

## Co-Pierre Georg

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### EMPLOYMENT

**University of Cape Town**  
Since 01/2018 Associate Professor (with tenure) African Institute of Financial Markets and Risk Management and School of Economics  
11/2014 - 12/2017 Senior Lecturer, African Institute of Financial Markets and Risk Management, and School of Economics  
06/2013 – 10/2014 Old Mutual Emerging Markets Lecturer, Graduate School of Business  
Since 04/2017 Director, UCT Financial Innovation Lab

**Deutsche Bundesbank**  
Since 06/2012 Research Economist in Banking Supervision and -Regulation (part-time since 06/2013)

### ACADEMIC POSITIONS

**Goethe University Frankfurt**  
Since 06/2014 Research Associate, Excellence Cluster SAFE, House of Finance

**Oxford University**  
Since 12/2016 Research Associate, Oxford Martin School for the 21st Century (INET)  
03/2012-03/2014 Collaborating Research Scholar, Network Cluster, Keble College

**Columbia University**  
Since 01/2017 Affiliate, Center for Global Legal Transformation

### EDUCATION

**Universidad Carlos III de Madrid**  
10/2011 – 06/2012 Postdoctoral Researcher, Interdisciplinary Group of Complex Systems Research, Departamento de Matemáticas

**Friedrich-Schiller-Universität Jena**  
05/2008 – 09/2011 PhD in Economics (*summa cum laude*), Dissertation title: „Systemic Risk in Interbank Markets“, Supervisor: PD Dr Markus Pasche, Prof Dr Andreas Freytag

**New York University Stern School of Business**  
02/2011 – 04/2011 Visiting Scholar (Prof Viral V. Acharya, PhD)

**University of Karlsruhe**  
10/2000 - 12/2005 Diploma in Physics (*final mark:1.8*), Title of diploma thesis: „Interference Effects in Vector-boson Fusion“, Supervisor: Prof Dr Dieter Zeppenfeld

## VISITING POSITIONS

01/2016-02/2016	<b>Columbia Business School</b> (Decision, Risk, and Operations)
04/2014 –05/2014	<b>Princeton University</b> (Bendheim Center for Finance)
1/2014	<b>Federal Reserve Bank of New York</b> (Money & Payments, Financial Institutions, Capital Markets)
12/2012 – 01/2013	<b>Xiamen University</b> (Wang Yanan Institute)
2012 , 2013	<b>University of Oxford</b> (Saïd Business School)

## PROFESSIONAL EXPERIENCE AND CONSULTING

Banco Central do Brazil (**2013**), Bank of Uganda (**2013**), Banque de France (**2011**), South African Reserve Bank (**2015, 2011, 2010**), Deutsche Bundesbank (**2010**)

## PUBLICATIONS IN PEER-REVIEWED JOURNALS

1. „*Information Contagion and Systemic Risk*“ (with Toni Ahnert, Bank of Canada), [Journal of Financial Stability](#), ([in press](#))
2. „*Contagious Herding and Endogenous Network Formation in Financial Networks*“ (with Christoph Aymanns, Oxford), [Journal of Banking and Finance](#) 50(1), 273-285, (**2015**)
3. „*Revealing Patterns of Local Species Richness Along Environmental Gradients with a Novel Network Tool*“ (with Mara Baudena, Utrecht, Angel Sanchez, UC3M, Paloma Ruiz-Benito, Stirling, Miguel A. Rodriguez Alcalá, Miguel A. Zavala, Alcalá, and Max Rietkerk, Utrecht); [Nature Scientific Reports](#) 5, 11561, (**2015**)
4. „*Complex Derivatives*“ (with Stefano Battiston, Zurich, Guido Caldarelli, IMT Lucca, Robert M. May, Oxford University, and Joseph E. Stiglitz, Columbia University); [Nature Physics](#) Vol. 9, No. 3, (**2013**)
5. Georg, Co-Pierre, „*The Effect of the Interbank Network Structure on Contagion and Common Shocks*“, [Journal of Banking and Finance](#) 37(7), 2216-2228 (**2013**)

## POLICY AND OTHER PUBLICATIONS

1. „*Systemic Risk in the Financial Sector*“, with Ian Goldin, Oxford University, Mike Mariathasan, KU Leuven, and Tiffany Vogel, University of Oxford. In: „*The Butterfly Defect – Globalization and Systemic Risk*“, Ian Goldin and Mike Mariathasan, [Princeton University Press](#) (**2013**)
2. Brink, Nicola and Georg, Co-Pierre, „*Note on Systemic Risk in the South African Interbank Market*“, Special Note in the [Financial Stability Review](#), South African Reserve Bank March 2011, (**2011**).

## WORKING PAPERS

1. *Fake News in Social Networks* (with Christoph Aymanns, St Gallen and Jakob Foerster, Oxford). Submitted. Available on [SSRN](#)  
Abstract:  
We model the spread of news as a social learning game on a network. Agents can either endorse or oppose a claim made in a piece of news, which itself may be either true or false. Agents base their decision on a private signal and their neighbors' past actions. Given these inputs, agents follow strategies derived via multi-agent deep reinforcement learning and

receive utility from acting in accordance with the veracity of claims. Our framework yields strategies with agent utility close to a theoretical, Bayes optimal benchmark, while remaining flexible to model re-specification. Optimized strategies allow agents to correctly identify most false claims, when all agents receive unbiased private signals. However, an adversary's attempt to spread fake news by targeting a subset of agents with a biased private signal can be successful. Even more so when the adversary has information about agents' network position or private signal. When agents are aware of the presence of an adversary they re-optimize their strategies in the training stage and the adversary's attack is less effective. Hence, exposing agents to the possibility of fake news can be an effective way to curtail the spread of fake news in social networks. Our results also highlight that information about the users' private beliefs and their social network structure can be extremely valuable to adversaries and should be well protected.

2. *The Importance of Informal Intellectual Collaboration with Central Colleagues* (with Daniel Opolot, University of Cape Town, and Michael E. Rose, University of Cape Town). Available on [SSRN](#)

Abstract:

When preparing a research article, academics engage in informal intellectual collaboration by asking their colleagues for feedback. This collaboration gives rise to a social network between academics. We study whether informal intellectual collaboration with an academic who is more central in this social network results in a research article having higher scientific impact. To address the well-known reflection problem in estimating network effects, we use the assignment of discussants at NBER summer institutes as a quasi-natural experiment. We show that manuscripts discussed by a discussant with a 10% higher than average Bonacich centrality rank results in 1.4% more citations and a 5% higher probability that an article is published in a top journal. To illustrate our results, we develop a structural model in which a positive externality from intellectual collaboration implies that collaborating with a more central colleague results in larger scientific impact of the research article.

3. *„Managing Duration Gaps: The Role of Interbank Markets* (with Marcel Bluhm, Xiamen University, and Jan-Pieter Krahen, Goethe University Frankfurt). Submitted. Available as [Deutsche Bundesbank Discussion Paper 16/2016 \(2016\)](#)

Abstract:

We explore the economics of interbank lending and borrowing, exploiting a comprehensive data set of interbank exposures in Germany over the period 2002-2014. Our findings suggest that interbank borrowing and lending play a significant role in the final allocation of interest rate risk in the economy. A typical bank in our sample holds significant amounts of interbank exposure on both sides of its balance sheet. The average contract length is well above two years, in contrast to the view that interbank markets mainly supply overnight funding liquidity. Based on dynamic panel regressions we find three main results. First, the formation of a bank's interbank book is closely related to the dynamics of the bank's client book. Second, by accessing the interbank market, banks tend to reduce their overall duration gap and their exposure to interest rate risk. Third, the central bank absorbs a significant share of the interest rate risk inherent in the banking system, particularly since the global financial crisis. On the policy level, our findings suggest a role for interbank markets in managing duration gap risk of individual banks as well as the entire banking system. This offers a macro-prudential rationale of expansive or contractive monetary policy.

4. *"A Network View on Interbank Liquidity"* (with Silvia Gabrieli, Banque de France), Banque de

France Working Paper 531 / Deutsche Bundesbank Discussion Paper 44 (2014), Submitted.  
Latest version on [SSRN](#)

Abstract:

The euro area overnight interbank market is best described as a network of over-the-counter lending relationships. We study liquidity reallocation in this interbank network using a novel dataset of all interbank loans settled between European banks. We show the existence of a network-pricing channel in over-the-counter markets: a bank's importance in the interbank network, measured by its centrality, has an economically significant effect on its liquidity provision and access. The effect is stronger for the price of liquidity than for the volume, and stronger for liquidity provision than for liquidity access.

5. „*Mirror, Mirror, on the Wall, Who is the Most Central of Them All?*“ (with Michael Rose, University of Cape Town). Available on [SSRN](#) (2015)

Abstract:

In academia, informal collaboration is an integral element in the production of knowledge. We construct the social network of informal collaboration using acknowledgments of 2782 scholarly articles published in six journals in financial economics. We rank financial economists according to their centrality in the social network of informal collaboration and find that central commenters are not necessarily the most central or the most productive authors. We explore the determinants of high centrality rankings using detailed CV data for the most central academics. A PhD from a better-ranked department is associated with a better centrality ranking. Seniority is associated with worse rankings, albeit at a decreasing rate.

6. „*Illiquidity Spirals in Coupled Over-the-Counter Markets*“ (with Christoph Aymanns, LSE, and Ben Golub, Harvard). Submitted. Submitted. Available on [SSRN](#) (2016)

Abstract:

Banks provide intermediation of two economically coupled assets, each traded on an OTC market—e.g., secured debt and the underlying collateral. We model banks' decisions to provide liquidity as a game of strategic complements on two coupled trading networks: incentives to be active in one network are increasing in its neighbors' activity in both networks. When an exogenous shock renders some banks inactive, other banks follow in an illiquidity spiral across the two networks. Liquidity can be improved if one of the two OTC markets is replaced by an exchange. For a class of market structures associated with random graphs, liquidity changes discontinuously in the size of an exogenous shock, in contrast to contagion on one network.

## WORK IN PROGRESS

1. „*The Cape of Good Homes: Foreign Demand and House Prices in Cape Town*“ (with Allan Davids, UCT)
2. „*Aggregate Liquidity Risk and Bank Portfolio Choice*“ (with Toni Ahnert, Bank of Canada, and Gideon du Rand, Stellenbosch)
3. „*Measuring Regulatory Complexity*“ (with Jean-Edouard Colliard, HEC Paris)

## AWARDS AND GRANTS

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| 2015 | Institut Louis Bachelier Grant for „Measuring Regulatory Complexity“, with Jean-Edouard Colliard, HEC Paris (10.000EUR)                |
| 2015 | „Quantitative Easing and Financial (In-)Stability“ – Volkswagen Foundation; Principle Investigator: Lorian Pelizzon, Goethe University |

- Frankfurt. (UCT: 138.000EUR of project total: 770.000EUR)
- 2012 Sustainable Architecture for Finance in Europe – SAFE excellence cluster at Goethe University Frankfurt, with Marcel Bluhm (PI) and Jan-Pieter Krahen (20.000EUR)
- 2011 European Central Bank, Lamfalussy Fellowship (10.000EUR)
- 2011 17<sup>th</sup> International Conference on Computing in Economics (CEF2011), San Francisco, Best Student Paper Prize, finalist
- 2009-2011 Graduate School „Foundations of Global Financial Markets – Stability and Change“, PhD fellowship
- 2005 Argonne National Lab, Argonne, IL, Travel Grant
- 2004 Albert-Einstein-Institute Golm, Travel Grant

#### CONFERENCE PRESENTATIONS (\*=scheduled)

- 2017 German Economists Abroad, Frankfurt; Bundesbank Big Data Conference, Frankfurt; Society for Economic Measurement conference 2017, Cambridge, MA; Central Bank Research Association Boston Policy Workshop, Boston, MA; CEPR Spring Symposium in Financial Economics, Imperial College, London
- 2016 Bank of England CCBS Workshop, London, MIT Center for Finance and Policy 3rd Annual Conference: *"Causes of and Policy Responses to the U.S. Financial Crisis: What Do We Know Now that the Dust Has Settled?"*, Boston, MA, Riksbank conference on *„Challenges in Interconnected Financial Systems“*, Stockholm, European Economic Association Meetings, Geneva, GRI Fields Conference *„The Stability of Financial Systems“*, Toronto, Federal Reserve *„Day Ahead Conference“*, San Francisco
- 2015 Society for the Advancement of Economic Theory 2015, Cambridge, 2nd Annual Society for Economic Measurement Annual Conference, Paris, 24th UMichigan Mitsui Finance/RFS Symposium, Traverse City, FIRS 2015, Reykjavik, 10th Tinbergen Institute Conference, Amsterdam, INET Annual Conference 2015, Paris
- 2014 INET YSI Europe 2014 Conference, Amsterdam, GKFINM Annual Conference, Jena, DIW/ESMT/Bundesbank Conference on *„Achieving Sustainable Financial Stability“*, Berlin, *„Systemic Risk: Mathematical Modelling and Interdisciplinary Approaches“*, Isaac Newton Institute for Mathematical Sciences, Cambridge, 2014 IEA World Congress, Amman
- 2013 FDIC 13th Annual Bank Research Conference, Arlington, VA, ECB Workshop *„Structural Changes in Money Markets“*, Frankfurt, UP/SARB/ERSA 3rd Annual Monetary Policy Workshop, Pretoria, Banco Central do Brazil, VIII Financial Stability Seminar, Sao Paulo, European Financial Management Association, Reading, UK, 2nd *„Rethinking Economics“* Conference, Tübingen, Global Systems Dynamics and Policy Conference, Brussels, *„Financial Globalization and Sustainable Finance“*, Cape Town, INET 2013 Plenary Conference, Hong Kong, Marie Curie ITN Conference on *„Financial Risk Management & Risk Reporting“*, Konstanz
- 2012 RBNZ-UA Conference on *„Stability and Efficiency of Financial Systems“*, Wellington, European Center for Financial Integration Studies, *„Mapping European Economic Governance Rules, Processes and Behaviors“*, Brussels, Ivie Workshop on *„International Banking and Financial Integration“*,

Valencia, FDIC 12th Annual Bank Research Conference, Arlington, VA, DFG-NSF Conference on „*Reckoning the Risk of Catastrophe*“, Washington, DC, Latsis Symposium „*Economics on the Move*“, ETH Zurich, International Finance and Banking Society 4th International Conference, Invited Session on Networks, Valencia, „*Financial and Macroeconomic Stability: Challenges Ahead*“, Central Bank of Turkey, Istanbul, UPF-FNA Workshop on „*Financial Networks*“, Barcelona, Institut Louis Bachelier 5th Financial Risks International Forum: „*Systemic Risk*“, Paris

2011 RBNZ-ANU-UA Conference: „*Macro Policies after the Crisis*“, Wellington, „*DSGE and beyond – expanding the paradigm in monetary policy research?*“, Narodowy Bank Polski, Warsaw, Biennial Conference of the Economic Society of South Africa 2011, Stellenbosch, VI Annual Seminar on „*Banking, Financial Stability and Risk*“, Banco Central do Brazil, Sao Paulo, Workshop on „*Coping with Crises in Complex Socio-Economic-Systems – 2011*“, Zurich, 17th International Conference on Computing in Economics and Finance, San Francisco, „*Financial Networks Workshop*“, Network Science Center, USMA West Point

2009 MAFIN 09, Reykjavik, Poster on „*Central Bank Policy in a Model of Endogenous Money*“

#### **SEMINAR PRESENTATIONS** (\*=scheduled)

2018 EBRD\*

2017 Goethe University Frankfurt, Banque de France, Columbia University (Law), UC3M, Copenhagen Business School, University of Zurich, Imperial College Business School

2016 London School of Economics (SRC), HEC Paris, Columbia Business School, University of Wisconsin Business School, Georgia Institute of Technology Scheller College of Business, IMF, GMU, Bank of Canada

2015 Indiana University Bloomington

2014 DIW, Federal Reserve Bank of New York, Stellenbosch University

2013 Banca d'Italia, University of Amsterdam, University of Vienna, Banco Central do Brasil, ECB, Bundesbank, University of Zurich, Oxford University Nuffield College

2012 US Treasury (Office of Financial Research), IMF, Oxford University Keble College, Schumpeter Seminar Humboldt-University Berlin, Universitat Pompeu Fabra, City University London, University of Leicester, Jaime I Universitat, Banco de España, Universidad Carlos III de Madrid, Oxford University Saïd Business School, Banque de France, Deutsche Bundesbank, Cambridge University Judge School of Business

2011 Banque de France, Bank of England, University of Pretoria, South African Reserve Bank, Stellenbosch University, University of Sao Paulo, Universidad Carlos III de Madrid, Federal Reserve Bank of Philadelphia, New York University, University Erfurt, University of Jena

2010 University of Leipzig, University of Halle, Deutsche Bundesbank, University of Jena, University of Pretoria, South African Reserve Bank

2009 University of Jena

## DISCUSSIONS

- 2017 FIRS, Wang, Paddrik, and Park, *“Bank Networks and Systemic Risk: Evidence from the National Banking Acts”*
- 2015 EBC-DNB Conference, Amsterdam, Kapadia et al., *“Taking uncertainty seriously: simplicity versus complexity in financial regulation”*
- 2013 ITN Marie Curie Conference, Horváth and Wagner, *„The Disturbing Interaction Between Countercyclical Capital Requirements and Systemic Risk“*
- 2012 Institut Louis Bachelier, Lahmann and Kaserer: *„Measuring Systemic Risk and Assessing Systemic Importance in Global and Regional Financial Markets using the ESS-Indicator“* and Pausch and Welzel: *„Regulation, Credit Transfers with CDS, and Bank Lending“*

## ACTIVITIES AND MEMBERSHIP

*Referee for:* RoF, JFI, JEDC, JEEA, Operations Research, JEBO, JFS, JBF, IICB, Journal of Financial Regulation, BE Journal of Macroeconomics, JEIC, Review of Development Finance, African Finance Journal, South African Journal of Economics, Computational Economics, Economics in Transition, Emerging Markets Review, Journal of Statistical Mechanics, IEEE Transactions on Knowledge and Data Engineering

*Also referee for:* National Research Foundation (SA), Swiss National Fund, ECB Working Paper Series, Bank of England Working Paper Series, ERSA Working Paper Series

*Academic committee:* FIRS 2018

*Membership:* European Finance Association, Economic Society of South Africa, German Finance Association, German Economic Association, European Economic Association, INET Working Group on Financial Linkages (2012-2015)

*Conference and Workshop Organization:*

1. UCT/ERSA/Imperial/RoF Conference on *“Banking in Emerging Markets”* (Cape Town, 2016)
2. BIS/DNB/Bundesbank/RoF Conference on *“Global Financial Interconnectedness”* (Basle, 2015)
3. Bundesbank/IMF/INET Workshop *„Interconnectedness: Building Research Into the Policy Agenda“* (Washington, D.C., 2014)
4. ERSA Financial Economics Workshop (Cape Town, 2013, Pretoria, 2014, Pretoria, 2015)
5. Bundesbank autumn conference *„Supervising Banks in a Complex Financial System“* (Frankfurt, 2013)
6. Bundesbank/BCBS Workshop *„Supervising Financial Networks“* (Frankfurt, 2013)
7. Jena Graduate School annual conference 2011 (PhD Workshop, Jena 2011)

## TEACHING

Postdoctoral Students (#: first placement):

1. Suraj Shekhar (PhD Penn State, since 08/2016)
2. Christine Makanza (PhD UCT, since 06/2016)

3. Pawel Fiedor (PhD Krakow, 06/2015 – 06/2016; #: Trainee at European Systemic Risk Board)
4. Hylton Hollander (PhD Stellenbosch, 06/2015 – 01/2016; #: Lecturer at Stellenbosch University)

#### PhD Students:

1. Allan Davids (MPhil Stellenbosch, main advisor, since 08/2016)
2. Qobolwakhe Dube (MCom, UCT, since 02/2017, co-advisor)
3. Gideon du Rand (MSc Stellenbosch, 04/2015-)
4. Nolwazi Hlophe (MCom Pretoria, main advisor, since 02/2017, part-time; Bank of Swaziland Financial Stability Department)
5. Chernay Johnson (MSc Wits, 02/2017-, co-advisor)
6. Tina Koziol (MBusSc Jena, main advisor, since 04/2016)
7. Esti Kemp (MPhil Pretoria, main advisor, since 04/2016, part-time; SARB Financial Stability Department)
8. Michael Rose (MSc Kiel, main advisor, since 04/2015)

Other Students: 4 MBA Students (UCT GSB, 2013-2014), 1 MComm Students (UCT GSB, 2015), 2 Diploma Students (FSU Jena, 2012)

#### Teaching

1. Fintech and Cryptocurrencies (MPhil in Data Science of Financial Technology), University of Cape Town, **(2018\*)**
2. Financial Software Engineering (MPhil in Data Science of Financial Technology), University of Cape Town, **(2018\*)**
3. Financial Regulation (MCom in Risk Management of Financial Markets), University of Cape Town **(2016, 2017)**
4. Econometrics (MCom in Risk Management of Financial Markets), University of Cape Town **(2016, 2017)**
5. ECO3021S - Quantitative Methods in Economics (Module on Econometrics), University of Cape Town **(2015)**
6. Economics for MBA Students, University of Cape Town Graduate School of Business, **(2014)**
7. Seminar, „*Business Cycle Theory and Policy*“, Friedrich-Schiller-Universität Jena, **(SS 2009)**
8. Teaching Assistant, „*Macroeconomics*“, Friedrich-Schiller-Universität Jena, **(SS 2008)**

*Other Teaching:* WEHIA 2016 Summer School, Universitat Jaume I, **(2016)**, Financial Networks in Emerging Countries, Bank of Uganda, Banco Central do Brazil, **(2013)**, Complexity Economics Summer School, IMT Lucca, **(2012)**, Workshop, „*Banking and Modern Financial Economics*“, University of Pretoria, **(2011)**

#### **MEDIA APPEARANCES**

TV: CNBC Africa, News24.com, Business Day TV

Radio: Talk702.com, Voice of the Cape FM

Newspaper/News Websites: CNN, Business Day, BDLive, Times, Times Live Crain's New York Business, The Conversation, EWN, Independent Online, The Sowetan

#### **COMPUTER SKILLS AND SOFTWARE DEVELOPMENT**

Software Development:

**central-places.net** – Website accompanying our projects on informal collaboration in academia, with Michael Rose (UCT). Available at: <http://www.central-places.net/>

**Supervisory Data Explorer** – Proprietary visualization software for supervisory financial network



data (2015), with Peter Sarlin (RiskLab Finland, Infolytika), Sharat Akhoury (UCT), and Dieter Wang (University of Amsterdam)

**NetGen** – An open source financial networks cleaning and analysis tool (2014), with Tarik Roukny (ULB). Available at: <http://www.netgen-toolbox.org/>

**BlackRhino** – An open source financial multi-agent simulation (2013)  
Available at: [https://github.com/cogeorg/black\\_rhino](https://github.com/cogeorg/black_rhino)

Programming Languages: Python, C++, Java, Perl, Fortran, PHP, JavaScript, Solidity

09/2001 – 07/2003 University of Karlsruhe, Steinbuch Center for Computing, Research Assistant

## REFERENCES

Available upon request.