

Marie Curie ITN Final Conference

on

*Financial Risk Management & Risk Reporting*

University of Konstanz

11. & 12. April 2013



# Contents

	<b>Page</b>
<b>Welcome</b>	<b>5</b>
Marie Curie Project . . . . .	6
Transportation . . . . .	7
Campus Map . . . . .	9
Internet Access . . . . .	10
Conference Dinner . . . . .	10
Guided Tour . . . . .	10
<b>Scientific Committee</b>	<b>13</b>
Organizing Committee . . . . .	14
<b>Time Schedule</b>	<b>15</b>
<b>Sessions</b>	<b>17</b>
<b>Keynote Speakers</b>	<b>25</b>
<b>Panel Discussions</b>	<b>31</b>
<b>Abstracts</b>	<b>35</b>
<b>The City of Konstanz</b>	<b>65</b>
<b>Conference Participants</b>	<b>67</b>



# Welcome

Dear colleagues and friends,

Welcome to the Marie Curie ITN - Conference on “Financial Risk Management and Risk Reporting” at the University of Konstanz. We hope that you will enjoy your stay in this beautiful environment and that you will find the scientific part of the conference stimulating. We are sure that your participation will enrich the quality of the conference and the young researchers’ networking experience.

We are very grateful to the reviewers who have provided invaluable advice in selecting the best papers. We are also very grateful to our various industry partners who have helped to promote the network, offered secondments and other support to the Marie Curie fellows. Finally, this conference and the research network receive the generous support of the European Community’s Seventh Framework Programme FP7-PEOPLE-ITN-2008 under grant agreement number PITN-GA-2009-237984 (project name: RISK). The funding is gratefully acknowledged.

*Günter Franke*

University of Konstanz

*Ser-Huang Poon*

Manchester Business School

## Marie Curie Project

### - Initial Training Network on Risk Management and Risk Reporting

The Marie Curie Initial Training Network (RISK, [www.mariecurierisk.eu](http://www.mariecurierisk.eu)) was funded by the European Commission to explore the impact of the global financial crisis from a multi disciplinary perspective involving academic and industry experts. The network has delivered significant contributions to the private sector and regulatory bodies by providing new insights and innovative solutions to many of the current financial and economic issues. At the same time the network has fulfilled its aim of offering high level and rigorous research training and experience to young researchers.

A total of 34 fellows have been recruited to the network. Of the 34 fellows, 28 are Early Stage Researchers and six are Experienced Researchers (ERs). Ten fellowships are for 36 months duration and in these cases the fellows registered on University PhD programmes. Three 12-month fellows have registered for MPhil degrees, one of which has completed. A total of nine fellows are directly trained and employed by industry; two current fellows have offers to join in the Autumn. Three fellows completed their PhD during their projects.

All fellows have been able to access a variety of training including subject specific rigorous PhD level training at academic partner institutions and specialist training provided by experts outside of the network. In addition to training, fellows have also been able to attend and present their work at internal seminars, doctoral seminars, summer schools and international conferences organised by the European Accounting Association, the American Accounting Association, the European Financial Management Association, the International Banking and Finance Society, and the Risk Management Conference, the International Symposium on Money, Banking and Finance, European Network for Research in Organisational and Accounting Change and the Financial Risks International Forum.

Our fellows also have the benefit of being able to spend a period of secondment at another partner within the network. Fourteen secondments have been completed seven of which were based in industry. More industry secondments are scheduled to take place in the next few months.

Twenty two projects have already been completed. Our fellows have produced a range of working papers and a number of fellows have been successful at transforming working papers into refereed journal articles appearing in the European Journal of Operational Research, Indian Accounting Review and the Journal of Banking and Finance. Our fellows have gone on to secure positions in industry in the area of financial risk and others have secured academic lectureships.

Our research results have been implemented by industry partners to enhance their business practices. We have also attracted a foresight grant from the UK Treasury to report on the regulation of the internalisation of orders. The ITN contract ends in September 2013, but the network will continue to work with our industry partners to ensure that our research projects are addressing industry problems and concerns.

*Ser-Huang Poon*

Manchester Business School, RISK ITN Coordinator

## Transportation

Once you register at your hotel, you should receive a “**Gästepass**” (a visitor card). This card entitles you to use for free the red busses of the City of Konstanz. You may ask for more information at the reception of your hotel.

**We offer a special transportation** (a red bus from the City of Konstanz) **for conference participants** on Thursday morning, Thursday evening, and Friday morning. The bus schedules are as follows:

### **Thursday morning, April 11**

8.00 Stephansschule (Untere Laube) - see Map 1

8.05 Sternenplatz

8.08 Zähringerplatz

around 8.20 Arrival at the University

### **Thursday evening, April 11**

17.45 Departure from University of Konstanz (in front of the main entrance)

### **Friday morning, April 12**

8.00 Stephansschule (Untere Laube) - see Map 1

8.05 Sternenplatz

8.08 Zähringerplatz

around 8.20 Arrival at the University

## **Taxi**

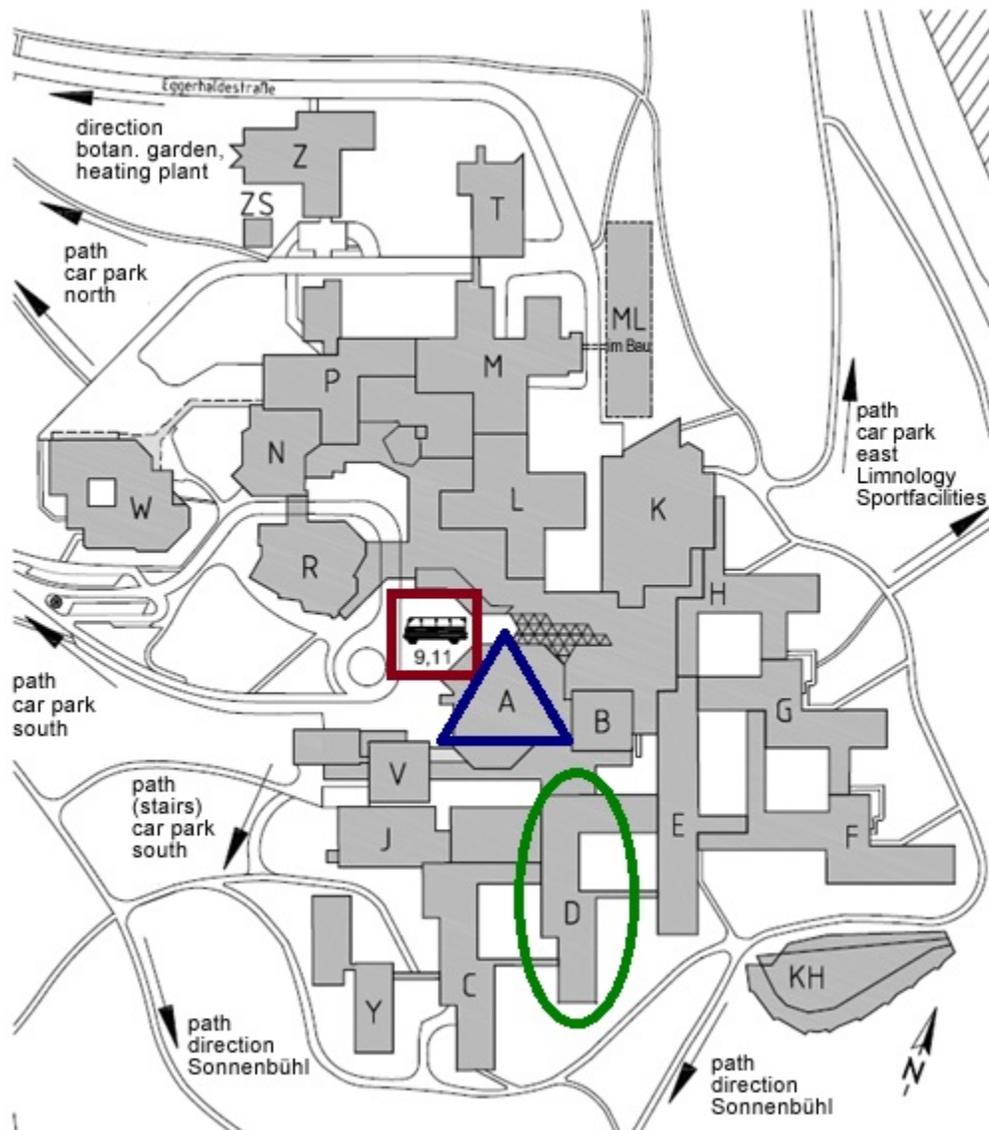
Taxi Dornheim: +49 7531 67 777 or +49 7531 57 777

Taxi Müller: +49 7531 65300

Taxi Seeteufel: +49 7531 44944



# Campus Map



## Legend

- : Bus stop and Main Entrance - University of Konstanz
- △ : Main conference room: A702 (Situated on the second floor of "A" Building.)
- : Rooms for parallel sessions: D432, D433, D434, D436

## Internet Access

There will be wireless internet connection provided for the conference participants in the D-building and A-building. You will need to have your own laptop, tablet or smartphone in order to connect to the internet.

To sign in for the internet access please check for available networks and connect to **WLAN network** called **MarieCurie** with the following **Password: MCTN2013**.

## Conference Dinner

The conference dinner will be held in "Konzil von Konstanz" (Council of Constance) very close to the port on Thursday, March 11 starting at 7:30 pm. See the "Map 2".

The dinner is not included in the conference fee. Those who registered for dinner will receive a coloured voucher at the registration desk together with the conference folder. Please bring this voucher to the "Konzil".

### History of the "Konzil"

The Konzil was built between 1388 and 1391 as a large storage place for the trade with Italy. From 1414 to 1418 the biggest Congress of the Middle Age, the Council of Constance, took place in Konstanz. Its main purpose was to end the Papal schism. While the ecclesiastic and the secular representatives mostly met in the monasteries in Konstanz, the new Pope was finally elected in November 1417 in the upper hall of this building, called "Konzil" since then.

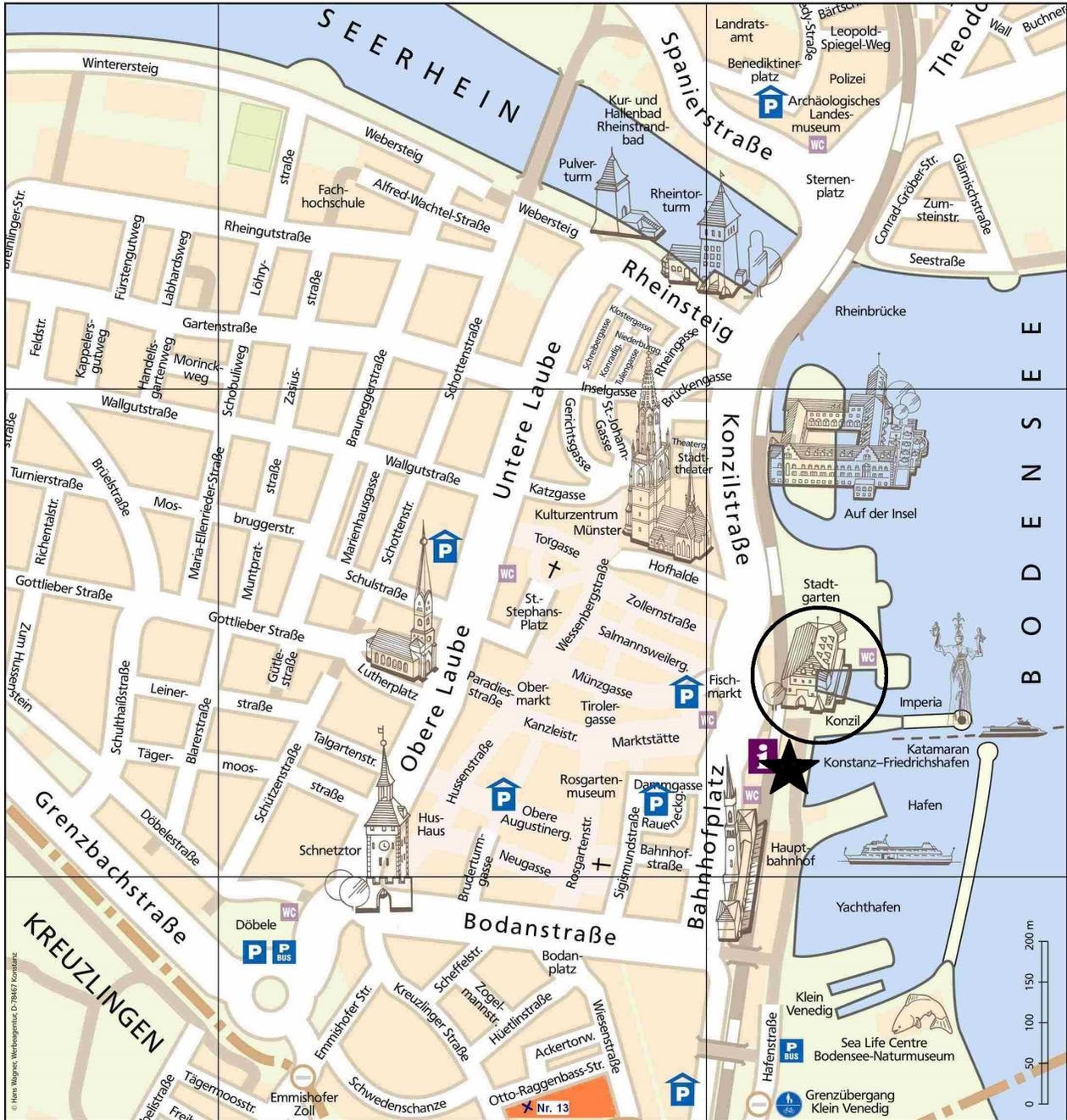
## Guided Tour

For those who will be in Konstanz also on Saturday (13 April 2013), we offer a guided tour through the old town of Konstanz.

The tour starts at 11:00 am at the Big Clock of the Konstanz port (see the ★ on the "Map 2") and it will last for approximately 1h and 45 minutes. The tour will be offered in English.

The guided tour is **free of charge**.

Map 2:



Legend

- : “Konzil von Konstanz” (Council of Constance) - Dinner Place
- ★ : Meeting point for the Guided Tour on Saturday



# Scientific Committee

## Coordinators:

<b>Günter Franke</b>	University of Konstanz
<b>Poon Ser-Huang</b>	University of Manchester
<b>Xavier Freixas</b>	Universitat Pompeu Fabra

## Members:

<b>Axel Adam-Mueller</b>	University of Trier
<b>Luc Bauwens</b>	University of Louvain
<b>Michael Brennan</b>	UCLA and University of Manchester
<b>Christian Brownlees</b>	Universitat Pompeu Fabra
<b>Ralf Brüggemann</b>	University of Konstanz
<b>Wolfgang Bühler</b>	University of Mannheim
<b>Hans Christensen</b>	University of Chicago
<b>Christian Conrad</b>	University of Heidelberg
<b>Casper de Vries</b>	Erasmus Universiteit Rotterdam
<b>Mathias Drehmann</b>	Bank for International Settlement
<b>Klaus Duellmann</b>	Deutsche Bundesbank
<b>Falko Fecht</b>	Frankfurt School of Finance and Business
<b>Lisa Goldberg</b>	University of Berkeley
<b>Nikolaus Hautsch</b>	Humboldt-Universität zu Berlin
<b>Helmut Herwartz</b>	Christian-Albrechts-Universität Kiel
<b>Jens Jackwerth</b>	University of Konstanz
<b>Mark Joshi</b>	University of Melbourne
<b>Jan Pieter Krahen</b>	Goethe University Frankfurt
<b>Asger Lunde</b>	CREATES, Aarhus University
<b>Ingmar Nolte</b>	Warwick Business School
<b>Ken Peasnell</b>	Lancaster University
<b>Winfried Pohlmeier</b>	University of Konstanz
<b>Peter Raupach</b>	Deutsche Bundesbank
<b>Michael Rockinger</b>	University of Lausanne

<b>Richard Stapleton</b>	University of Manchester
<b>Norman Strong</b>	University of Manchester
<b>Marti Subrahmanyam</b>	New York University
<b>Stephen Taylor</b>	Lancaster University
<b>Marliese Uhrig-Homburg</b>	Karlsruhe Institute of Technology
<b>David Veredas</b>	Free University of Brussels
<b>Niklas Wagner</b>	University of Augsburg
<b>Martin Walker</b>	University of Manchester
<b>Steven Young</b>	Lancaster University
<b>Stefano Zambon</b>	University of Ferrara

## Organizing Committee

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# Time Schedule

## Thursday, 11th April

8.30 - 9.00	Registration, Coffee and Welcome - <b>Günter Franke</b> and <b>Ser-Huang Poon</b>
9.00 - 9.45  <i>Room A702</i>	<i>Keynote Speaker:</i> <b>Claudio Borio</b> , Deputy Head of Monetary and Economic Department and Director of Research and Statistics at the Bank for International Settlements <i>Title:</i> The Financial Cycle: Three lessons for systemic risk management <i>Chair:</i> <b>Günter Franke</b> , University of Konstanz
09.50 - 11.20	<b>Parallel Sessions</b> - D432, D433, D434, D436
11.20 - 11.45	Coffee break (level A6)
11.45 - 12.30  <i>Room A702</i>	<i>Keynote Speaker:</i> <b>Victoria Saporta</b> , Head of Prudential Policy Division Bank of England <i>Title:</i> Capital Requirements: The quest for resilience <i>Chair:</i> <b>Klaus Düllmann</b> , Deutsche Bundesbank
12.30 - 13.30	Lunch (Cafeteria, level K7)
13.30 - 14.15  <i>Room A702</i>	<i>Keynote Speaker:</i> <b>Jean Charles Rochet</b> , University of Zürich, President of the Econometric Society <i>Title:</i> Why Do Governments Borrow so Much? (joint work with Michel Habib, University of Zürich) <i>Chair:</i> <b>Xavier Freixas</b> , University Pompeu Fabra
14.20 - 16.20	<b>Parallel Sessions</b> - D432, D433, D434, D436
16.20 - 16.45	Tea break (level A6)
16.45 - 17.30  <i>Room A702</i>	<i>Keynote Speaker:</i> <b>John C. Hull</b> , Professor of Finance, Maple Financial Chair in Derivatives and Risk Management, Joseph L. Rotman School of Management, University of Toronto <i>Title:</i> Funding Value Adjustments and Discount Rates in the Valuation of Derivatives <i>Chair:</i> <b>Thomas Schroeder</b> , European Investment Bank
19.30	<i>Dinner Place:</i> Council of Constance (upper level) <i>Dinner Speaker:</i> <b>Michael Brennan</b> , Professor Emeritus at UCLA Anderson School of Management

**Note:** There will be a Poster Session on level A6 on Thursday, the 11th April

## Friday, 12th April

8.30 - 9.15	<i>Keynote Speaker:</i> <b>Jon Danielsson</b> , Co-director of the Systemic Risk Centre, London School of Economics
<i>Room A702</i>	<i>Title:</i> Does Risk Forecasting Help Macroprudential Policy Makers? <i>Chair:</i> <b>Casper de Vries</b> , Erasmus Universiteit, Rotterdam
09.20 - 10.50	<b>Parallel Sessions</b> - D432, D433, D434, D436
10.50 - 11.15	Coffee break (level A6)
11.15 - 12.45	<b>Industry Panel 1:</b> <b>- <i>Financial Markets Practice and Governance</i></b> <i>Moderator:</i> <b>Thomas Poppensieker</b> (McKinsey) <i>Panel Members:</i> <b>Robert Hodgkinson</b> (ICAEW), <b>Thomas Schroeder</b> (European Investment Bank), <b>Marti Subrahmanyam</b> (New York University),
<i>Room A702</i>	<b>Industry Panel 2:</b> <b>- <i>Bank Regulation and Capital Adequacy</i></b> <i>Moderator:</i> <b>Günter Franke</b> (University of Konstanz) <i>Panel Members:</i> <b>Klaus Düllmann</b> (Deutsche Bundesbank), <b>Andreas Gottschling</b> (McKinsey), <b>Jan Pieter Krahen</b> (Director of the Centre of Financial Studies, Frankfurt, Member of the“Liikanen Group”)
12.45 - 13.45	Lunch (Cafeteria, level K7)
13.45 - 14.30	<i>Keynote Speaker:</i> <b>Peter Hansen</b> , Professor of Economics, European University Institute
<i>Room A702</i>	<i>Title:</i> A Quantum Leap in Volatility Modeling: The Use of Realised Measures of Volatility <i>Chair:</i> <b>Winfried Pohlmeier</b> , University of Konstanz
14.35 - 16.35	<b>Parallel Sessions</b> - D432, D433, D434, D436
16.35 - 17.00	Networking and coffee (level A6)

# Sessions

## Thursday 11th April, Morning Sessions 9.50 - 11.20

Parallel 1 - Credit Rating and Macro Risks

Room: D432

**Chair: Michael Brennan**

**Paper 1:** Systemic Risk and Credit Ratings- Harald Scheule, UTS Business School; **Daniel Roesch**, Leibniz Universität Hannover. **Discussant:** *Sebastian Keiler*, Deutsche Bundesbank.

**Paper 2:** Securitization and the Dark side of Diversification - **Maarten Oordt**, De Nederlandsche Bank. **Discussant:** *Guenter Franke*, University of Konstanz.

**Paper 3:** A Model of Mortgage Losses and its Applications for Macroprudential Instruments, **Christian Hott**, Zurich Insurance Group. **Discussant:** *Elisa Luciano*, Collegio Carlo Alberto.

Parallel 2 - Loss Estimation & Insolvency

Room: D433

**Chair: Casper de Vries**

**Paper 1:** Methods for LGD-Estimation - **Patrick Miller** (presenting author), **Eugen Töws**, **Thomas Hartmann-Wendels**, University of Cologne. **Discussant:** *Yvonne Kreis*, Gutenberg University Mainz.

**Paper 2:** Loss Distributions in a Factor Approach to Systemic Risk - **Yvonne Kreis** (presenting author) and **Dietmar Leisen**, Gutenberg University Mainz. **Discussant:** *Patrick Miller*, University of Cologne.

**Paper 3:** Multi-CoVaR and Shapley Value: A Systemic Risk Measure - **Zhili Cao**, Banque de France. **Discussant:** *Jon Danielsson*, London School of Economics.

Parallel 3 - Stability & Macro Prudential

Room: D434

**Chair: Victoria Saporta**

**Paper 1:** Active Risk Management and Banking Stability - **Consuelo Silva-Buston**, Tilburg University.

**Discussant:** *Jens Jackwerth*, University of Konstanz.

**Paper 2:** Catharsis: Tracing the Real Effects of Bank Insolvency and Resolution - **Josef Korte**, Goethe University Frankfurt. **Discussant:** *Jean Charles Rochet*, University of Zürich.

**Paper 3:** Dynamic Macro-Prudential Regulation - **Frederic Malherbe**, London Business School.

**Discussant:** *Kebin Ma*, Tilburg University.

Parallel 4 - Contagion & Spillover

Room: D436

**Chair: David Veredas**

**Paper 1:** What Factors Drive Systemic Risk during International Financial Crises? - **Gregor Weiss**, TU Dortmund University; **Denefa Bostandzic**, **Sascha Neumann** (presenting author), Ruhr-Universität Bochum. **Discussant:** *Clemens Bonner*, De Nederlandsche Bank.

**Paper 2:** Financial Fragility and Contagion in Interbank Networks - **Stefano Pegoraro**, Sant'Anna School, Pisa. **Discussant:** *Peter Raupach*, Deutsche Bundesbank.

**Paper 3:** The Dynamics of Spillover Effects during the European Sovereign Debt Turmoil - **Adrian Alter** (presenting author), University of Konstanz; **Andreas Beyer**, ECB. **Discussant:** *Benedikt Ruprecht*, University of Augsburg.

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## Thursday 11th April, Afternoon Sessions 14.20-16.20

Parallel 1 - Liquidity & Risk Taking

Room: D432

**Chair: Jean-Charles Rochet**

**Paper 1:** Hedge Fund Flows and Changes in Credit Spread - **Olga Kolokolova, Ming-Tsung Lin** (presenting author) and **Ser-Huang Poon**, Manchester Business School. **Discussant:** *Consuelo Silva Buston*, Tilburg University.

**Paper 2:** Convertible Bonds and Bank Risk-Taking - **Natalya Martynova** (presenting author) and **Enrico Perotti**, University of Amsterdam. **Discussant:** *Xavier Freixas*, Universitat Pompeu Fabra.

**Paper 3:** - Stress Testing German Banks Against a Global Credit Crunch - **Klaus Düllmann** and **Thomas Kick**, Deutsche Bundesbank. **Discussant:** *Daniel Roesch*, Leibniz Universität. Hannover.

**Paper 4:** Debt Maturities, Liquidity Risk and Externality - **Zhao Li** (presenting author), Universitat Pompeu Fabra; **Zhili Cao**, Banque de France. **Discussant:** *Maarten Oordt*, De Nederlandsche Bank.

Parallel 2 - Realised Measures and Correlation

Room: D433

**Chair: Winfried Pohlmeier**

**Paper 1:** Realized Copula Models - **Matthias Fengler**, University of St Gallen; **Ostap Okhrin** (presenting author), Humboldt University. **Discussant:** *Roxana Halbleib*, University of Konstanz.

**Paper 2:** Obtaining and Predicting the Bounds of Realized Correlation - **Lidan Grossmass**, University of Konstanz. **Discussant:** *Peter Hansen*, European University Institute.

**Paper 3:** Constructing Optimal Sparse Portfolios Using Regularization Methods - **Sandra Paterlini** (presenting author), EBS Business School; **Bjoern Fastrich, Peter Winker**, University of Giessen. **Discussant:** *Gerd Ronning*, Universität Tübingen.

**Paper 4:** CDS Spreads and Systemic Risk - A Spatial Econometric Approach - **Armin Eder**, Helvetia Group; **Sebastian Keiler** (presenting author), Deutsche Bundesbank. **Discussant:** *Patrick Augustin*, Stockholm School of Economics.

## Parallel 3 - Basel &amp; Bank Regulation

Room: D434

**Chair: Claudio Borio**

**Paper 1:** The Manipulation of Basel Risk-Weights, Evidence from 2007-10 - **Mike Mariathasan** (presenting author), University of Oxford; Ouarda Merrouche, European University Institute. **Discussant:** *Björn Richter*, Goethe University Frankfurt.

**Paper 2:** Banking Competition and Stability: The Role of Leverage - **Xavier Freixas**, Universitat Pompeu Fabra; **Kebin Ma** (presenting author), Tilburg University. **Discussant:** *Valentin Burg*, Humboldt Universität zu Berlin.

**Paper 3:** Market Timing, Maturity Mismatch, and Risk Management: Evidence from the Banking Industry - **Benedikt Ruprecht** (presenting author), University of Augsburg; **Oliver Entrop**, University of Passau; **Thomas Kick**, Deutsche Bundesbank; **Marco Wilkens**, University of Augsburg. **Discussant:** *Josef Korte*, Goethe University Frankfurt.

**Paper 4:** The Impact of the LCR on the Interbank Money Market - **Clemens Bonner** (presenting author), De Nederlandsche Bank; **Sylvester Eijffinger**, Tilburg University. **Discussant:** *Mike Mariathasan*, University of Oxford.

## Parallel 4 - Reporting &amp; Governance

Room: D436

**Chair: Robert Hodgkinson**

**Paper 1:** Are the Loan Loss and Fair Value Components of Bank Income Rationally Priced? - **Chu Yeong Lim** (presenting author), Singapore Management University; **Martin Walker** and **Edward Lee**, Manchester Business School. **Discussant:** *Antti Miihkinen*, Aalto University.

**Paper 2:** The Information Content of Mandatory Risk Disclosures? Evidence from the Finnish Stock Market 2006-2009 - **Antti Miihkinen**, Aalto University. **Discussant:** *Martin Walker*, Manchester Business School.

**Paper 3:** A Blind Spot of Banking Regulation: Level 3 Valuation and Regulatory Capital Ratios - **Markus Glaser**, Ludwig-Maximilians-University Munich; **Ulf Mohrmann**, University of Konstanz; **Jan Riepe** (presenting author), Ludwig-Maximilians-University. **Discussant:** *Chu Yeong Lim*, Singapore Management University.

**Paper 4:** The Role of Financial Constraints in the Market for Corporate Control - **Seyed Hossein Khatami** (presenting author), **Roberto Mura**, **Maria Marchica**, Manchester Business School. **Discussant:** *Stefano Zambon*, University of Ferrara.

## Friday 12th April, Morning Sessions 9.20-10.50

Parallel 1 - CEO & Managerial Behaviour

Room: D432

**Chair: Roberto Mura**

**Paper 1:** Basel III and CEO compensation in Banks: A new regulatory attempt after the crisis - **Andrej Gill** (presenting author), **Christian Eufinger**, Goethe University Frankfurt. **Discussant:** *Thomas Poppensieker*, McKinsey.

**Paper 2:** Managerial Overconfidence and Risk-Taking in the Debt Market - **Valentin Burg** (presenting author), **Tobias Scheinert**, **Daniel Streitz**, Humboldt Universität zu Berlin. **Discussant:** *Maria Marchica*, Manchester Business School.

**Paper 3:** VaR(ious) Leverage Cycles of Banks - **Björn Richter** (presenting author), **Christian Eufinger**, Goethe University Frankfurt. **Discussant:** *Natalya Martynova*, University of Amsterdam.

Parallel 2 - Derivatives Pricing

Room: D433

**Chair: Richard Stapleton**

**Paper 1:** Pricing and Risk Management with Stochastic Volatility Using Importance Sampling - **Przemyslaw Stilger** (presenting author), **Simon Acomb**, **Ser-Huang Poon**, Manchester Business School. **Discussant:** *Antoni Vaello-Sebastia*, University of Balearic Islands.

**Paper 2:** Capturing Skewness and Kurtosis by Fitting the QQ-plot: A simple approach with an application to option pricing - **Antoni Vaello-Sebastià** (presenting author), University of Balearic Islands; **Unai Ansejo**, Itzarri; **Aitor Bergara**, University of the Basque Country. **Discussant:** *Michael Rockinger*, University of Lausanne.

**Paper 3:** Least Square Monte Carlo Simulation vs. Stochastic - on - Stochastic for Variable Annuities and Exotic Options with BS/Heston-CIR a comparison of GPU and Intel Phi implementations - **Georgios Dimitrakopoulos**, Manchester Business School. **Discussant:** *Nikolaus Schweizer*, Saarland University.

## Parallel 3 - Contagion &amp; Spillover

Room: D434

**Chair: Wolfgang Buehler**

**Paper 1:** Ranking Systemically Important Financial Institutions - **Mardi Dungey**, University of Cambridge; **Matteo Luciani, David Veredas** (presenting author), Universite Libre de Bruxelles.

**Discussant:** *Wolfgang Buehler*, University of Mannheim.

**Paper 2:** Information Contagion and Systemic Risk - **Co-Pierre Georg** (presenting author), Deutsche Bundesbank; **Toni Ahnert**, London School of Economics. **Discussant:** *David Veredas*, Universite Libre de Bruxelles.

**Paper 3:** The Disturbing Interaction Between Countercyclical Capital Requirements and Systemic Risk - **Wolf Wagner, Bálint Horváth** (presenting author), Tilburg. **Discussant:** *Co-Pierre Georg*, Deutsche Bundesbank.

## Parallel 4 - Counterparty Risk

Room: D436

**Chair: John C. Hull**

**Paper 1:** On Pricing DVA losses - **Eberhard Mayerhofer**, Dublin City University. **Discussant:** *Heikki Seppala*, Manchester Business School.

**Paper 2:** Closed Form Approximation of Swap Exposures - **Heikki Seppala** (presenting author), **Ser-Huang Poon** and **Thomas Schröder** Manchester Business School. **Discussant:** *John Hull*, University of Toronto.

**Paper 3:** Counterparty Credit Risk in Repo Transactions: A Reduced Form Approach to Exposure at Default - **Rüdiger Weber**, University of Bonn. **Discussant:** *Thomas Schroeder*, European Investment Bank.

## Friday 12th April, Afternoon Sessions 14.35-16.35

Parallel 1 - Different Perspectives of Risk

Room: D432

**Chair: Marti Subrahmanyam**

**Paper 1:** Longevity Risk Transfer: Is it worth for annuity providers? - **Elisa Luciano** (presenting author), Collegio Carlo Alberto; **Luca Regis**, University of Torino. **Discussant:** *Richard Stapleton*, Manchester Business School.

**Paper 2:** Cross-hedging Minimum Return Guarantees: Basis and Liquidity Risk - **Judith Schneider**, University of Münster; **Nikolaus Schweizer** (presenting author), Saarland University; **Stefan Ankirchner**, University of Bonn. **Discussant:** *Axel Adam-Mueller*, University of Trier.

**Paper 3:** The Term Structure of CDS Spreads and Sovereign Credit Risk - **Patrick Augustin**, Stockholm School of Economics. **Discussant:** *Adrian Alter*, University of Konstanz.

**Paper 4:** Conditional Probabilities for Euro Area Sovereign Default Risk - **Bernd Schwaab**, European Central Bank; **Andre Lucas**, VU University Amsterdam; **Xin Zhang**, Riksbank Sweden. **Discussant:** *Fabian Krueger*, University of Konstanz.

Parallel 2 - Tail & Extreme Values

Room: D433

**Chair: Jon Danielsson**

**Paper 1:** Modelling Risk of Extreme Electricity Spot Prices - **Volodymyr Korniichuk**, Cologne Graduate School. **Discussant:** *Casper de Vries*, Erasmus Universiteit Rotterdam.

**Paper 2:** The Cross-Section of Tail Risks in Stock Returns: An Asset Pricing Model with Fat-Tails - **Kyle Moore** (presenting author), **Pengfei Sun**, **Chen Zhou**, **Casper de Vries**, Erasmus Universiteit Rotterdam. **Discussant:** *Volodymyr Korniichuk*, Cologne Graduate School.

**Paper 3:** Tail Risks and Systemic Risks for U.S. and Euro Zone Financial Institutions in the Wake of the Global Financial Crisis - **Stefan Straetmans** (presenting author), **Sajid Chaudhry**, Maastricht University. **Discussant:** *Charnchai Lewwatanachotinan*, Erasmus Universiteit Rotterdam.

**Paper 4:** Extreme Linkages in Financial Markets: Macro Shocks and Systemic Risk - **Charnchai Lewwatanachotinan** (presenting author), Erasmus Universiteit Rotterdam and **Casper G. de Vries**, Chapman University. **Discussant:** *Ralf Brueggemann*, University of Konstanz.

## Parallel 3 - Market Microstructure and Collateralization

Room: D434

**Chair: Michael Rockinger**

**Paper 1:** Decentralized Exchange - **Semyon Malamud** (presenting author), EPFL; **Marzena Rostek**, University of Wisconsin. **Discussant:** *Nordia Thomas*, University of Wisconsin - La Crosse.

**Paper 2:** High Frequency Trading and Mini Flash Crashes - **Anton Golub** (presenting author), Olsen Ltd; **Ser-Huang Poon**, Manchester Business School; **John Keane**, University of Manchester. **Discussant:** *Semyon Malamud*, EPFL.

**Paper 3:** Transaction Taxes in a Price Maker/Taker Market - **Nordia Thomas** (presenting author), U. of Wisconsin - La Crosse; **Dale Rosenthal**, U. of Illinois at Chicago. **Discussant:** *Michael Rockinger*, University of Lausanne.

**Paper 4:** Contagion Effects and Collateralized Credit Value Adjustments for Credit Defaults Swaps - **Lars Rösler** (presenting author) and **Rüdiger Frey**, WU Vienna. **Discussant:** *Jan Riepe*, Ludwig-Maximilians-University.

## Parallel 4 - Robust Econometrics &amp; Diagnostics

Room: D436

**Chair: Peter Hansen**

**Paper 1:** Robust Econometric Inference for Stock Return Predictability - **Alexandros Kostakis** (presenting author), Manchester Business School; **Tassos Magdalinos**, University of Southampton and **Michalis Stamatogiannis**, University of Bath. **Discussant:** *Michael Wolf*, University of Zürich.

**Paper 2:** Testing for Monotonicity in Expected Asset Returns - **Michael Wolf** (presenting author), University of Zurich; **Joseph Romano**, Stanford University. **Discussant:** *Winfried Pohlmeier*, University of Konstanz.

**Paper 3:** The drivers of downside equity tail risk - **Pengfei Sun** (presenting author), **Kyle Moore**, **Casper de Vries**, Erasmus Universiteit Rotterdam; **Chen Zhou**, De Nederlandsche Bank and Erasmus Universiteit Rotterdam. **Discussant:** *Stefan Straetmans*, Maastricht University.

**Paper 4:** Correlation Stress Tests Using the Random Matrix Theory: An Empirical Implementation to the Chinese Market - **Zhen Guo** (presenting author), Marie Curie ITN; **Anton Golub**, Olsen Ltd. **Discussant:** *Ostap Okhrin*, Humboldt University.

# Keynote Speakers

Keynote Speaker 1

Thursday 11<sup>th</sup> April, 9.00 - 9.45

Room: A702

**Title:** The Financial Cycle: Three lessons for systemic risk management



**Claudio Borio** is currently the Deputy Head of Monetary and Economic Department and Director of Research and Statistics, Bank for International Settlements. At the BIS since 1987, covering various responsibilities in the Monetary and Economic Department including as Head of the Secretariat for the Committee on the Global Financial System and the Gold and Foreign Exchange Committee (now known as Markets Committee). 1985-1987: worked as economist at the OECD in the country studies branch of the Economics and Statistics Department. Prior to that Lecturer and Research Fellow at Brasenose College, Oxford University. Holder of a DPhil and MPhil in Economics and a BA in Politics, Philosophy and Economics from the same university. Author of numerous publications in the fields of monetary policy, banking, finance and issues related to financial stability.

*Abstract:* The financial cycle is the key source of systemic risk. This lecture reviews what we have learnt about the financial cycle over the last decade and draws three lessons for systemic risk monitoring and management: the usefulness of macro-stress tests, the value added of network analysis and the design of countercyclical (macro) prudential instruments.

**Title:** Capital Requirements: The Quest for Resilience

**Victoria Saporta** is head of the prudential policy division at the Bank of England. She leads the analysis and research for the development and evolution of a new macroprudential policy framework in the U.K., and for developing Bank policy on the key prudential policy reform issues. She has held a number of policy and research positions in the financial stability and monetary analysis areas of the Bank, representing the Bank on international committees dealing with prudential issues. She is on the policy development group of the Basel Committee and co-chairs a working group responsible for reviewing the international regime on large exposures.

She has published a number of articles on financial stability issues in books, professional journals and Bank of England publications. She holds a Ph.D. in Economics and an M.Phil in Finance from the University of Cambridge, and a B.Sc. in Mathematical Economics and Econometrics from the London School of Economics.

*Abstract:* The financial crisis exposed material weaknesses in the regulatory framework for banks. The Basel III package of reforms tackled some of the most important fault-lines: it raised the level and the quality of capital; introduced internationally-consistent liquidity standards; and added a leverage constraint to the regulatory toolkit. But Basel III did not materially alter the overall framework for measuring the denominator of the risk-based capital ratio - risk-weighted assets (RWAs).

More recently, an active debate has arisen over the robustness of the risk-weighting regime. The introduction of Basel II materially increased the complexity of RWA calculations; investor confidence in the risk weighting regime appears to be ebbing; and regulatory investigations have uncovered large variations in RWAs that are unrelated to portfolio risk.

In her remarks, Victoria Saporta will look back at the rationale of the risk weighting approach adopted by Basel II - including the introduction of internal models for regulatory purposes. She will examine the extent to which the regime has met its objectives of improving risk sensitivity, reducing regulatory arbitrage and providing incentives for banks to enhance risk management. She will conclude with some thoughts on policy directions to mitigate the unintended consequences of Basel II and on how to design a more robust regime going forward.

Keynote Speaker 3

Thursday 11<sup>th</sup> April, 13.30 - 14.15

Room: A702

**Title:** Why Do Governments Borrow so Much?

**Jean-Charles Rochet** is a former student of Ecole Normale Supérieure (Paris) and holds a Ph.D. in Mathematical Economics from Paris Dauphine University. His dissertation won the Arconati-Visconti award. He has taught in Paris, London, (B.P. visiting professor, London School of Economics, 2001-02), and Toulouse (1988-2011). He is now SFI Professor of Banking in the Banking and Finance Institute at Zürich University. Rochet has visited many universities and central banks all over the world. He is a Fellow of the Econometric Society since 1995 and has been its President in 2012. He has also been council member of the European Economic Association, and associate editor of *Econometrica*. He has written more than 60 articles in international scientific journals and 7 books, including “Microeconomics of Banking” (with X. Freixas), “When Insurers Go Bust” (with G. Plantin), “Why are there so many banking Crises?”, and “Risk Management in Turbulent Times” (with G. Beneplanc). His research interests include financial stability, payments economics, industrial organization of financial markets, risk management, contract theory, and solvency regulations for financial institutions.

*Abstract:* It is often said that a government’s horizon rarely extends beyond the next election. The present paper explores that statement’s implications for government debt policy. We initially consider the case of a government that is all but certain to lose the next election. Interestingly, government debt displays a bubble-like property: the amount of debt the government can raise during its one term in office depends on the amount of debt the new government in turn will be able to raise later. We then allow for the possibility that the government may win the election. Not surprisingly, the probability of winning the election moderates the government incentive to issue debt. Debt as a fraction of GDP decreases in the probability of winning the election. As before and for what are essentially the same reasons, debt increases in the mean GDP growth rate and decreases in its volatility. We then calibrate our model on real data and find that it explains a lot of cross sectional variation of debt to GDP ratios across countries.

Keynote Speaker 4

Thursday 11<sup>th</sup> April, 16.45 - 17.30

Room: A702

**Title:** Funding Costs and Discount Rates in the Valuation of Derivatives

**John Hull** is the Maple Financial Professor of Derivatives and Risk Management at the Joseph L. Rotman School of Management, University of Toronto. He is an internationally recognized authority on derivatives and risk management and has over 50 publications in this area. His work has an applied focus. His areas of research have included the impact of stochastic volatility on the pricing and hedging of options, the valuation of interest rate and credit derivatives, the calculation of value at risk, and the evaluation of model risk. He has written three books: “Risk Management and Financial Institutions” (now in its 3rd edition), “Options, Futures, and Other Derivatives” (now in its 8th edition) and “Fundamentals of Futures and Options Markets” (now in its 8th edition). The books have been translated into many languages and are widely used in trading rooms throughout the world, as well as in the classroom.

*Abstract:* Prior to the 2008 credit crisis, most derivatives market participants used LIBOR as a proxy for the risk-free rate. Since the crisis there has been a tendency to use the OIS rate as the discount rate for collateralized transactions and LIBOR as the discount rate for non-collateralized transactions. Furthermore, in the case of non-collateralized transactions, many derivatives dealers make what is termed a funding value adjustment (FVA) to reflect the difference between the discount rate used and their average funding costs. This presentation will critically examine these practices.

Dinner Speaker

Thursday 11<sup>th</sup> April, 19.30

Council of Constance



**Michael J. Brennan** is the former Irwin and Goldyne Hearsh Professor of Banking and Finance at the University of California, Los Angeles and Professor of Finance at the London Business School. He is currently Emeritus Professor at UCLA and Distinguished Visiting Professor at the University of Manchester. He was educated at Oxford, Pittsburgh and MIT. Dr. Brennan’s research interests include asset pricing, corporate finance and market microstructure.

A former President of the American Finance Association, the Society for Financial Studies, and the Western Finance Association, Dr. Brennan has also served as Editor of the Journal of Finance and was the Founding Editor of the Review of Financial Studies. He has also served as a director of the National Bureau of Economic Research. He has received honorary degrees from B.I. (Oslo), Notre Dame University, University of Lancaster, London University, University of St Gallen, University of Stockholm, and the University of Zurich.

## Keynote Speaker 5

Friday 12<sup>th</sup> April, 8.30 - 9.15

Room: A702

**Title:** Does Risk Forecasting Help Macroprudential Policy Makers?

**Jon Danielsson** is a director of the Systemic Risk Centre at the London School of Economics. His research interests include financial stability, systemic risk, extreme market movements, market liquidity and financial crisis.

He has published his research extensively in both academic journals and the mainstream media, and has presented his work in a number of universities and institutions. His latest book is *Financial Risk Forecasting*, and his next book, titled *Global Financial Systems*, will be published by Pearson in July 2013.

*Abstract:* The presentation will focus on the vexing question of the role played by statistical, market risk based, models in macro prudential regulations. While such models undeniably failed before the crisis, they have come to play a central role in the new financial stability environment. Have the models been rehabilitated or are the policymakers making a mistake?

We will discuss on the objective and role of macro prudential policy, the model risk of market risk models, reliability of systemic risk measures, the usefulness of extreme value theory for financial stability purposes and the nature of financial risk.

## Keynote Speaker 6

Friday 12<sup>th</sup> April, 13.45 - 14.30

Room: A702

**Title:** A Quantum Leap in Volatility Modeling: The Use of Realised Measures of Volatility

**Peter Hansen** is Professor of Economics at the European University Institute in Florence, Italy. He holds a Master of Science from University of Copenhagen and a Ph.D. in Economics from University of California, San Diego. He previously held position at the Economics departments at Brown University and Stanford University, and he has taught at the Stanford Graduate School of Business. He has published research on cointegration, forecasting, and financial volatility, and his contributions to econometrics include the “Test for Superior Predictability”; the “Model Confidence Set”, the “Realized Kernel Estimator”; the “Winner’s Curse of Model Selection”, and the class of Realized GARCH models. He is associate editor for *Econometric Theory* and the *Journal of Applied Econometrics*; and a research fellow at CREATES (Aarhus University) and the Volatility Institute (NYU, Stern).

*Abstract:* Realized measures of volatility, which are computed from high-frequency data, can greatly enhance the performance of volatility models that are key for risk modeling. We present a novel Realized GARCH framework that utilizes realized measures of volatility. These models have several advantages over conventional GARCH models, as they yield better empirical fit and forecasting performance, and can explain important empirical features, such as the leverage effect. Realized GARCH models are also simple to generalize to high-dimensional systems, through the use of realized measures of covariances. Empirical applications with a vast number of assets are presented.



# Panel Discussions

Industry Panel 1

Friday 12<sup>th</sup> April, 11.15 - 12.00

Room: A702

**Topic:** Financial Markets Practice and Governance

**Moderator:** Thomas Poppensieker (McKinsey)



**Thomas Poppensieker** leads the McKinsey Risk Practice in Germany and directs the work on market and trading risk globally. Since joining McKinsey in 1996, he has advised many large financial institutions across Europe, primarily on issues related to risk management and wholesale banking. With extensive expertise in treasury and market risk, credit risk, enterprise risk management, and “bad bank” implementation, Dr. Thomas Poppensieker has helped banking and securities clients

deal with a range of challenges: devising liquidity-risk and funding-management strategies, revamping credit and underwriting processes, and establishing a central risk organization and governance. He currently sits on the executive board of the Frankfurt Institute of Risk Management and Regulation. As a member of the Group of Experts in Banking Issues between 2009 and 2011, he has also advised the European Commission on new banking regulation, including the new regulatory Basel III regimes.

Dr. Thomas Poppensieker spearheaded the design and execution of several of McKinsey’s proprietary surveys and reports, including an assessment of the impact of new regulations on the banking industry, a European asset-liability-management survey, and a global survey on credit portfolio management. He has an MBA from the University of Bayreuth in Germany and a PhD in Finance from the University of Cologne, where his research focused on value-based credit portfolio management

**Panel Discussion Members:** Robert Hodgkinson (ICAEW), Thomas Schroeder (European Investment Bank) and Marti Subrahmanyam (New York University).



**Robert Hodgkinson** qualified as a Chartered Accountant in 1983 after graduating in Philosophy, Politics and Economics from Oxford University and he joined ICAEW in October 2002 from public practice. He sits on the ICAEW board and has executive responsibility for ICAEW's technical strategy department which includes its seven specialist faculties. He also leads ICAEW's thought leadership and research programmes. Since 2007 Robert has been a member of the board of the International Federation of Accountants (IFAC) and from 2000 to 2004 represented the UK accountancy profession as a vice-president of the European Federation of Accountants (FEE) and as chairman of its Auditing Working Party. Robert was a member of the Accounting and Finance Panel for the UK Government's 2008 Research Assessment Exercise. He is also a regular speaker and panel chair at academic conferences including the annual meetings of the American Accounting Association and European Accounting Association.



**Thomas Schroeder.** His area of responsibility at European Investment Bank is long-term funding in Sterling and most other European and African currencies. In that context he has been working on counterparty credit risk issues in the context of liability hedging with derivatives. Thomas has been conducting research in a variety of fields and publishing in peer-reviewed academic journals in physics, economics and finance; most recently in *Journal of Risk Management in Financial Institutions* and *Journal of Portfolio Management*. He has also been teaching as an Adjunct Professor of Finance at John F. Welch College of Business, Sacred Heart University. Prior to joining EIB in 1997 he worked as a management consultant with McKinsey & Company, Frankfurt. Thomas studied at the universities of Cologne, Heidelberg and Keele and holds Ph.D. degrees in both physics and economics.



**Marti G. Subrahmanyam** is the Charles E. Merrill Professor of Finance and Economics in the Stern School of Business at New York University. He holds degrees from the Indian Institute of Technology, Madras, and the Indian Institute of Management, Ahmedabad, and a doctorate from the Massachusetts Institute of Technology. Professor Subrahmanyam has published numerous articles in leading academic journals and books in the areas of corporate finance, capital markets and international finance. He has been a visiting professor at leading academic institutions around the world. Professor Subrahmanyam currently serves on the editorial boards of many academic journals and was the founding editor of the *Review of Derivatives Research*. He has won many teaching awards including New York University's Distinguished Teaching Medal. He has served as a consultant to several institutions around the world. He also sits on the boards of several companies, in Asia, Europe and North America, and has served as an advisor to international and government organizations.

Industry Panel 2

Friday 12<sup>th</sup> April, 12.00 - 12.45

Room: A702

**Topic:** Bank Regulation and Capital Adequacy

**Moderator:** Günter Franke (University of Konstanz)



**Günter Franke** is a full professor of International Finance at the University of Konstanz. He was the head of the “Center of Finance and Econometrics” and also the head of the interdisciplinary research group “Price-, Liquidity- and Default Risks: Management and Distribution”, financed by the German Research Foundation. His research interests are banking, capital markets, risk management and international finance. He was president of the European Finance Association and of the German Finance Association and coordinated the finance activities of the European Institute for Advanced Studies in Management in Brussels for more than

10 years. He is a member of the Berlin-Brandenburg Academy of Science and holds an honorary degree from the University of Mannheim.

**Panel Discussion Members:** Klaus Düllmann (Deutsche Bundesbank), Andreas Gottschling (McKinsey & Co) and Jan Pieter Krahen (Director of the Centre of Financial Studies, Frankfurt, Member of the Liikanen Group).



**Klaus Düllmann** is Head of Supervisory Coordination and Risk Analysis Division and Deputy Head of the Research Centre in the central office of the Deutsche Bundesbank in Frankfurt. He represents the Deutsche Bundesbank in international working groups on banking regulation and chairs the “Capital Monitoring Group” of the Basel Committee on Banking Supervision.

He is responsible for financial risk modelling, research on the impact of regulatory minimum capital standards and stress tests of the banking sector. He is associate editor of the Journal of Risk Model Validation. He holds a PhD from the faculty of business administration at the University of Mannheim. He graduated in mathematics from the Technical University of Darmstadt and in business administration from the University in Hagen.



**Andreas Gottschling** joined McKinsey & Company in September 2012 as a Senior Advisor in the Zurich Office. He is a member of McKinsey's Risk and Corporate Finance practice and primarily serves Financial Institutions on risk, analytics and regulatory matters. His professional experiences include: Managing Director and member of the Risk Executive Committee at Deutsche Bank responsible for Risk Analytics & Instruments and Operational Risk. Member of the steering committees on: Capital, Regulation, Operational Risk, SOx, Reputational Risk. Responsible for Basel II, II.5 and Basel III approvals. Managing Director at LGT

Group responsible for asset allocation. Partner at a Hedge Fund responsible for risk management. Faculty at Washington State University. Head of Quant at Deutsche Bank Research. Andreas studied Mathematics and Economics at the universities of Freiburg, Harvard and graduated with a PhD from University of California at San Diego.



**Jan Pieter Krahn** is a Professor of Finance at Goethe University's House of Finance, located in Frankfurt, Germany. He is also a Director of the Center for Financial Studies (CFS), a CEPR Fellow, and the 2011 President of the European Finance Association. His current research interests focus on the implications of the 2007 - 2010 financial turmoil for banking, systemic risk, and financial market regulation. His publications appeared, among others, in the Review of Economic Studies, the Journal of Financial Intermediation, the Journal of Banking and Finance, and Experimental Economics. Krahn has been involved in policy advisory on issues of financial market regulation, most recently as a member of the Issing

Commission, advising the German government on the G20 meetings 2008 - 2011. He is also a member of the Academic Advisory Board, German Federal Ministry of Finance, a member of the Group of Economic Advisors (GEA) at the European Securities and Markets Agency (ESMA), Paris, and a member of the High Level Expert Group on Structural Reform of the EU Banking Sector (Liikanen Commission, Brussels).

# Abstracts

## Thursday 11th April, Morning Sessions 9.50-11.20

Parallel 1 - Credit Rating and Macro Risks

Room: D432

**Paper 1:** Systemic Risk and Credit Ratings - Harald Scheule, UTS Business School; **Daniel Roesch**, Leibniz Universität Hannover.

Abstract: Investors were surprised during the Global Financial Crisis that mortgage securitizations were exposed to larger default rates than corporate bonds given the same credit rating. This paper presents a parsimonious model attributing deviations of default rates from expected default probabilities implied by credit ratings to systematic risk. Conditions, under which the systematic risk of securitized tranches of pools is higher than that of single name debt instruments with the same rating are identified. An extensive empirical study analyzes a unique and comprehensive data set, which includes ratings, yield spreads, defaults and control variables for securitizations and corporate bonds. The analysis finds evidence that financial instruments may be exposed to different levels of systematic risk given the same rating. Therefore, credit ratings do not provide comprehensive information on the degree of systematic risk. An analysis of yield spreads at origination finds empirical evidence that fixed income investors (contrary to credit rating agencies) include systematic risk in the pricing of financial instruments.

**Paper 2:** Securitization and the Dark side of Diversification - **Maarten R.C. van Oordt**, De Nederlandsche Bank.

Abstract: Diversification by banks affects the systemic risk of the sector. Importantly, Wagner (2010) shows that linear diversification increases systemic risk. We consider the case of securitization, whereby loan portfolios are sliced into tranches with different seniority levels. We show that tranching offers nonlinear diversification strategies, which can reduce the failure risk of individual institutions beyond the minimum level attainable by linear diversification, without increasing systemic risk.

**Paper 3:** A Model of Mortgage Losses and its Applications for Macroprudential Instruments, **Christian Hott**, Zurich Insurance Group.

Abstract: We develop a theoretical model of mortgage loss rates that evaluates their main underlying risk factors. Following the model, loss rates are positively influenced by the house-price level, the loan-to-value of mortgages, interest rates, and the unemployment rate. They are negatively influenced by the growth of house prices and the income level. The calibration of the model for the US and Switzerland demonstrates that it is able to describe the overall development of actual mortgage loss rates. In addition, we show potential applications of the model for different macroprudential instruments: stress tests, countercyclical buffer, and setting risk weights for mortgages with different loan-to-value and loan-to-income ratios.

**Paper 1:** Loss Given Default for Leasing: Parametric and Nonparametric Estimation - **Patrick Miller** (presenting author), **Eugen Töws**, **Thomas Hartmann-Wendels**, University of Cologne.

Abstract: This study uses a dataset containing 14,322 defaulted leasing contracts provided by three German leasing companies to analyze different approaches to estimating the loss given default (LGD). We find that finite mixture models perform exceptionally well in-sample, while model trees perform better out-of-sample because the finite mixture model produces a precise density fit but neglects the actual error, measured as the mean absolute error (MAE) and root mean squared Error (RMSE).

**Paper 2:** Loss Distributions in a Factor Approach to Systemic Risk - **Yvonne Kreis** (presenting author) and Dietmar Leisen, Gutenberg University Mainz.

Abstract: Regarding the influence of systemic risk on the stability of the banking system, we reduce the interconnectedness and contagion between financial institutions to a single systemic risk factor. This corresponds to an application of the Vasicek loan model to determine default probability and loss distribution for the whole banking system. By transferring this classic micro-structure finance model to a macroeconomic setting, we present a closed-form solution for the maximum percentage loss in the case of individual bankruptcies.

**Paper 3:** Multi-CoVaR and Shapley Value: A Systemic Risk Measure - **Zhili Cao**, Banque de France.

Abstract: In this paper I propose a systemic risk measure to efficiently capture the systemic importance of each financial institution within a given system. The term systemic risk refers to the contagion risk to which each bank contributes to the financial system. The whole procedure is split into two parts: 1) calculate the total systemic risk, 2) use an allocation rule to attribute the total risk to each financial institution. For the first step, I define a measure "Multi-CoVaR" to estimate the total systemic risk, which also measures the institution's marginal contribution to the systemic risk given a set of institutions has been in distress. For the second step, I apply the Shapley value methodology to allocate the total systemic risk. The additivity property of Shapley value ensures that the macroprudential tool can be efficiently implemented at individual levels.

**Paper 1:** Active Risk Management and Banking Stability - **Consuelo Silva-Buston**, Tilburg University.

Abstract: This paper analyzes the net impact of two opposing effects of active risk management at banks on their stability: higher risk-taking incentives and better isolation of credit supply from varying economic conditions. We present a model where banks actively manage their portfolio risk by buying and selling credit protection. We show that anticipation of future risk management opportunities allows banks to operate with riskier balance sheets. However, since they are better insulated from shocks than banks without active risk management, they are less prone to failure. Empirical evidence from US bank holding companies broadly supports the theoretical predictions. In particular, we find that active risk management banks were less likely to fail during the crisis of 2007-2009, even though their balance sheets displayed higher risk-taking. These results provide an important message for bank regulation, which has mainly focused on balance sheet risks when assessing financial stability.

**Paper 2:** Catharsis - The Real Effects of Bank Insolvency and Resolution - **Josef Korte**, Goethe University Frankfurt.

Abstract: In general, banks play a growth-enhancing role for the real economy. However, distorted incentives of banks, depositors, and regulators around bank insolvency may corrupt banks' credit allocation and monitoring decisions, leading to suboptimal real economic outcomes. A rules-based prompt resolution regime for insolvent banks may reestablish the incentive system and provide for economically superior credit allocation and monitoring. We test this hypothesis of a 'catharsis effect' of regulatory insolvency using a large firm-level dataset and proposing a new indicator to measure the catharsis effect. Employing an instrumental variable setup and an interaction approach, we try to overcome potential endogeneity and causality concerns usually inhering research on real economic implications of bank regulation. We find a comparably stronger implementation of a hypothetical positive capital closure rule to have a positive and statistically as well as economically significant effect on individual firm growth - particularly for firms that are structurally more dependent on bank financing. Our findings are robust to various specifications. Investigating the transmission channels of the catharsis effect, we find that it essentially works through benefiting better quality firms and reallocating credit towards firms that need it most. Additional analyses suggest that the catharsis effect works best in open banking systems that provide high access to international finance and hence mitigate potentially negative credit supply effects of insolvent bank liquidation. Taken together, our findings advocate for stronger attention to incentive-compatible bank resolution regimes.

**Paper 3:** Dynamic Macro-Prudential Regulation - **Frederic Malherbe**, London Business School.

Abstract: I propose a new general equilibrium framework, in which government guarantees induce financial institutions to take on too much risk through excessive leverage. In response, the regulator sets capital requirements to trade-off growth with financial stability (tax-payer exposure to a banking sector collapse). This trade-off depends on the state of the economy and optimal capital requirements are therefore time varying. I solve the model numerically to characterize the optimal requirements and show that they should crucially react to aggregate bank capital and credit expansion. For most calibrations, optimal requirements are higher in good times, which resonates with the notion of "counter-cyclical capital buffers". I also show that, in this set-up, the size of an individual financial institution is irrelevant. No extra-buffer is thus required for large institutions. Finally, I compare the optimal policy to the (best possible) constant capital requirement and show that the latter not only generates excess volatility but also episodes of extremely excessive credit expansion. In such cases, there is no longer a trade-off: an increase in capital requirement would both be good for growth and improve financial stability.

**Paper 1:** What Factors Drive Systemic Risk during International Financial Crises? - **Gregor Weiss**, TU Dortmund University; **Denefa Bostandzic**, **Sascha Neumann** (presenting author), Ruhr-Universität Bochum.

Abstract: We analyze the determinants of the contribution of international banks to both global and local systemic risk during prominent financial crises. We find no empirical evidence supporting the hypotheses that bank size, leverage, non-interest income or the quality of the bank's credit portfolio are persistent determinants of systemic risk across financial crises. In contrast, our results show that global systemic risk in particular is predominantly driven by characteristics of the regulatory regime. We also confirm, for the subprime crisis, the hypothesis that the banks' contribution to moderately bad tail events in the past predicts the financial sector's crash risk.

**Paper 2:** Financial Fragility and Contagion in Interbank Networks - **Stefano Pegoraro**, Sant'Anna School, Pisa.

Abstract: This paper develops a computational model to test the resilience of different network topologies to an exogenous shock. We test three different network configurations for the financial system: random graphs, small world networks and scale free networks. Four scenarios are taken into consideration: a benchmark case of no liquidity risk and random attack, the case of liquidity risk and two cases of targeted attack (one in a probabilistic sense, the other by setting into default the most connected institution). We find that contagion windows may vary depending both on the topology and the case we consider. In particular, we show how random graphs provide insurance against targeted attacks, but are particularly fragile to random attacks, while the scale free configuration is extremely fragile to targeted shocks, despite being resilient to random ones. For small world graphs we find instead that the only factor explaining contagion is the average degree, since no substantial difference is found among the four scenarios.

**Paper 3:** The Dynamics of Spillover Effects during the European Sovereign Debt Turmoil - **Adrian Alter** (presenting author), University of Konstanz; **Andreas Beyer**, ECB.

Abstract: In this paper we develop empirical measures for the strength of spillover effects. Modifying and extending the framework by Diebold and Yilmaz (2011), we quantify spillovers between sovereign credit markets and banks in the euro area. Spillovers are estimated recursively from a vector autoregressive model of daily CDS spread changes with exogenous common factors. We account for interdependencies between sovereign and bank CDS spreads and we derive generalised impulse response functions. Specifically, we assess the systemic effect of an unexpected shock to the creditworthiness of a particular sovereign or country-specific bank index to other sovereign or bank CDSs focusing on the period between October 2009 and July 2012. Channels of transmission from or to sovereigns and banks are aggregated to produce a Contagion index (CI). This index is disentangled into four components, the average potential spillover: i) amongst sovereigns, ii) amongst banks, iii) from sovereigns to banks, and iv) vice-versa. We highlight the impact of policy related events along the different components of contagion index. The systemic contribution of each sovereign or banking group is quantified as the net spillover weight in the total net spillover measure. Finally, the captured time-varying interdependence between banks and sovereigns emphasises the evolution of their strong nexus.

**Thursday 11th April, Afternoon Sessions 14.20-16.20**

Parallel 1 - Liquidity &amp; Risk Taking

Room: D432

**Paper 1:** Hedge Fund Flows and Changes in Credit Spread - **Olga Kolokolova, Ming-Tsung Lin** (presenting author) and **Ser-Huang Poon**, Manchester Business School.

Abstract: By analyzing capital flows in and out of hedge fund industry over 1994 to 2010, we find significant evidence that hedge fund's trading activities severely affect credit spread, defined as the difference between the yields on Moody's Baa bonds and T-Bills. Outflows from large funds, fund recently suffered negative performance, funds with short lockup period depress prices of high grade bonds and caused credit spread to decrease. The most important result is associated with debt-oriented hedge funds. In times of outflow, the debt funds depress the risky bond price and increase the spread. The highest explanatory power for changes in credit spread is 42% compared to a baseline level regression of 15%. We do not find evidence that hedge fund flows have any impact on equity, currency and commodity markets, or the volatility index, after the 2008 crisis and other related factors are controlled for.

**Paper 2:** Convertible Bonds and Bank Risk-Taking - **Natalya Martynova** (presenting author), **Enrico Perotti**, University of Amsterdam.

Abstract: We study the effect of going-concern contingent capital on bank risk choice. The possibility of debt for equity conversion forces deleveraging in highly levered states, when risk incentives are worse. The additional equity reduces endogenous risk shifting by diluting returns in high states. An optimally designed trigger and convertible debt amount trades off this risk reduction against its debt dilution effect. Interestingly, contingent capital may be less risky in equilibrium than traditional debt, as its lower priority is compensated by reduced endogenous risk. Its effectiveness in risk reduction depends critically on the informativeness of the trigger. Adopting a noisy market trigger produces excess conversion (type II error), while an accounting trigger converts too infrequently (type I error) because of regulatory forbearance.

**Paper 3:** - Stress Testing German Banks Against a Global Credit Crunch - **Klaus Düllmann** (presenting author) and **Thomas Kick**, Deutsche Bundesbank.

Abstract: This paper investigates the impact of a global credit crunch scenario on the corporate credit portfolios of large German banks by a two-stage approach: A macroeconometric model to forecast the shock-impact on three particularly export-oriented industry sectors in Germany, and a CreditMetrics-type portfolio model with sector-dependent unobservable risk factors to determine the effect on banks' credit portfolios. In our assessment of capital ratios we confirm that both the increase of the capital charge for the unexpected loss and the increase in banks' expected losses need to be considered. We also find that the availability of granular information on the level of borrower-specific probabilities of default has a significant impact on the stress test results.

**Paper 4:** Debt Maturities, Liquidity Risk and Externality - **Zhao Li** (presenting author), Universitat Pompeu Fabra; **Zhili Cao**, Banque de France.

Abstract: We consider a model where banks choose their debt maturity structure by weighting short term against long term debt. When using short term debt, banks' refinancing need is triggered by an exogenous macro productivity shock. At the competitive equilibrium: 1: the probability of liquidity crisis, 2. the expected excess refinancing cost, 3: bank's profit, decrease with the probability of experiencing the macro shock. While using long term debt, banks do not need to refinance, yet, they may misbehave due to a lack of interim discipline. The equilibrium borrowing contract should rule out banks' misbehavior, which limits banks' lending capacity. Banks choose short term maturity when they expect a macro shock to occur with a small probability. From a social perspective, the externalities caused by over borrowing in short term debt exist only in the case that the probability of macro shock is large, otherwise, the social optimum coincides with the market equilibrium. Our result points out externality correction tool may only be needed when the probability of macro shock is large. This suggests regulators themselves should be "prudential" on implementing liquidity regulations.

**Paper 1:** Realized Copula Models - **Matthias Fengler**, University of St Gallen; **Ostap Okhrin** (presenting author), Humboldt University.

Abstract: We introduce realized copula models (RCopM). Based on assumptions of the marginal distributions of daily stock returns and a parametric copula family, the RCopM is a time-varying conditional copula model where the copula structure is inferred from realized covariance estimated from within-day high-frequency data. Copula shape parameters are obtained in a method-of-moments type of fashion through Hoeffding's lemma. Applying this procedure day by day gives rise to a time series of copula parameters that is approximated by an autoregressive time series model. This allows us to capture time-varying dependence. Studying a portfolio risk management application, we find that time-varying realized copula improves on standard benchmark models in the literature.

**Paper 2:** Obtaining and Predicting the Bounds of Realized Correlation - **Lidan Grossmass**, University of Konstanz.

Abstract: The problem of estimation of realized correlation, which is analogous to realized covariance, is compounded by effects of market microstructure noise and asynchronous trading. Various methods have been proposed to decrease the biases but require assumptions to be made that may be unrealistic. This paper argues that the inherent data problems make precise point identification of realized correlation difficult but identification bounds in the spirit of Manski (1995) can be derived. These identification bounds allow for a more robust approach to inference especially when the realized correlation is used for estimating other risk measures. We forecast the identification bounds using the HAR model of Corsi (2003) using data during the year of onset of the credit crisis and find that the bounds provide good predictive coverage of the realized correlation for both 1- and 10-step forecasts even in volatile periods.

**Paper 3:** Constructing Optimal Sparse Portfolios Using Regularization Methods - **Sandra Paterlini** (presenting author), EBS Business School; **Bjoern Fastrich, Peter Winker**, University of Giessen.

Abstract: The ideas of Markowitz indisputably constitute a milestone in portfolio theory, even though the resulting mean-variance portfolios typically exhibit an unsatisfying out-of-sample performance, especially when the number of securities is large and that of observations is not. The bad performance is caused by estimation errors in the covariance matrix and in the expected return vector that can deposit unhindered in the portfolio weights. Recent studies show that imposing a penalty in form of a  $\ell_1$ -norm of the asset weights regularizes the problem, thereby improving the out-of-sample performance of the optimized portfolios. Simultaneously,  $\ell_1$ -regularization selects a subset of assets to invest in from a pool of candidates that is often very large. However,  $\ell_1$ -regularization might lead to the construction of biased solutions. We propose to tackle this issue by considering several alternative penalties proposed in non-financial contexts. Moreover we propose a simple new type of penalty that explicitly considers financial information. We show empirically that these alternative penalties can lead to the construction of portfolios with superior out-of-sample performance in comparison to the state-of-the-art  $\ell_1$ -regularized portfolios and several standard benchmarks, especially in high dimensional problems. The empirical analysis is conducted with various U.S.-stock market datasets.

**Paper 4:** CDS Spreads and Systemic Risk - A Spatial Econometric Approach - **Armin Eder**, Helvetia Group; **Sebastian Keiler** (presenting author), Deutsche Bundesbank.

Abstract: This study applies a novel way of measuring, quantifying and modeling the systemic risk within the financial system. The magnitude of risk spillover effects is gauged by introducing a specific weighting scheme. This approach originally stems from spatial econometrics. The methodology allows for a decomposition of the credit spread into a systemic, systematic and idiosyncratic risk premium. We identify considerable risk spillovers due to the interconnectedness of the financial institutes in the sample. In stress tests, up to one fifth of the CDS spread changes are owing to financial contagion. These results also give an alternative explanation for the nonlinear relationship between a debtor's theoretical probability of default and the observed credit spreads - known as the "credit spread puzzle".

**Paper 1:** The Manipulation of Basel Risk-Weights, Evidence from 2007-10 - **Mike Mariathan** (presenting author), University of Oxford; **Ouarda Merrouche**, European University Institute.

Abstract: In this paper, we analyse a novel panel data set to compare the relevance of alternative measures of capitalisation for bank failure during the 2007-10 crisis, and to search for evidence of manipulated Basel risk-weights. Compared with the unweighted leverage ratio, we find the risk-weighted asset ratio to be a superior predictor of bank failure when banks operate under the Basel II regime, provided that the risk of a crisis is low. When the risk of a crisis is high, the unweighted leverage ratio is the more reliable predictor. However, when banks do not operate under Basel II rules, both ratios perform comparably, independent of the risk of a crisis. Furthermore, we find a strong decline in the risk-weighted asset ratio leading up to the crisis. Several empirical findings indicate that this decline is driven by the strategic use of internal risk models under the Basel II advanced approaches. Evidence of manipulation is stronger in less competitive banking systems, in banks with low initial levels of Tier 1 capital and in banks that adopted Basel II rules early. We find tangible common equity and Tier 1 ratios to be better predictors of bank distress than broader measures of capital, and identify market-based measures of capitalisation as poor indicators. We find no relationship between the probability of a bank being selected into a public recapitalisation plan and regulatory measures of capital.

**Paper 2:** Banking Competition and Stability: The Role of Leverage - **Xavier Freixas**, Universitat Pompeu Fabra; **Kebin Ma** (presenting author), Tilburg University.

Abstract: This paper reexamines the classical issue of the possible trade-off's between banking competition and financial stability by highlighting the key role of leverage. By means of a simple model we show how competition affects portfolio risk, insolvency risk, liquidity risk and systemic risk in different ways. The relationships depend crucially on banks' liability structure, and more precisely, on whether banks are financed by insured retail deposits or by uninsured wholesale funding. In addition, we argue that bank's leverage plays a central role: it is optimally set based on the portfolio risk and affects bank's solvency, funding liquidity and exposure to contagion. Thus the analysis of the relationship between banking competition and financial stability should carefully distinguish between the different types of risk and should take into account banks' endogenous leverage decisions. This leads us to revisit the existing empirical literature using a more precise taxonomy of risk and taking into account endogenous leverage, thus clarifying a number of apparently contradictory empirical results and allowing us to formulate new testable hypotheses.

**Paper 3:** Market Timing, Maturity Mismatch, and Risk Management: Evidence from the Banking Industry - **Benedikt Ruprecht** (presenting author), University of Augsburg; **Oliver Entrop**, University of Passau; **Thomas Kick**, Deutsche Bundesbank; **Marco Wilkens**, University of Augsburg.

Abstract: We investigate financial intermediaries' interest rate risk management as the simultaneous decision to manage on-balance exposure and to use interest rate swaps. We find that for banks with trading activity the maturity gap and the decision to use interest rate swaps are exogenous to one another. For banks without trading activity, the decision to use interest rate swaps is exogenous to the maturity gap, but endogenous vice versa. The magnitude of the maturity mismatch is, however, always an endogenous determinant of the extent of derivatives. These findings provide support for the maturity gap being largely determined by customer liquidity needs, whereas the decision to use interest rate swaps relies on compliance with interest rate risk regulation. Exploiting the time-series variation in panel data, we find selective hedging behavior in the use of interest swaps driven by the slope of the yield curve as well as by funding uncertainty.

**Paper 4:** The Impact of Liquidity Regulation on Interbank Money Markets - **Clemens Bonner** (presenting author), De Nederlandsche Bank; **Sylvester Eijffinger**, Tilburg University.

Abstract: This paper analyzes the impact of a liquidity requirement similar to the Basel III Liquidity Coverage Ratio (LCR) on the interbank money market and monetary policy implementation. By combining two unique datasets of Dutch banks from 2004 to 2011, we show that non-compliance with a liquidity requirement causes banks to pay and charge higher interest rates for loans with maturities longer than the requirement's 30 day horizon. With respect to volumes, our analysis reveals that banks with a liquidity deficiency increase borrowing and decrease lending of long-term loans. Short-term loans seem to be unaffected by a liquidity requirement. A key takeaway from our analysis is that as long as only a small share of banks is non-compliant with the liquidity requirement, monetary policy implementation is likely to be unaffected. As soon as there is an aggregate shortage, central banks should consider using the interbank term rate as (additional) target for monetary policy implementation.

**Paper 1:** Are the Loan Loss and Fair Value Components of Bank Income Rationally Priced? - **Chu Yeong Lim** (presenting author), Singapore Management University; **Martin Walker** and **Edward Lee**, Manchester Business School.

Abstract: This paper examines if the market rationally prices the loan loss provisions, and the fair value gains and losses of US banks. We also model the discretionary components of loan loss provisions and fair value gains and losses, and test if the discretionary components are priced differently from their non-discretionary counterparts. We find little evidence that the market misprices operating cash flows, non-discretionary loan loss provisions, or fair value gains and losses (discretionary or otherwise). However we do find evidence of significant mispricing of discretionary loan loss provisions. This evidence remains significant even after controlling for the fact that loan loss provisions are correlated with bank risk.

**Paper 2:** The Information Content of Mandatory Risk Disclosures? Evidence from the Finnish Stock Market 2006-2009 - **Antti Miihkinen**, Aalto University.

Abstract: This paper examines the information content of mandatory risk disclosures in Finland which is a highly regulated risk disclosure environment. More specifically, my purpose is to provide evidence of whether risk disclosure of low quality associates with cumulative abnormal returns in the capital markets, and whether risk information asymmetry influences the usefulness of earnings information as measured by firms' earnings response coefficients. Finally, I analyze whether the riskiness of the stock markets and firms influence the relevance of annual risk reviews. Association tests have been done in a four year panel covering years 2006-2009. First, I find that high quality of risk disclosure is negatively associated with cumulative abnormal returns. Second, I demonstrate that low quality of risk disclosure strengthens investors' reactions to short-term positive earnings news. Third, I show that investors' reactions to low quality of risk disclosure are stronger if the risk information is provided by risky firms. Finally, I provide evidence that balanced descriptions on firms' major risks are more relevant to investors than disclosure on single risk topics. This paper contributes to the literature by extending prior analyses of the value-relevance of market risk disclosures by US firms to the analyses of the information content of mandatory overall risk reviews by firms in a continental European country.

**Paper 3:** A Blind Spot of Banking Regulation: Level 3 Valuation and Basel Risk Capital - **Markus Glaser**, Ludwig-Maximilians-University Munich; **Ulf Mohrmann**, Universität Konstanz; **Jan Riepe** (presenting author), Ludwig-Maximilians-University.

Abstract: This paper explores the relation between the valuation of fair value assets and banks' default risk. Using a publicly available dataset of more than 8,500 bank quarters from 2008 to 2012, we document a robust link between banks' probability of default and their share of Level 3 assets even when several other factors, such as mortgage exposure, opacity, and regulatory capital, are controlled for. In connection with our result that constrained banks with respect to regulatory capital most heavily use Level 3 assets, we argue that banks use discretion in the valuation of fair value assets to ease regulatory constraints. In contrast to regulatory capital ratios, the market reacts accordingly and therefore seems to understand the effects of Level 3 asset usage. These results have important consequences for practitioners and regulators.

**Paper 4:** The Role of Financial Constraints in the Market for Corporate Control - **Seyed Hossein Khatami** (presenting author), **Roberto Mura** and **Maria Marchica**, Manchester Business School.

Abstract: Using a large sample of US acquisitions from 1985 to 2007, we study the effect of financial constraints on the likelihood of receiving takeover bids as well as target and bidder gains from acquisitions. Our findings suggest that presence of financial constraints is one of the most important determinants of the likelihood of receiving takeover bids. Financial constraints in the target companies significantly increase acquisition premiums and target gains from acquisitions, but do not have significant impact on bidder abnormal returns after properly controlling for the bidder's choice of acquiring constrained or unconstrained companies. Financial constraints in bidders have positive but insignificant impact on bidder abnormal returns. The most value-enhancing acquisitions are those in which both acquisition parties are financially constrained prior to the takeover. Our results further show that relaxation of financial constraints after acquisition of financially constrained targets is an important source of value-enhancement and gains from acquisition.

## Friday 12th April, Morning Sessions 9.20-10.50

Parallel 1 - CEO & Managerial Behaviour

Room: D432

**Paper 1:** Basel III and CEO compensation in banks: Pay structures as a regulatory signal - **Andrej Gill** (presenting author), **Christian Eufinger**, Goethe University Frankfurt.

Abstract: This paper proposes a new regulatory approach that implements capital requirements contingent on managerial compensation. We argue that excessive risk taking in the financial sector originates from the shareholder moral hazard created by government guarantees rather than from corporate governance failures within banks. The idea of the proposed regulation is to utilize the compensation scheme to drive a wedge between the interests of top management and shareholders to counteract shareholder risk-shifting incentives. The decisive advantage of this approach compared to existing regulation is that the regulator does not need to be able to properly measure the bank investment risk, which has been shown to be a difficult task during the 2008 – 2009 financial crisis.

**Paper 2:** Managerial Overconfidence and Risk-Taking in the Debt Market - **Valentin Burg** (presenting author), **Tobias Scheinert**, **Daniel Streitz**, Humboldt Universität zu Berlin.

Abstract: We study the impact of managerial traits on risk-taking in corporate borrowing. In particular, we investigate the relation between managerial overconfidence and their use of performance-sensitive debt (PSD) contracts. These contracts require higher (lower) interest payments when the borrower's performance deteriorates (improves). Overconfident managers underestimate the probability of financial distress and overestimate future cash flows. Hence, they perceive PSD as a relatively cheap financing source. Our empirical results suggest that overconfident managers are more likely to issue PSD. Further, overconfident managers choose riskier contracts with more potential for interest rate changes. Surprisingly, we find that only the CEO's overconfidence is related to PSD while the CFO's overconfidence seems to play no role in the decision of a firm whether and how to implement performance pricing provisions into their loan contracts.

**Paper 3:** VaR(ious) Leverage Cycles of Banks - **Björn Richter** (presenting author), **Christian Eufinger**, Goethe University Frankfurt.

Abstract: This paper presents a theoretical foundation for bank leverage heterogeneity in the cross-section and through the business cycle. Based on recent empirical evidence, we model banks' balance sheet management as being constrained by Value-at-Risk (VaR). Since global banks have more diversified investment opportunities than regional banks, they are better protected against region specific risks. Thus, global banks have a higher debt capacity and operate with higher leverage than regional banks. Additionally, this diversification advantage exposes global banks to a larger share of non-diversifiable risk compared to regional banks. Hence, their leverage is affected stronger by changes in the global economic conditions than regional banks' leverage. We investigate implications for interbank lending networks: (i) When banks are not able to raise deposits in the short term, an interbank network emerges as a result of changes in regional risk factors. (ii) Adopting similar risk management techniques and diversifying regional risks results in highly correlated core bank balance sheets, which in turn facilitates longer intermediation chains within the banking sector.

**Paper 1:** Pricing and Risk Management with Stochastic Volatility Using Importance Sampling - **Przemyslaw Stan Stilger** (presenting author), **Simon Acomb**, **Ser-Huang Poon**, Manchester Business School.

Abstract: In this paper, we apply importance sampling to Heston's stochastic volatility model and the Bates's stochastic volatility with jumps. We propose an effective numerical scheme that dramatically improves the speed of importance sampling. Most importantly, we introduce the Likelihood Ratio Method Based on Characteristic Function to estimate the Greeks in a computationally efficient manner. To achieve significant variance reduction also for the Greeks, we combine this method with importance sampling. All results are illustrated using European and barrier options.

**Paper 2:** Capturing Skewness and Kurtosis by Fitting the QQ-plot: A simple approach with an application to option pricing - **Antoni Vaello-Sebastià** (presenting author), University of Balearic Islands; **Unai Ansejo**, Itzarri; **Aitor Bergara**, University of the Basque Country.

Abstract: We present a new distribution that consists on a polynomial expansion of the Gaussian quantiles, which nests the well known Cornish-Fisher expansion. Using third-order polynomials we obtain analytical expressions for the distribution and density functions, also yielding a skewness-kurtosis region much wider than the usually considered Gram-Charlier expansion. We discuss three different estimation methodologies using stock index data. We also apply our density for option pricing and hedging obtaining closed-form formulae. Finally, we conduct an empirical application with S&P500 options data, showing that our option pricing model outperforms other models based on semi-nonparametric densities of similar order.

**Paper 3:** Least Square Monte Carlo Simulation vs. Stochastic on Stochastic for Variable Annuities and Exotic Options with BS/Heston-CIR a comparison of GPU and Intel Phi implementations - **Georgios Dimitrakopoulos**, Manchester Business School.

Abstract: One of the key aspects of Solvency II is the calculation of the Solvency Capital Requirement (SCR), which is the minimum capital to be held by an insurance company in order to avoid bankruptcy over a one-year horizon with a confidence level of 99.5%. Monte Carlo Simulation is a common technique being used by insurers for the projection of their liabilities in a future point in time. However, the increased complexity of the insurance unit-linked products requires nested-simulation approaches in order to achieve an acceptable accuracy. This technique is computationally intensive. The Least-Square Monte Carlo (LSMC), when successfully applied, is a possible solution to this computational problem. In this research project we will try to utilize the High Performance Computing Techniques in order to accelerate the performance of both the nested simulations and the LSMC approximations. We also investigate a range of basis functions for different types of products and sets of stochastic variables to assess the accuracy of LSMC approximations.

**Paper 1:** Ranking Systemically Important Financial Institutions - **Mardi Dungey**, University of Cambridge; **Matteo Luciani**, **David Veredas** (presenting author), Universite Libre de Bruxelles.

Abstract: We propose a simple network-based methodology for ranking systemically important financial institutions. We view the risks of firms - including both the financial sector and the real economy - as a network with nodes representing the volatility shocks. The metric for the connections of the nodes is the correlation between these shocks. Daily dynamic centrality measures allow us to rank firms in terms of risk connectedness and firm characteristics. We present a general systemic risk index for the financial sector. Results from applying this approach to all firms in the S&P500 for 2003-2011 are twofold. First, Bank of America, JP Morgan and Wells Fargo are consistently in the top 10 throughout the sample. Citigroup and Lehman Brothers also were consistently in the top 10 up to late 2008. At the end of the sample, insurance firms emerge as systemic. Second, the systemic risk in the financial sector built-up from early 2005, peaked in September 2008, and greatly reduced after the introduction of TARP and the rescue of AIG. Anxiety about European debt markets saw the systemic risk begin to rise again from April 2010. We further decompose these results to find that the systemic risk of insurance and deposit-taking institutions differs importantly, the latter experienced a decline from late 2007, in line with the burst of the housing price bubble, while the former continued to climb up to the rescue of AIG.

**Paper 2:** Information Contagion and Systemic Risk - **Co-Pierre Georg** (presenting author), Deutsche Bundesbank; **Toni Ahnert**, London School of Economics.

Abstract: Information contagion can reduce systemic risk defined as the joint default probability of banks. This paper examines the effects of ex-post information contagion on both the banks' ex-ante optimal portfolio choices and the implied welfare losses due to joint default. Because of counterparty risk and common exposures, bad news about one bank reveals valuable information about another bank, thereby triggering information contagion. We find that information contagion reduces (increases) the joint default probability when banks are subject to counterparty risk (common exposures). When applied to microfinance, our model also provides a novel explanation for higher repayment rates in group lending.

**Paper 3:** The Disturbing Interaction Between Countercyclical Capital Requirements and Systemic Risk - **Wolf Wagner, Bálint Horváth** (presenting author), Tilburg.

Abstract: We consider an economy in which fixed capital requirements are costly because they expose banks to fluctuations in aggregate funding conditions. Countercyclical capital requirements - which impose lower capital demands in bad aggregate states - have the potential to improve welfare. However, such capital requirements also have a cost as they increase systemic risk taking at banks. This is because they insulate banks against economy-wide fluctuations (but not against idiosyncratic shocks) and thus create incentives to invest in correlated activities. As a result, the economy's sensitivity to aggregate conditions increases and credit crunches may become more likely. We show that capital requirements that directly incentivize banks to become less correlated can be a better policy tool – as they reduce both systemic risk-taking and procyclicality.

**Paper 1:** On Pricing DVA losses - **Eberhard Mayerhofer**, Dublin City University.

Abstract: Credit Value Adjustments (CVAs) of financial contracts between defaultable entities account for possible future losses due to the failure of either party to meet its financial obligations. The standard practice of CVA calculation is as follows. First ignoring counterparty's default, the Counterparty-Credit-Risk-free price is determined, and then an insurance premium is obtained from the counterparty to accept possible default of the latter. Recently there is an increased interest both in the industry, the supervisory bodies and from the academia to understand pricing and hedging (if possible) these CVAs. The portable CVA (PCVA), introduced by Albanese, Brigo and Oertel, is designed to assist the surviving party to novate the contract with a new party, in case of counterparty's default. This methodology interprets Debt Value Adjustments as assets to the surviving party and thus insists on an insurance premium to cover associated losses in case of default of the counterparty. It is revealed that PCVA leads to unreasonably high CVA charges, due to the emergence of what we call 'wrong-way-risk of the second kind' and thus we contradict Albanese et al who claim that the difference to the Basel III approved unilateral CVA only is marginal. We also derive a simple expression for PCVA which allows to identify it as sum of put and call options prices. This expression makes nested simulations for the determination of PCVA unnecessary. Finally, we realize that the PCVA is a price-adjusted unilateral CVA, which accounts for the 'option of default' for the counterparty before we do, thus depriving us of any possible gains for ourselves due to our own default. Is this a risk we can charge the counterparty for?

**Paper 2:** Closed Form Approximation of Swap Exposures - **Heikki Seppala** (presenting author), **Ser-Huang Poon** and **Thomas Schröder** Manchester Business School.

Abstract: The collapse of the Lehman Brothers and the 2008 financial crisis have made Libor risky and increased liquidity cost of some currencies. The basis spreads in tenor basis swap and cross currency basis swap are substantial post 2008 crisis. No model exists to date that tackles these new phenomenon. We propose a two-factor mean reverting Gaussian model for the basis spread, and use it to derive a closed form expression for the expected exposure of tenor basis swap. An approximation for the expected exposure of the cross currency basis swaps is derived based on its upper and lower bounds. We also describe how our model can be calibrated and show that the calibration of the two-factor Gaussian model to the time series of term structure of basis spread is quite good. Our analytical solutions can be used to value swaptions, and as sanity checks for CVA, CVA VaR and Basel risk capital for counterparty credit risk exposure of OTC derivatives.

**Paper 3:** Counterparty Credit Risk in Repo Transactions: A Reduced Form Approach to Exposure at Default - **Rüdiger Weber**, University of Bonn.

Abstract: From interest rate data provided by the Bundesbank, sovereign and corporate bond yields, I estimate default intensity processes for Euro Area governments and banks. The results I obtained using a transformed variable Maximum Likelihood approach show that the correlations between the default intensities of sovereigns and banks are generally strong but differ greatly in size as well as decomposition. This causes a non-negligible impact of wrong-way risk that is neglected in standard models. In a Monte Carlo simulation, I simulate distributions of exposure at default for a number of sample sale and repurchase agreement (repo) transactions with the banks as counterparties and the governments as collateral issuers. To illustrate a prominent case of wrong-way risk, the contract design of these transactions closely mimics that of the European Central Bank (ECB). None of the risk mitigation instruments employed by the ECB can effectively mitigate this risk in the tails of the exposure distribution for the more volatile collateral securities, particularly when allowing for double default.

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## Friday 12th April, Afternoon Sessions 14.35-16.35

Parallel 1 - Different Perspectives of Risk

Room: D432

**Paper 1:** Longevity risk transfer with financial risk: is it worth for annuity providers?- **Elisa Luciano** (presenting author), Collegio Carlo Alberto; **Luca Regis**, University of Torino.

Abstract: This paper formalizes the trade-off between the cost and benefits of longevity risk transfer, when - stimulated by regulatory or accounting rules - an annuity provider such as a pension fund takes a holistic view of risk, which includes both mortality and interest-rate risk appraisal, on both assets and liabilities. The main novelty of the paper consists in developing a simplified, consistent way to measure both interest-rate and longevity risk, so as to provide an overall Value-at-Risk (VaR) in closed form. The fund's alternatives are represented in the plane expected return-VaR. We calibrate the risk-return frontier to the 2010 UK annuity and bond market.

**Paper 2:** Cross-hedging Minimum Return Guarantees: Basis and Liquidity Risk - **Judith C. Schneider**, University of Münster; **Nikolaus Schweizer** (presenting author), Saarland University; **Stefan Ankirchner**, University of Bonn.

Abstract: We reveal substantial pitfalls inherent in variable annuity (VA) contracts from a risk management perspective. We provide a numerical framework for assessing basis risk, liquidity risk and model risk via a least-squares approximation of the variance-minimizing delta hedging strategy. The basis risk arises when the insurance company cannot trade in the underlying of the VA contract, e.g. an external mutual fund. We consider an insurer who approximates the risk positions by a portfolio of correlated, liquidly traded futures contracts as is frequently done in practice. Since under any futures hedging strategy the credit financing of margin calls may become necessary, a borrowing-constrained insurer also faces funding risk of the hedging strategy at any point in time. In an extended example we demonstrate that our method is an efficient tool well-suited for the evaluation and improvement of the design of complex life insurance products.

**Paper 3:** The Term Structure of CDS Spreads and Sovereign Credit Risk Job Market Paper - **Patrick Augustin**, Stockholm School of Economics.

Abstract: I study the term structure of credit default swap spreads to understand how global and country-specific risk factors explain time variation in sovereign credit risk. The shape of the term structure conveys significant information about the relative importance of global and domestic risk. Global shocks determine spread changes when the slope is positive. Nonetheless, a negative slope indicates that domestic shocks are relatively more important. To draw these conclusions, I develop a recursive preference-based model with long-run risk for credit default swaps. The underlying default process, which modulates expectations about future default probabilities, depends both on global macroeconomic uncertainty and country-specific risk. Their dynamics and investor preferences jointly explain time variation in the term structure. I evaluate the model using a panel of 44 countries. Country-specific fundamentals explain relatively more spread variation than global factors as countries become more distressed. The number of months the term structure is inverted proxies for the duration of distress. Overall, the results suggest that both sources of risk are important. They simply matter in different times.

**Paper 4:** Conditional Probabilities for Euro Area Sovereign Default Risk - **Bernd Schwaab**, European Central Bank; **Andre Lucas**, VU University Amsterdam; **Xin Zhang**, Riksbank Sweden.

Abstract: We propose an empirical framework to infer the likelihood of joint and conditional sovereign defaults from observed CDS prices. Our model is based on a dynamic skewed-t copula which captures all the salient features of the data, including skewed and heavy-tailed changes in the price of CDS protection against sovereign default, as well as dynamic volatilities and correlations to ensure that risk dependence can increase in times of stress. We apply the framework to euro area sovereign CDS spreads from 2008 to mid-2011. Our results reveal significant time-variation in distress dependence and considerable spill-over effects in the likelihood of sovereign default. We also investigate distress dependence around a policy announcement on May 9, 2010, and demonstrate the importance of capturing higher-order time-varying moments during times of crisis for the correct assessment of interacting risks.

**Paper 1:** Forecasting extreme electricity spot prices - **Volodymyr Korniichuk**, Cologne Graduate School.

Abstract: We propose a model for forecasting extreme electricity prices in real time (high frequency) settings. The unique feature of our model is its ability to forecast electricity price exceedances over very high thresholds, where only a few (if any) observations are available. The model can also be applied for simulating times of occurrence and magnitudes of the extreme prices. We employ a copula with a changing dependence parameter for capturing serial dependence in the extreme prices and the censored GPD for modelling their marginal distributions. For modelling times of the extreme price occurrences we propose an approach based on a negative binomial distribution. The model is applied to electricity spot prices from Australia's national electricity market.

**Paper 2:** The Cross-Section of Tail Risks in Stock Returns: An Asset Pricing Model with Fat-Tails - **Kyle Moore** (presenting author), **Pengfei Sun**, **Chen Zhou**, **Casper De Vries**, Erasmus Universiteit Rotterdam.

Abstract: This paper analyzes the cross-sectional downside tail risk of stock returns and investigates whether heterogeneity in downside tail risk can be compensated in expected returns. By assuming that stock returns follow a heavy-tailed distribution, downside tail risk is determined by two parameters: the tail shape and scale. With constructing a theoretical model based on investor safety-first utility, we show that if large downside losses are of sufficient concern to investors, then the downside distribution of asset returns share a homogeneous shape parameter. Under this condition, cross-sectional heterogeneity in the downside tail risk of financial assets is solely attributed to heterogeneity in the scale parameter. Furthermore, we show that if tail shape homogeneity holds, an asset pricing model can be constructed in which the equilibrium price of assets is determined by the cross-section of tail risks indicated by the scales. In other words, the expected returns of financial assets can compensate for heterogeneity in the scale parameter.

**Paper 3:** Tail Risks and Systemic Risks for U.S. and Euro Zone Financial Institutions in the Wake of the Global Financial Crisis - **Stefan Straetmans** (presenting author), **Sajid Chaudhry**, Maastricht University.

Abstract: We evaluate multiple market-based measures for US and eurozone individual bank tail risk and banksystemic risk. We apply statistical extreme value analysis to the tails of bank equity capital losses to estimate the likelihood of individual institutions' financial distress as well as individual banks' exposure to each other ("contagion risk") and to global shocks ("extreme systematic" risk). The estimation procedure presupposes that bank equity returns are "heavy tailed" and "tail dependent" as identifying assumption. We also assess to what extent magnitudes of tail risk and systemic risk have been altered by the global financial crisis. Using both US and eurozone banks allows one to make a cross-atlantic comparison of the financial systems' riskiness and financial stability. For Europe we assess the relative importance of cross-border bank spillovers as compared to domestic bank spillovers. The results suggest, inter alia, that both tail risk and systemic risk in the US are higher than in the eurozone. We cannot generally conclude that domestic eurozone spillover risk dominates cross-border eurozone spillover risk. Finally, tail risk and systemic risk have increased over time on both sides of the Atlantic.

**Paper 4:** Extreme Linkages in Financial Markets: Macro Shocks and Systemic Risk - **Charnchai Leuwattanachotinan** (presenting author), Erasmus Universiteit Rotterdam and **Casper G. de Vries**, Chapman University.

Abstract: In this paper we measure extreme loss linkages in financial markets during severe macroeconomic conditions. Specifically, we employ a count estimator, which is a nonparametric univariate approach, to compute probabilities of the extreme linkage between daily S&P500 and German DAX index returns conditioned on extreme levels of macroeconomic factors (i.e. inflation, industrial production, unemployment and money supply). According to the results, we conclude that, the factor related to real economy, i.e. industrial production, has most impact on the extreme loss linkage between US and German equity markets comparing to the other factors which are more related to monetary policies. Additionally, the same procedure is also implemented to the equity returns by sector of both markets and we find that industrial production is still the most dominant macro factor. Health care and utilities sectors are the two sectors least affected by the severe macroeconomic circumstances.

**Paper 1:** Decentralized Exchange - **Semyon Malamud** (presenting author), EPFL; **Marzena Rostek**, University of Wisconsin.

Abstract: We develop a general model of decentralized exchange. Our model allows for any number of traders and traded assets, and any form of market decentralization, including trading environments determined by an arbitrary network structure. We study how the equilibrium allocation and liquidity depend on the network topology and how an agent's risk exposure depends on other agents' exposures. Agents hold several, position specific "local market portfolios", that also determine the "local market clearing prices". The impact of one trader on another decays exponentially in the distance in the network, at an explicitly given equilibrium rate. Introducing decentralized forms of exchange always improves liquidity in the existing markets.

**Paper 2:** High Frequency Trading and Mini Flash Crashes - **Anton Golub** (presenting author), Olsen Ltd; **Ser-Huang Poon**, Manchester Business School; **John Keane**, University of Manchester.

Abstract: Mini Flash Crashes (or Flash Equity Failures) are abrupt and unexpected price changes that are perceived to occur as result of High Frequency Trading (HFT) activity. Almost 20,000 such black-swan events have been identified for the period 2006 - 2011 in the US equity markets. In this paper we analyze these events during the most volatile market periods and suggest an explanation for their occurrences. In contrast to previous investigations, we find that Mini Flash Crashes are the result of regulation framework and market fragmentation. Namely, we conclude that Mini Flash Cashes happen predominantly due to aggressive use of Intermarket Sweep Orders and Regulation NMS protecting only the Top of the Book. Furthermore, we find that Mini Flash Crashes have an adverse impact on market liquidity and we document a phenomenon of Fleeting Liquidity characteristic of ultra-fast crashes, where the trades constituting the crash trade through the displayed quotes as if they did not exist. Finally, we briefly discuss suggestions to extend price protection to the Depth of the Book.

**Paper 3:** Transaction Taxes in a Price Maker/Taker Market - **Nordia D.M. Thomas** (presenting author), U. of Wisconsin - La Crosse; **Dale W.R. Rosenthal**, U. of Illinois at Chicago and **Hefei Wang**.

Abstract: We develop a price maker/taker model to study how a financial transaction tax affects markets. We find taxes do not reduce the effects of destabilizing speculation. Taxes widen optimal and effective spreads by many times the tax, may decrease or increase volatility slightly without market makers, and increase volatility significantly with market makers. A 50 basis point tax halves the benefit of providing liquidity, gains from trade, and volume (doubles search costs). Market quality is more affected by taxes in markets with market makers. We also find revenue-optimal rates of about 55 – 70 basis points. Our results are particularly relevant to markets with high-frequency trading or thin depth.

**Paper 4:** Contagion Effects and Collateralized Credit Value Adjustments for Credit Defaults Swaps - **Lars Rösler** (presenting author) and **Rüdiger Frey**, WU Vienna.

Abstract: The paper is concerned with counterparty credit risk management for credit default swaps in the presence of default contagion. In particular, we study the impact of default contagion on credit value adjustments such as the BCCVA (Bilateral Collateralized Credit Value Adjustment) of Brigo et al. (2012) and on the performance of various collateralization strategies. We use the incomplete-information model of Frey and Schmidt (2012) as vehicle for our analysis. We find that taking contagion effects into account is important for the effectiveness of the strategy and we derive refined collateralization strategies to account for contagion effects.

**Paper 1:** Robust Econometric Inference for Stock Return Predictability - **Alexandros Kostakis** (presenting author), Manchester Business School; **Tassos Magdalinos**, University of Southampton and **Michalis Stamatogiannis**, University of Bath.

Abstract: This study examines stock return predictability via lagged financial variables with unknown stochastic properties. We conduct a battery of predictability tests for US stock returns during the period 1927 - 2011, employing a Wald test based on a novel instrumental variables (IVX) econometric methodology. The proposed testing procedure: i) robustifies inference to the degree of persistence of the employed regressors, accommodating stationary processes, random walks and all intermediate nearly nonstationary processes, ii) accommodates testing the joint predictive ability of financial variables in multiple regression and iii) is easy to implement as it is based on a linear estimation procedure. We provide significant evidence in favor of predictability for the dividend yield, net equity expansion, dividend-price, earnings-price and book-to-market value ratios as well as various combinations of these variables in the full sample period. Predictability is stronger for relatively smaller capitalization and value portfolios' returns. Nevertheless, predictability evidence almost entirely disappears in the post-1952 period.

**Paper 2:** Testing for Monotonicity in Expected Asset Returns - **Michael Wolf** (presenting author), University of Zürich; **Joseph P. Romano**, Stanford University.

Abstract: Many postulated relations in finance imply that expected asset returns strictly increase in an underlying characteristic. To examine the validity of such a claim, one needs to take the entire range of the characteristic into account, as is done in the recent proposal of Patton and Timmermann (2010). But a closer inspection reveals that their test is only a test for the direction of monotonicity, since it requires the relation to be monotonic: either weakly decreasing under the null or strictly increasing under the alternative. When the relation is non-monotonic, the test breaks down and can falsely "establish" a strictly increasing relation with quite high probability. We offer some alternative tests that do not share this problem. The behavior of the various tests is illustrated via Monte-Carlo studies. We also present empirical applications to real data.

**Paper 3:** The drivers of downside equity tail risk - **Pengfei Sun** (presenting author), **Kyle Moore**, **Casper De Vries**, Erasmus Universiteit Rotterdam; **Chen Zhou**, De Nederlandsche Bank and Erasmus Universiteit Rotterdam.

Abstract: We analyze the cross-sectional differences in the tail risk of equity returns and identify the drivers of tail risk. We provide two statistical procedures to test the hypothesis of cross-sectional downside tail shape homogeneity. An empirical study of 230 US non-financial firms shows that between 2008 and 2011 the cross-sectional tail shape is homogeneous across equity returns. The heterogeneity in tail risk over this period can be entirely attributed to differences in scale. The differences in scales are driven by the following firm characteristics: market beta, size, book-to-market ratio, leverage and bid-ask spread.

**Paper 4:** Correlation Stress Tests Using the Random Matrix Theory: An Empirical Implementation to the Chinese Market - **Zhen Guo** (presenting author), Marie Curie ITN; **Anton Golub**, Olsen Ltd.

Abstract: This paper develops a new correlation stress testing technique to decompose high-dimensional correlation matrices into different components constructed by eigenvalues and eigenvectors and then allow data-coherent stress tests in correlations while maintain the desirable mathematical properties of correlation matrices, e.g. positive semi-definiteness. We use the Random Matrix Theory to filter "noise" components, identify the hidden patterns of eigenvectors, and interpret the meanings of macroeconomic and microeconomic scenarios. We help users to propose meaningful data-coherent macroeconomic scenarios when they have large-dimensional correlation matrices and many hypothetical scenarios to choose from. This is the first paper in the literature which introduces the Random Matrix Theory to stress testing. We use an empirical example based on the Chinese equity market to show how to implement our model. Interestingly, we find that the top 3 most important components in our dataset are the market impact, the government influence, and the real-estate-industry impact. We conduct some hypothetical stress tests to show how the stressed eigenvalues lead to structural changes in correlations and to generate valid post-stressed correlation matrices. Our approach could be easily extended to multi-market correlation stress testing.

# The City of Konstanz

## History

The first traces of civilization in Konstanz date back to the late Stone Age. Around 100 AD, the first Romans settled on the site. Its name, originally Constantia, comes from the emperor Constantius Chlorus who fought the Alemanni in the region and fortified the town. Around 585 the first bishop took residence in Konstanz and marked the beginning of the city's importance as a spiritual center. Trade thrived during the Middle Ages; Konstanz owned the only bridge in the region which crossed the Rhine, making it a strategic place. Its linen production caused international reputation and the city was prosperous. In 1192, Konstanz gained the status of an Imperial City so it was henceforth subject only to the Emperor. Close to the Konzil, at the port, stands Imperia, a statue built in 1993 in memory of the Council. In 1460 the Swiss Confederacy conquered Thurgau, Konstanz's natural hinterland. Konstanz then unsuccessfully tried to get admission to the Swiss Confederacy. So, Konstanz entered the Swabian League instead. In the Swabian War of 1499, Konstanz lost its last privileges over Thurgau to the Swiss Confederation. The Protestant Reformation took hold in Konstanz in the 1520s, headed by Ambrosius Blarer. Soon the city declared itself officially Protestant, pictures were removed from the churches, and the bishop temporarily moved to Meersburg, a small town across the lake. In 1548 Emperor Charles V imposed the Imperial Ban on Konstanz and it had to surrender to Habsburg Austria. The new Habsburg rulers were eager to re-Catholicise the town and in 1604 a Jesuit College was opened. Its theater, built in 1610, is the oldest theater in Germany still performing regularly. The city became part of the Grand Duchy of Baden in 1806, part of the German Empire in 1871 during the unification of Germany. After World War I it belonged to the Republic of Baden. Today, it is part of Baden-Württemberg. The Altstadt (Old Town) has many old buildings and twisted alleys. The city scene is marked by the majestic "Münster" Cathedral ("Münster Unserer Lieben Frau"), several other churches and three towers left over from the city wall, one of which marks the place of the former medieval bridge over the Rhine.

A special attraction in Konstanz is the wonderful flower island of "Mainau". The island belongs to the Lennart Bernadotte Foundation, set up by the late Lennart, Count Bernadotte af Wisborg, formerly Prince of Sweden and Duke of Smaland.

## Cafés and Restaurants

### 1. **Ristorante da Giuseppe**

Maybe the most popular Italian restaurant in the city.

Mainaustrasse 132, Phone: +497531 – 3612255

### 2. **Brauhaus Johann Albrecht**

This private brewery offers a delicious selection of beer and also a variety of typical German food.

Konradigasse 27, Phone: +497531 – 25045

### 3. **Sushi-Bar Tatsumi Osamu Yamashita**

This very popular authentic Japanese restaurant is situated away from the city centre, but offers a great ambience and a broaden variety of delicious dishes.

Wollmatinger Str. 70, Phone: +497531 – 3621009

### 4. **Tolle Knolle**

A restaurant offering everything around potatoes.

Bodanplatz 9, Phone: +497531 – 17575

### 5. **Ignaz | Brasserie**

This restaurant and bar is located directly in front of the main train station and provides a convenient ambience and a very good gastronomy.

Bahnhofplatz 6, Phone: +497531 – 2827788

### 6. **Hexenküche**

The right place for meat-lovers - very good steaks and ribs.

Bodanstrasse 30, Phone: +497531 – 24560

### 7. **Café-Bar-Restaurant Wessenberg**

Wessenberg, located directly in front of the Münster, provides a nice ambience to choose from its extensive wine list.

Wessenbergstrasse 41, Phone: +497531 – 919664

### 8. **Coffehouse - Das Voglhaus Café**

Very popular coffe bar with style in the middle of the old city.

Wessenbergstrasse 8, Phone: +497531 – 9189520

### 9. **Pano**

Trendy café with very good breakfast.

Wessenbergstrasse 8, Phone: +497531 – 9189520

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