Research and Teaching Concept

IWH Halle & FSU Jena

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Research Concept

- Research Profile
- Current Research and Future Directions
- Grants
- PhD Supervision

Research Profile

In my research, I study allocational consequences of changes in the regulatory and technological environment of financial intermediaries.

In my more recent research projects I have studied:

1. Bank capital structure in general equilibrium:
    - Redistributive effects of bank capital regulation
    - GE linkages corporate bond markets $\Leftrightarrow$ banks
2. Deregulation of banking competition.
    - How competition can generate inefficient credit booms.
    - How competition reduces bank information production.

Research Profile (cont.)

Methods and Approach:

- Theoretical & empirical (so far, more theory)
- Theory "flavor": my models aim to
  - be concise and understandable for *every* economist
  - restrict assumptions to the smallest possible set
  - focus on making empirically testable predictions or offering policy advice
- Focus on macrofinancial aspects: Holding the strong belief that we still know too little about *macro*-economic aspects to financial intermediation, I link in my work micro frictions (information spillovers, market access restrictions etc.) with macro outcomes, e.g. credit cycles; redistribution.

Recent and Current Research

1. The redistributive effects of bank capital regulation. [download]
   (with E. Carletti and R. Marquez), *Journal of Financial Economics* (Jun 2020)

2. Bank Competition, Information Choice and Inefficient Credit Booms

   [download]

   Revise & Resubmit, *Journal of Financial Economics*

Work in progress:

- Bank Competition and Information Production [download]
  (with Filippo De Marco)

- GE effects of corporate bond market interventions
  (with E. Carletti, R. Marquez)
- Bitcoin intermediary runs (with Eva Schliephake)

Future Directions of Research (I)

1. Technological change, innovation policy and financial regulation

- Decarbonization will force multi-trillion dollar writedowns on financial assets in carbon-intensive industries.
- Yet financial regulation addressing risks from foreseeable technological change is still in its infancy.
- Innovation policy and financial regulation will have to go hand in hand to be effective, but our understanding of how they interact is still quite limited.

In my future research, I plan to address the interaction between innovation policy, finance and financial regulation.

Research Network

Christoph Bertsch
(Sveriges Riksbank)

Frederic Malherbe
(UCL)

Co-Pierre Georg
(UCT)

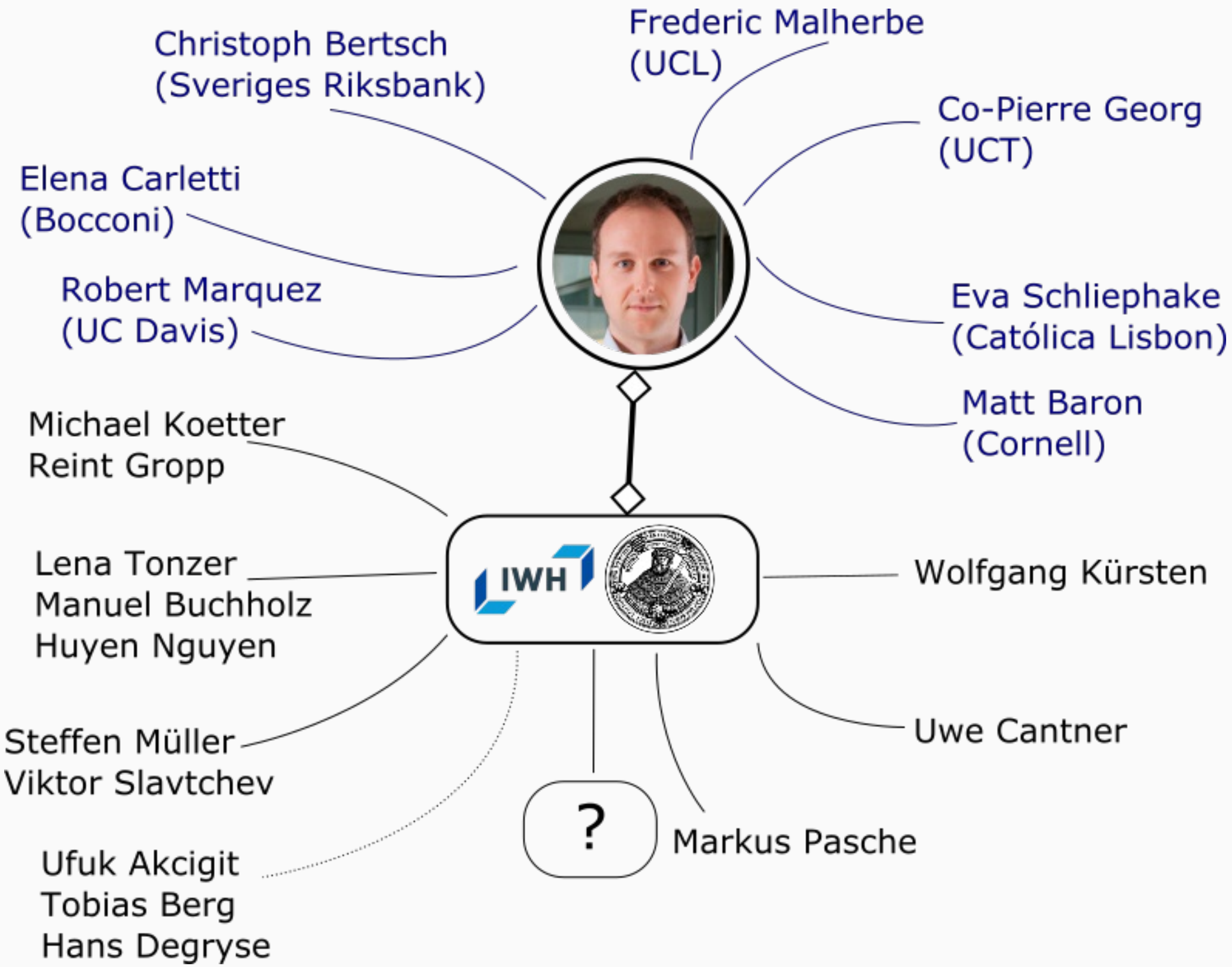
Elena Carletti
(Bocconi)

Robert Marquez
(UC Davis)

Eva Schliephake
(Católica Lisbon)

Matt Baron
(Cornell)

Research Network



Future Directions of Research (II)

2. FinTech innovation, payments & central bank digital currency

I plan to further intensify my study of questions related to the adoption of FinTech innovations such as innovative payment instruments and central bank digital currency*.

Key research contacts in this field:

- *Co-Pierre Georg (University of Cape Town)*
- *Christine Parlour (UC Berkeley)*

Future Directions of Research (III)

3. Interdisciplinary: COVID-19 and social graph topology

- COVID-19 has generated economist interest in SIR/MSEIR models. Limitation: no network, just mean field equations
- Comp. statistical physics literature obtains disease spread studying percolation* problems on a stochastic network.
  - Topology is first-order determinant of disease spread
  - Confirmed by recent empirical work showing that Facebook social graph data predict COVID-19 spread*.
  - Real-world social networks have short average path lengths and high clustering (Watts and Strogatz, 1998).

Network theory therefore suggests a more refined approach to COVID-19 containment instead of universal shutdown:

Future Directions of Research (III)

3. COVID-19 and the topology of the social graph (cont.)

How to contain COVID-19 without persistent shutdown:

- "Short-cut" links between clusters (Watts, Strogatz 1998) are of first order importance for disease spread* *.
- *Targeted* pre-emptive testing and *targeted* attempts to *reduce transmission through short-cut links dramatically* increases average path lengths and percolation thresholds in the network ⇒ idiosyncratic but no systemic outbreaks
- This is possible without severing all links, complete shutdowns or testing everybody. **Current focus of testing primarily people of high network centrality is misguided.**

Thanks to my dual qualification, I can be an intermediary between network science and economic policy.

Grants | PhD Supervision

Competitive Research Grants

- BAFFI Carefin Grant
- NVidia Hardware Grant (2018)

Currently applying:

- Fondazione Cariplo Grant (EUR 197,000)

PhD Co-Supervision

During my 2017/18 Sabbatical at Cornell, I have co-supervised Isha Agarwal (Placement: UBC Sauder School of Business, Vancouver).

Teaching Concept

- Teaching Portfolio
- Teaching Philosophy
- Evaluations @ Bocconi
- Possible Teaching @ FSU: Module "Digital Finance"

Teaching Portfolio

What have I taught so far?

- Financial Markets and Institutions (Bocconi, Finance B.Sc.)
    - *Teaching innovation:* my class was the first lecture at Bocconi to fully transition to paperless exams, and among the first to introduce voluntary online testing.
- Finance with Big Data (Bocconi, Data Science M.Sc.)
    - Covers FinTech, blockchain technologies (for asset tokenization), and applications of machine learning in FinTech industry. I've designed a complete 8 ECTS class from scratch. Several universities are using my materials now, including Univ. Concordia (Montreal).
- PhD workshop in banking theory (Cornell, PhD)

Teaching Portfolio (cont.)

What would I feel comfortable teaching?

At BSc level: anything

At MSc level: wide range of courses on financial economics, applied microeconomics, digital finance and AI, e.g.

Banking
Corporate Finance
Financial Regulation
Financial Crises

FinTech and Fin. Innovation
Blockchains
Machine Learning for Finance

International Finance
Topics in Macro Finance
Game Theory

Teaching Portfolio (cont.)

What would I feel comfortable teaching?

At PhD level:

I'd be delighted to offer PhD lectures/workshops, e.g. as part of the Central German Doctorate Program (CGDP), any of the following:

- Microeconomics of Banking
- Macroeconomics of Financial Markets
- Workshop Machine Learning with Python

Teaching Philosophy

Large undergraduate classroom settings:

- Capture and actively manage student attention by
  - designing the class as interactive as possible
  - avoiding excessive use of projector in classroom
- Complement with extensive electronic teaching media for after-class/outside-of-classroom learning experience.
- For distance teaching I'm experimenting with HTML slide technologies that add interaction to pre-recorded classes.

Graduate-level classes:

- Challenge students, push them out of their comfort zone.
- Maximum independence and responsibility for the student.
- Let students see my genuine passion for the subject.

Evaluations @ Bocconi

Observations and suggestions on the course content and the teaching methods:	Highlight the positive aspects of the course:	Highlight any problem or difficulty which during the course:
the teaching method was great and professor petriconi is an awesome teacher! i liked how he didn't use the slides much and had a discussion with us rather than reading from slides. i also liked the online optional assessments a lot	interesting topics	some material is difficult/i feel like we move throug fast and sometimes cover too much
best teacher i received at Bocconi	he is very passionate about the topic and brings a nice amount of energy	n/a
teaching methods are very good and the professor explains the topics very well.	The best professor I have at Bocconi. He shows interest and enthusiasm in the material. He explains the material in a way that we can understand.	no difficulties apart from there being a lot of conte this course.
Teaching methods we're appropriate. I would liked to have spent more time on some of the topics, as it felt like we were rushed to cover the amount of material we do in one class period.	Really good teaching methods, I felt like topics we're explained in a way that was easy to understand and follow along with!	
Appreciate the organization of the course - easy to read slides that are consistently accessible. Enjoy the layout in which the slides are presented.	Professor is extremely engaging and approachable.	None
It would be nice to add some more in-class exercises.	Very kind and clear teacher; the online quizzes are a good idea	
Enjoyed the course	Very clear and easy to understand slides. Course was very well organized and followed syllabus well. Optional quizzes helped to reinforce material and gave me the opportunity to see if I really understood the course content.	Questions in the practice problem sets could be o math-intensive which took away from practicing th relevant material
Good	Teacher is kind and helpful	No
In overall, the course was conducted in a highly professional manner with a great enthusiasm of the professor. However, It would be better to introduce mid-term exams, since the contents get harder by the finals and the amount of chapters to be covered mounts up making it harder to fully prepare for finals.	Great insights, great assistance of the professor and interminable enthusiasm of the professor! I got more interested in the Finance field due to our professor.	-
I thought the slides were extremely helpful and clear. The lecturer was very engaging and enthusiastic about the subject which made it more interesting to study.	The professor's positive attitude towards the course subject meant that the lectures were interesting and enjoyable.	
His introductions for each lessons are just a bit too long. Apart from that, he's great.	The professor is very enthusiastic about the subject, and it is clear that he cares deeply about his students.	

Possible Teaching @ FSU

Module "Digital Finance":

I could imagine offering a new MSc module "Digital Finance", complementing existing "DigiLab" offerings of FSU:

- 3 SWS: FinTech and Blockchains
- 1 SWS: Seminar FinTech and Blockchains

Content:

- Machine Learning in Python specifically for FinTech applications (payments/fraud detection/KYC/risk measure)
- Foundations of Blockchain Technology
- Smart Contracts and Asset Tokenization

I'd of course coordinate with my colleagues for optimal match.

Service

Service

- **Organizer, EuroFIT conference** (joint with Frederic Malherbe), December 2018.

- **Member, DSBA Degree Design Committee**: Together with representatives of the other departments, I co-designed the new Machine Learning degree at Bocconi.

- **Organizer, Bocconi Finance Seminar Series**: I have organized seminar series at Bocconi for two consecutive years. More than 30 speakers, including Laura Veldkamp, Christian Hellwig, Andrew Karolyi, Stavros Panageas, Christine Parlour.

Thank you!