credit cards (Visa, Mastercard) are widely accepted (in all taxis and hotels, most shops) and there are ATMs on the campus and in the neighbourhood.

### Transportation

Budapest has a dense network of metros, trams and buses. Tickets should be purchased from a vending machine before boarding. Travelcards for 24 or 72 hours or 7 days are also available. <http://www.bkk.hu/en/tickets-and-passes/prices/>. Taxis are regulated, prices are fixed. Reliable Taxi companies include Főtaxi +36 1 2222222, City +36 1 2111111, Taxi2000: +36 1 2000000, Tele5 +36 1 5555555, 6x6 +36 1 6666666.

### Electricity

European type (Schuko) 2 pin sockets with 230V 50Hz are used.

### Emergency number: 112

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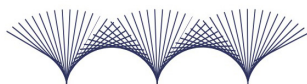


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