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Horizon 2020 Excellent Science

Call: ERC-2019-STG
(Call for proposals for ERC Starting Grant)

Topic: ERC-2019-STG

Type of action: ERC-STG
(Starting Grant)

Proposal number: 852959

Proposal acronym: CarFin

Deadline Id: ERC-2019-STG

Table of contents

Section	Title	Action
1	General information	
2	Participants & contacts	
3	Budget	
4	Ethics	
5	Call-specific questions	

How to fill in the forms

The administrative forms must be filled in for each proposal using the templates available in the submission system. Some data fields in the administrative forms are pre-filled based on the steps in the submission wizard.

Proposal ID **852959**

Acronym **CarFin**

1 - General information

Topic	ERC-2019-STG	Type of Action	ERC-STG
Call Identifier	ERC-2019-STG	Deadline Id	ERC-2019-STG

Acronym **CarFin**

Proposal title

A Social Theory of Networks in Finance: Financial Careers, Revolving Doors and the Great Financial Crisis

Note that for technical reasons, the following characters are not accepted in the Proposal Title and will be removed: < > " &

Duration in months

60

Primary ERC Review Panel*

SH1 - Individuals, Markets and Organisations

Secondary ERC Review Panel

SH2 - Institutions, Values, Environment and Space

(if applicable)

ERC Keyword 1*

SH1: Financial economics; banking; corporate finance; international finance; accounting; audi

Please select, if applicable, the ERC keyword(s) that best characterise the subject of your proposal in order of priority.

ERC Keyword 2

SH1: Public economics; political economics; law and economics

ERC Keyword 3

SH3: Social structure, social mobility

ERC Keyword 4

SH3: Communication and information, networks, media

Free keywords

Social Embeddedness; Careers; Knowledge; Risk; Financial Markets; Financial Crisis; Social Network Analysis; Social Sequence Analysis;

Proposal ID **852959**

Acronym **CarFin**

Abstract

The aim of the project is to develop a social theory of networks in finance (NiF) to examine the interconnectedness of modern financial systems. This theory complements, but refocuses financial networks (FN). FN black-boxes the social despite evidence that relatively small clusters of interconnected actors can manipulate markets with serious consequences for financial stability. Tracing the relations between actors opens up new ways for understanding the causes of systemic risk. Rethinking risk as a product of social interaction has implications for how finance is regulated (inter)-nationally, and how risk management practices are implemented.

Drawing on key concepts from sociology, political economy and organisation studies, this study examines NiFs as socially embedded and increasingly intertwined as people move between firms. Collateral management (CM), an intermediary of growing importance, forms the empirical basis for examining financial activity through individual and inter-organisational networks. Understanding these flows is important because they demonstrate CMs intertwinement with a larger network of financial firms. First, using social sequence analysis the project examines CM career histories to typologise career trajectories prior to, and after the GFC. Second, a social network analysis places CM within the wider financial network as driver of interconnectedness. Knowledge creation and flows will be analysed longitudinally by integrating sequence and network approaches. Finally, the project models the interconnectedness against the performance of CDOs to explore if social network connectedness has contributed to the GFC.

This study is of significance to academics, policy makers and industry, because framing risk as outcome of social interaction opens up new avenues for non-economists to engage with finance, and for governments to promote policy change targeting the structure and governance of financial services to improve financial market stability.

Remaining characters

1

In order to best review your application, do you agree that the above non-confidential proposal title and abstract can be used, without disclosing your identity, when contacting potential reviewers?*

☒ Yes

☐ No

Proposal ID **852959**

Acronym **CarFin**

Declarations

In case of a Synergy grant application 'Principal Investigator' means 'corresponding Principal Investigator on behalf of all Principal Investigators', and 'Host Institution' means 'corresponding Host Institution'.

1) The Principal Investigator declares to have the written consent of all participants on their participation and on the content of this proposal, as well as of any researcher mentioned in the proposal as participating in the project (either as other PI, team member or collaborator).*	<input checked="" type="checkbox"/>
2) The Principal Investigator declares that the information contained in this proposal is correct and complete.	<input checked="" type="checkbox"/>
3) The Principal Investigator declares that all parts of this proposal comply with ethical principles (including the highest standards of research integrity — as set out, for instance, in the European Code of Conduct for Research Integrity — and including, in particular, avoiding fabrication, falsification, plagiarism or other research misconduct).	<input checked="" type="checkbox"/>
4) The Principal Investigator hereby declares that <i>(please select one of the three options below)</i> :	
- in case of multiple participants in the proposal, the Host Institution has carried out the self-check of the financial capacity of the organisation on http://ec.europa.eu/research/participants/portal/desktop/en/organisations/lfv.html or to be covered by a financial viability check in an EU project for the last closed financial year. Where the result was “weak” or “insufficient”, the Host Institution confirms being aware of the measures that may be imposed in accordance with the H2020 Grants Manual (Chapter on Financial capacity check) .	<input type="radio"/>
- in case of multiple participants in the proposal, the Host Institution is exempt from the financial capacity check being a public body including international organisations, higher or secondary education establishment or a legal entity, whose viability is guaranteed by a Member State or associated country, as defined in the H2020 Grants Manual (Chapter on Financial capacity check) .	<input type="radio"/>
- in case of a sole participant in the proposal, the applicant is exempt from the financial capacity check.	<input checked="" type="radio"/>
5) The Principal Investigator hereby declares that each applicant has confirmed to have the financial and operational capacity to carry out the proposed action. Where the proposal is to be retained for EU funding, each beneficiary applicant will be required to present a formal declaration in this respect.	<input checked="" type="checkbox"/>
The Principal Investigator is only responsible for the correctness of the information relating to his/her own organisation. Each applicant remains responsible for the correctness of the information related to him and declared above. Where the proposal to be retained for EU funding, the Host Institution and each beneficiary applicant will be required to present a formal declaration in this respect.	

According to Article 131 of the Financial Regulation of 25 October 2012 on the financial rules applicable to the general budget of the Union (Official Journal L 298 of 26.10.2012, p. 1) and Article 145 of its Rules of Application (Official Journal L 362, 31.12.2012, p.1) applicants found guilty of misrepresentation may be subject to administrative and financial penalties under certain conditions.

Personal data protection

The assessment of your grant application will involve the collection and processing of personal data (such as your name, address and CV), which will be performed pursuant to Regulation (EC) No 45/2001 on the protection of individuals with regard to the processing of personal data by the Community institutions and bodies and on the free movement of such data. Unless indicated otherwise, your replies to the questions in this form and any personal data requested are required to assess your grant application in accordance with the specifications of the call for proposals and will be processed solely for that purpose. Details concerning the purposes and means of the processing of your personal data as well as information on how to exercise your rights are available in the [privacy statement](#). Applicants may lodge a complaint about the processing of their personal data with the European Data Protection Supervisor at any time.

Your personal data may be registered in the Early Detection and Exclusion system of the European Commission (EDES), the new system established by the Commission to reinforce the protection of the Union's financial interests and to ensure sound financial management, in accordance with the provisions of articles 105a and 108 of the revised EU Financial Regulation (FR) (Regulation (EU, EURATOM) 2015/1929 of the European Parliament and of the Council of 28 October 2015 amending Regulation (EU, EURATOM) No 966/2012) and articles 143 - 144 of the corresponding Rules of Application (RAP) (COMMISSION DELEGATED REGULATION (EU) 2015/2462 of 30 October 2015 amending Delegated Regulation (EU) No 1268/2012) for more information see the [Privacy statement for the EDES Database](#).

Proposal ID **852959**

Acronym **CarFin**

2 - Participants & contacts

#	Participant Legal Name	Country	Action
1	UNIVERSITY OF BRISTOL	United Kingdom	

Proposal ID **852959**

Acronym

CarFin

Short name **UNIVBRIS**

2 - Administrative data of participating organisations

Host Institution

PIC	Legal name
999974262	UNIVERSITY OF BRISTOL

Short name: **UNIVBRIS**

Address of the organisation

Street TYNDALL AVENUE SENATE HOUSE

Town BRISTOL

Postcode BS8 1TH

Country United Kingdom

Webpage www.bristol.ac.uk

Specific Legal Statuses

Research and Innovation legal statuses

Public bodyyes

Legal personyes

Non-profityes

International organisationno

International organisation of European interestno

Industry (private for profit).....no

Secondary or Higher education establishmentyes

Research organisationyes

Enterprise Data

SME self-declared status.....17/05/1909 - no

SME self-assessment unknown

SME validation sme..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

Proposal ID **852959**

Acronym

CarFin

Short name **UNIVBRIS**

Department(s) carrying out the proposed work

Department 1

Department name

Department of Management

☐ not applicable

☒ Same as proposing organisation's address

Street

TYNDALL AVENUE SENATE HOUSE

Town

BRISTOL

Postcode

BS8 1TH

Country

United Kingdom

Proposal ID **852959**

Acronym

CarFin

Short name **UNIVBRIS**

Principal Investigator

The following information of the Principal Investigator is used to personalise the communications to applicants and the evaluation reports. Please make sure that your personal information is accurate and please inform the ERC in case your e-mail address changes by using the call specific e-mail address:

For Starting Grant Applicants: ERC-2019-StG-applicants@ec.europa.eu

The name and e-mail of contact persons including the Principal Investigator, Host Institution contact are read-only in the administrative form, only additional details can be edited here. To give access rights and contact details of contact persons, please save and close this form, then go back to Step 4 of the submission wizard and save the changes.

ORCID ID

0000-0003-3180-7862

Researcher ID

The maximum length of the identifier is 11 characters (ZZZ-9999-2010) and the minimum length is 9 characters (A-1001-2010).

Other ID

Please enter the type of ID here

Please enter the identifier number here

Last Name* Tischer

Last Name at Birth

Ackermann

First Name(s)* Daniel

Gender*

☒ Male

☐ Female

Title

Dr.

Country of residence

United Kingdom

Nationality*

Germany

Country of Birth*

Germany

Date of Birth* (DD/MM/YYYY)

14/01/1986

Place of Birth*

Potsdam

Contact address

Current organisation name

University of Bristol

Current Department/Faculty/Institute/
Laboratory name

Department of Management

☒ Same as organisation address

Street

TYNDALL AVENUE SENATE HOUSE

Postcode/Cedex

BS8 1TH

Town*

BRISTOL

Phone*

+441173317994

Country*

United Kingdom

Phone2 / Mobile

+447707690564

E-mail*

daniel.tischer@bristol.ac.uk

Proposal ID **852959**

Acronym

CarFin

Short name **UNIVBRIS**

Contact address of the Host Institution and contact person

The name and e-mail of Host Institution contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and contact details of Host Institution, please save and close this form, then go back to Step 4 of the submission wizard and save the changes. Please note that the submission is blocked without a contact person and e-mail address for the Host Institution.

Organisation Legal Name **UNIVERSITY OF BRISTOL**

First name* **Tiernan**

Last name* **Williams**

E-Mail* **eu-research@bristol.ac.uk**

Position in org.

Department

☐ Same as organisation

☒ Same as organisation address

Street

Town

Postcode

Country

Phone

Phone2/Mobile

Proposal ID **852959**

Acronym **CarFin**

3 - Budget

Participant Number in this proposal	Organisation Short Name	Organisation Country	Total eligible costs/€ (including 25% indirect costs) ?	Requested grant/€
1	University Of Bristol	UK	1417010,00	1417010,00
Total			1 417 010	1 417 010

4 - Ethics

1. HUMAN EMBRYOS/FOETUSES		Page
Does your research involve Human Embryonic Stem Cells (hESCs) ?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
Does your research involve the use of human embryos?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
Does your research involve the use of human foetal tissues / cells?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
2. HUMANS		Page
Does your research involve human participants?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
Does your research involve physical interventions on the study participants?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
3. HUMAN CELLS / TISSUES		Page
Does your research involve human cells or tissues (other than from Human Embryos/ Foetuses, i.e. section 1)?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
4. PERSONAL DATA		Page
Does your research involve personal data collection and/or processing?	<input checked="" type="radio"/> Yes <input type="radio"/> No	B2 10
Does it involve the collection and/or processing of sensitive personal data (e.g: health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
Does it involve processing of genetic information?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
Does it involve tracking or observation of participants?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
Does your research involve further processing of previously collected personal data (secondary use)?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
5. ANIMALS		Page
Does your research involve animals?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
6. THIRD COUNTRIES		Page
In case non-EU countries are involved, do the research related activities undertaken in these countries raise potential ethics issues?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
Do you plan to use local resources (e.g. animal and/or human tissue samples, genetic material, live animals, human remains, materials of historical value, endangered fauna or flora samples, etc.)?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
Do you plan to import any material - including personal data - from non-EU countries into the EU?	<input type="radio"/> Yes <input checked="" type="radio"/> No	

Proposal ID 852959	Acronym CarFin
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Do you plan to export any material - including personal data - from the EU to non-EU countries?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
In case your research involves low and/or lower middle income countries , are any benefits-sharing actions planned?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
Could the situation in the country put the individuals taking part in the research at risk?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
7. ENVIRONMENT & HEALTH and SAFETY		Page
Does your research involve the use of elements that may cause harm to the environment, to animals or plants?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
Does your research deal with endangered fauna and/or flora and/or protected areas?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
Does your research involve the use of elements that may cause harm to humans, including research staff?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
8. DUAL USE		Page
Does your research involve dual-use items in the sense of Regulation 428/2009, or other items for which an authorisation is required?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
9. EXCLUSIVE FOCUS ON CIVIL APPLICATIONS		Page
Could your research raise concerns regarding the exclusive focus on civil applications?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
10. MISUSE		Page
Does your research have the potential for misuse of research results?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
11. OTHER ETHICS ISSUES		Page
Are there any other ethics issues that should be taken into consideration? Please specify	<input type="radio"/> Yes <input checked="" type="radio"/> No	

I confirm that I have taken into account all ethics issues described above and that, if any ethics issues apply, I will complete the ethics self-assessment and attach the required documents.
 ☒

[How to Complete your Ethics Self-Assessment](#)

 erc <small>European Research Council</small> <small>Executive Agency</small>	Proposal Submission Forms European Research Council Executive Agency	
	Proposal ID 852959	Acronym CarFin

5 - Call specific questions

Academic Training	
Are you a medical doctor or do you hold a degree in medicine? Please note that if you have also been awarded a PhD, your medical degree may be your first eligible degree.	<input type="radio"/> Yes <input checked="" type="radio"/> No
Date of earliest award (PhD or equivalent)* - DD/MM/YYYY	<input type="text" value="26/03/2013"/>
With respect to the earliest award (PhD or equivalent), I request an extension of the eligibility window, (indicate number of days) [see the ERC 2019 Work Programme and the Information for Applicants to the Starting and Consolidator Grant 2019 Calls].	<input type="radio"/> Yes <input checked="" type="radio"/> No
Eligibility	
Please indicate your percentage of working time in an EU Member State or Associated Country over the period of the grant:	<input type="text" value="70,00"/>
Please note that you are expected to spend a minimum of 50% of your total working time in an EU Member State or Associated Country.	
I acknowledge that I am aware of the eligibility requirements for applying for this ERC call as specified in the ERC Annual Work Programme, and certify that, to the best of my knowledge my application is in compliance with all these requirements. I understand that my proposal may be declared ineligible at any point during the evaluation or granting process if it is found not to be compliant with these eligibility criteria.*	<input checked="" type="checkbox"/>
Data-Related Questions and Data Protection (Consent to any question below is entirely voluntary. A positive or negative answer will not affect the evaluation of your project proposal in any form and will not be communicated to the evaluators of your project.)	
For communication purposes only, the ERC asks for your permission to publish, in whatever form and medium, your name, the proposal title, the proposal acronym, the panel, and host institution, should your proposal be retained for funding.	<input checked="" type="radio"/> Yes <input type="radio"/> No
Some national and regional public research funding authorities run schemes to fund ERC applicants that score highly in the ERC's evaluation but which can not be funded by the ERC due to its limited budget. In case your proposal could not be selected for funding by the ERC do you consent to allow the ERC to disclose the results of your evaluation (score and ranking range) together with your name, non-confidential proposal title and abstract, proposal acronym, host institution and your contact details to such authorities?	<input checked="" type="radio"/> Yes <input type="radio"/> No
The ERC is sometimes contacted for lists of ERC funded researchers by institutions that are awarding prizes to excellent researchers. Do you consent to allow the ERC to disclose your name, non-confidential proposal title and abstract, proposal acronym, host institution and your contact details to such institutions?	<input checked="" type="radio"/> Yes <input type="radio"/> No
For purposes related to monitoring, study and evaluating implementation of ERC actions, the ERC may need that submitted proposals and their respective evaluation data be processed by external parties. Any processing will be conducted in compliance with the requirements of Regulation 45/2001.	
Have you previously submitted a proposal to the ERC? If known, please specify your most recent ERC application details.	<input type="radio"/> Yes <input checked="" type="radio"/> No

Proposal ID **852959**

Acronym **CarFin**

Excluded Reviewers

You can provide up to three names of persons that should not act as an evaluator in the evaluation of the proposal for potential competitive reasons.

First Name

Last Name

Institution

Town

Country

Webpage

Proposal ID **852959**

Acronym **CarFin**

Extended Open Research Data Pilot in Horizon 2020

If selected, all applicants will by default participate in the [Pilot on Open Research Data in Horizon 2020¹](#), which aims to improve and maximise access to and re-use of research data generated by actions.

However, participation in the Pilot is flexible in the sense that it does not mean that all research data needs to be open. After the action has started, participants will formulate a [Data Management Plan \(DMP\)](#), which should address the relevant aspects of making data FAIR - findable, accessible, interoperable and re-usable, including what data the project will generate, whether and how it will be made accessible for verification and re-use, and how it will be curated and preserved. Through this DMP projects can define certain datasets to remain closed according to the principle "as open as possible, as closed as necessary". A Data Management Plan does **not** have to be submitted at the proposal stage.

Furthermore, applicants also have the possibility to opt out of this Pilot completely at any stage (before or after the grant signature), thereby freeing themselves retroactively from the associated obligations.

Please note that participation in this Pilot does not constitute part of the evaluation process. Proposals will not be penalised for opting out.

We wish to opt out of the Pilot on Open Research Data in Horizon 2020.

☒ Yes

☐ No

Optional: Please specify the reason(s) for not being able to participate in the Pilot:

It is my intentions to make the dataset available in anonymised format to interested parties, however, the exact mechanism will require in-depth discussion at a future date

Remaining characters 128

¹ According to article 43.2 of Regulation (EU) No 1290/2013 of the European Parliament and of the Council, of 11 December 2013, laying down the rules for participation and dissemination in "Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)" and repealing Regulation (EC) No 1906/2006.

ERC StartingGrant 2019
Research proposal [PartB1]
(Part B1 is evaluated both in Step 1 and Step 2,
Part B2 is evaluated in Step 2 only)

A Social Theory of Networks in Finance: Financial Careers, Revolving Doors and the Great Financial Crisis

CARFIN

Cover Page:

- Dr. Daniel Tischer
- University of Bristol
- 60 months

The aim of the project is to develop a *social theory of networks in finance* (NiF) to examine the interconnectedness of modern financial systems. This theory complements, but refocuses financial networks (FN). FN black-boxes the social despite evidence that relatively small clusters of interconnected actors can manipulate markets with serious consequences for financial stability. Tracing the relations between actors opens up new ways for understanding the causes of systemic risk. Rethinking risk as a product of social interaction has implications for how finance is regulated (inter)-nationally, and how risk management practices are implemented.

Drawing on key concepts from sociology, political economy and organisation studies, this study examines NiFs as socially embedded and increasingly intertwined as people move between firms. Collateral management (CM), an intermediary of growing importance, forms the empirical basis for examining financial activity through individual and inter-organisational networks. Understanding these flows is important because they demonstrate CMs intertwinement with a larger network of financial firms. First, using social sequence analysis the project examines CM career histories to typologise career trajectories prior to, and after the GFC. Second, a social network analysis places CM within the wider financial network as driver of interconnectedness. Knowledge creation and flows will be analysed longitudinally by integrating sequence and network approaches. Finally, the project models the interconnectedness against the performance of CDOs to explore if social network connectedness has contributed to the GFC.

This study is of significance to academics, policy makers and industry, because framing risk as outcome of social interaction opens up new avenues for non-economists to engage with finance, and for governments to promote policy change targeting the structure and governance of financial services to improve financial market stability.

Panel Selection:

The theme of the project – financial markets and banking – fits neatly into panel *SH1 Individuals Markets and Organisations*, yet at the same time, its novelty stems from its interdisciplinary nature and ambition to create a social theory of networks in finance. Framing financial activity as socially embedded and increasingly interconnected thus warrants a second panel *SH3 Social World, Diversity and Populations* reviewing the proposal. Methods employed – social sequence and network analyses – and the theoretical framing of the study across political economy, sociology and organisations studies support the request for this proposal to be also reviewed by SH3 panel members.

List of Abbreviations :

CDO – Collateralized Debt Obligation	FN – Financial Networks
CLO – Collateralized Loan Obligation	NiF – Networks in Finance
CM – Collateral Management	PGRA – Post Graduate Research Associate
CMF – Collateral Management Firm	PI – Principal Investigator
CMer – Collateral Manager	SEC – U.S. Securities and Exchange Commission
GFC – Great Financial Crisis	WP – Work Package
FCIC – Financial Crisis Inquiry Commission	

Section a:**Key research aim**

The aim of the project is to develop a *social theory of networks in finance* (NiF) to complement, but refocus the existing literature on financial networks (FN). The conventional view of *financial networks* (FN) focuses on macro-instability through bank to bank connectedness, or interconnectedness and the problems of contagion (see Allen et al. 2010; Gai & Kapadia 2010, Babus 2016). However, the FN approach remains limited to the modelling of financial data. Because of the narrowness of enquiry, our understanding of financial networks remains incomplete, both theoretically and empirically. But what we know about finance is that relative small clusters of individuals connected within and outside the banking sector can produce a large number of assets like *Collateralised Debt Obligations* (CDOs) (Tischer & Leaver 2017). Mapping those inter-personal relations opens up new ways of understanding the causes of systemic risks. By bringing the social back in, this project develops a *social theory of networks in finance* (NiF).

Collateral management (CM) – a key risk-mitigating and increasingly influential activity within financial markets – forms the empirical basis for the examination of how knowledge and practices travel as people move between firms and “colonise” CM. It is people that both *organise* and are *organised by* financial activity and its ever evolving demands and opportunities; they innovate products and they create new markets. However, knowledge diffusion and unfettered innovation may also bring with them a *dark side*, that is, actors may use their expertise and social capital to influence (and sometimes manipulate) the development of new product markets. This could ultimately contribute to the breakdown of financial markets more generally, as powerfully demonstrated by the GFC.

Building on the PI’s work on the GFC and NiF (Granter & Tischer 2014; Leaver & Tischer (under submission); Tischer & Leaver 2017; Tischer, Maurer & Leaver (in print)), this groundbreaking interdisciplinary project seeks to theorise NiF’s within a sociological and political economy context. It complements existing theories of financial networks, but refocuses risk and instability as an outcome of social networks. The development of novel academic theoretical and methodological outputs aside, the study has potentially far-reaching implications for the governance and regulation of financial activity more widely. Lastly, the project is timely given the recurrent nature and present threat of a financial crisis, and thus, the ability to, identify and pre-empt future crises caused by individual or collective action demonstrates the importance of this study.

Background to the study:

The GFC has changed how academics think about financial activity. It laid bare that the viewing of financial firms as a set of competing and independent actors is insufficient in capturing empirical reality. The theoretical and conceptual work on *financial networks* in particular is noteworthy in promoting our understanding of financial activity as interconnected and interdependent (Gale & Kariv, 2007), where failure of and losses by one actor, or a set of actors, can produce contagion-effects that can ultimately distress related activities and even the financial system as a whole (Allen & Gale, 2000; Haldane & May, 2011). Financial network analysis of collateralised debt obligations and affiliated innovations such as credit default swaps provide a particular powerful account of financial network interconnectedness and systemic failure (see Arewa 2009; Haldane 2011; Markose et al. 2012). This line of enquiry is driven by increasingly sophisticated economic and computational models (see Caccioli et al. 2018 for a review); however, it is equally constrained by the type of input – transaction, regulatory or settlement data (Nier et al. 2007; Gai & Kapadia 2010; Babus 2016). In short, existing studies of financial networks are intrinsically quantitative and fiscal in character.

However, the FN view is insufficiently narrow as recognised in the wider social sciences where financial activity is seen as socially embedded (Granovetter 1985; Ho 2006; Podolny & Page 2003; Tischer & Leaver 2017; Uzzi 1997). Viewing finance as a social space, one in which actors constantly interact and interconnect, allows for an altogether different approach to the study of financial networks centered on these very actors, rather than on financial flows and positions. Here ‘sociality’ moves into the core of observation (MacKenzie 2004) and offers insights into constantly reconfiguring links between actors – human, economic,

algorithmic – through ‘social ties’ and ‘association’ (Latour 2005: 64f.). Actors are not atomistic, but exist within a common space suspended in a web of norms, customs and structures of control (Abolafia 2001; Callon 1990). Behaviours and actions are not an outcome of rational and all-knowing actors, but by the relational configurations within markets (Callon 1998; Callon & Muniesa 2005) and this social interconnectivity can have material economic consequences (Granovetter 1985; MacKenzie 2004; Uzzi 1997).

Thus by focusing on people, specifically those employed by collateral management firms, this project seeks to translate the notion of financial networks into the social realm. These *networks in finance* (to conceptually distinguish them from financial networks) exist at various levels (Arewa 2009): they can be bounded by teams or organizations, or they can span across firms and markets. Networks in finance are necessarily dynamic in nature and constantly reconfiguring to meet new demands and innovations. The rise of ICT has changed how financial services operate, both at the level of how technology itself changed work environments, for example the move away from traditional physical trading floors to electronic exchanges, and the level of products where complex computational demands replace traditional people-based roles with computers (see Knorr-Cetina & Brugger 2002). It was also people who developed new markets on the back of the growth of derivatives, offering seemingly endless opportunities through innovation of increasingly abstract financial products, which ultimately threatened global financial markets as a whole after Lehman’s collapse in 2008.

People remain at the heart of financial activity employing 2.2 million workers in the UK and 6.3 million in the US (TheCityUK 2016; Bureau of Labour Statistics 2018). But the nature of employment shifts from increasingly automated functions towards a more fuzzy set of actors. The emergence of new actors – CM from the 1980s (Riles 2011) and the *middle office* after the GFC (FT 2011, PWC 2014) – reshapes existing structures and relationships within and across firms. Driven by the growth of over-the-counter derivative markets, the need for collateral management has increased substantially leading up to the financial crisis and regulatory demands ensure continued growth in what has been called “the decade of collateral management” J.P. Morgan (2012). The emergence CM has clear implications for how finance organises and operates. This new need for intermediation forefronts social capital as an important resource used to reconfigure existing networks as connectivity and complexity increases (Tempest et al. 2004; Uzzi 1999). But it also has a more organising function as it reshapes processes within markets, and how financial firms interact and settle trades.

Still, our knowledge about the very people working in financial services remains, surprisingly, underdeveloped. Where it does exist, it tends to focus on elites collectively (Beaverstock 2005; Heemskeerk 2010; Ho 2006) and individually, for example by ascribing a cult-like status to winners in “high finance” (George Soros, John Paulson or David Einhorn) and the naming and shaming of individuals when things go wrong through scapegoating. The latter is intriguing because it has been a prominent feature during and following the GFC – Dick Fuld, Bob Diamond, Fred Goodwin, Fabrice Tourre or Jerome Kerviel, to name a few – in an attempt to avert the idea of failure at the systemic level. Elite status is constructed and maintained through focused recruitment strategies targeting elite education institutions – Harvard, Princeton, Yale – to both enact, regenerate and legitimise elites as holders of “expert” knowledge (Ho 2006: 41; also see Hall 2017). It also presumes a certain fixity of financial professions – the trader, investment banker, the M&A guys – reinforced by partner tracks within elite firms and the ensuing rigidity and silotisation of what is construed to be expert knowledge (Tett, 2015). But finance is not just about few individuals at the top; in fact, over 50% of those employed in UK financial services work in professional services supporting banks and fund managers (TheCityUK, 2016). Yet few academics have embarked on the quest to examine mundane financial activities (see McDowell 1997; Crompton & Birkelund 2000; Royal & Althausen 2003; Tempest et al. 2004). Others have thought to develop an understanding of how new financial actors organise and legitimise themselves through professional associations and eventually contribute to the establishment of new market logics (Loundsbury 2003; Tischer & Remer, 2017).

The idea of *professions*, in particular Abbott’s (1988) seminal work on *Systems of Professions*, provides a powerful narrative for how professions emerge and solidify through episodic struggles within a larger ecology of actors. It manifests an assumed zero-sum game which may be inappropriate in the context of CM, because CM is not competing for space. Rather CM expands and reconfigures existing network relationships in finance, not as an attempt of isolation or domination, but to generate opportunities for existing individual actors and firms (Seabrooke & Henriksen 2017; Henriksen & Seabrooke 2017). In other words, driven by a demand for a product, it may be advantageous for otherwise competing firms to coordinate the organisation of a new activity as the potential gain in the long term (both in financial and cultural terms) outweighs short-term financial gains realisable through competition. Viewing CM as a yet-to-be professionalised extension of

existing but variegated financial interests therefore creates opportunities to rethink financial professions' and financial markets' interconnectedness.

Spatial and industry networks are predominantly seen as powerful mediators and moderators of knowledge formation and diffusion (see Glueckler, Lazega & Hammer 2017, Greenhalgh et al. 2004; Powell 1998); however, emerging networks may lack effective governance procedures to ensure legitimate and productive behaviour by all individuals and groups thereof. Early movers into (or colonisers of) collateral management are not trained as collateral managers and professional norms are still emerging. Rather collateral management combines a variety of expertises – including legal, administrative, technical and financial – and such pre-existing expertise and insider knowledge could provide individuals and groups within these networks with positional and knowledge advantages that enable them to manipulate build-in risk-mitigating functions and thus the product itself (see Perrow 2005 for a historical discussion, Leaver & Tischer (under submission), Seabrooke & Henriksen 2017: pg. 5). Such a darker explanation of social network practices would provide an alternative, sociological account of how efforts to reduce risk in the market by means of securitisation instead produces “financial weapons of mass destruction” (Warren Buffett 2002).

Objective 1: to explain the establishment of collateral management and its post-crisis professionalization

Whilst we know what collateral management is and does (see Riles 2011 for an in-depth account), we have little understanding of who CMers are and where they come from. Given the increasingly significant role played by these actors, there is a pressing need to understand who these individuals are. Are collateral managers ivy-league educated elites? What does their professional career comprise of and what are the stepping stones that lead to a career in CM? The GFC provides a vantage point to divide this investigation of CMers into two discrete time-periods: 1) the unregulated pre-crisis growth of collateral management with a focus on developments in the market for *collateralized debt obligations*, and 2) post-crisis developments and the ensuing *professionalisation* of CM amid shifting regulatory demands. Abbott's (1988) system of professions will frame this analysis; however, the colonisation of what is a relatively uninhabited space during a time of rapid expansion may prove to be at odds with Abbott's framing around struggle and competition and may in fact be more collaborative in nature. This is not because of a lack of competitive ambition, but by a collectively recognised need to develop the practice of CM to support the rapid growth of CDOs leading up to the GFC. A powerful alternative explanation may be that CM requires a set of diverse expertises which naturally mitigate competitive practices before 2008. The post-crisis scenario equally raises important questions about continuity and change for CMers' careers. Do pre-GFC collateral managers remain active after the GFC or reorient their careers? Do they find 'refuge' in large financial firms (a potential form of reward)? These questions emerge because a crisis of the magnitude of the GFC may reshape networks in finance as regulatory scrutiny increases and ambitions to professionalise emerge.

Objective 2: to situate CM within the wider financial network as source of knowledge and driver of interconnectedness

New financial activities necessarily require new knowledge and expertises to be developed. But employees are no blank canvases; they bring with them a set of knowledge and expertises that are seen as relevant to the newly emerging practices in CM. Few studies have attempted to explore networks in finance centred on individuals, and where they do exist, they tend to focus on executives and/or board members, “the elite” (see Engelbert et al. 2012; Shue 2013; Fracassi 2017; Besedowsky & Botzem 2019). Knowledge is created, diffused and adopted through social relationships (see Owen-Smith & Powell 2004; Phelps et al 2012) and by studying individual career profiles and aggregating them into a whole-network state, we are able to identify key actors that connect the whole network and act as knowledge diffusers. The notion of CM as independent actor is of particular interest because it suggests a certain distance between CMers and investment bankers as originators of CDOs (Tischer et al 2019; WSJ 2011). However, relationships between CMFs and investment banks have been subject to public scrutiny and support claims that CMers neglected their fiduciary duties to investors (FCIC 2011). Mählmann (2013) argues that this relationship allowed investment banks to influence the CM strategy, but more importantly, it does provide evidence for the claim that CMers are *networked*. This project will examine precisely those relationships between CM and other financial firms by studying individual career profiles. A key aim is to identify potentially problematic network constellations.

An additional interest lies in understanding the ordering of connections, that is introducing sequence analysis to this network. Here the project builds on Everett et al's. (2018; also see Broccatelli et al. 2016) recent work on knowledge transfer in temporal two-mode networks. This basic idea can be translated into a career setting in which employees gain experience by working within an organisational setting, whilst also exchanging knowledge with other employees. Experience can be understood as a measure of a rather particular type of social capital expressed through an individual's network interconnectedness and endures departure from an organisation as alumni network (Hall 2011; Tymon & Stumpf 2003). Knowledge exchanged, however, is an

individual measure that requires contact between people, and therefore is best understood as a local measure, such as working in the same team. Knowledge exchanged is specific to individuals, accumulative and transferable, whereas experience may require length of tenure, seniority and tie latency to be considered. Developing Everett et al's (2018) method thus provides a useful starting point for the project's ambition to integrate sequence and network techniques.

Objective 3: to examine if and how CM network interconnectedness has contributed to the GFC

Evidence published by the FCIC (2011) shows that investment banks sought to hire specific CMers who were seen to be amenable to selecting and managing collateral from small pools of assets chosen carefully by investment banks and hedge funds. This raises the question if the interconnectedness of CMers with the rest of finance can provide a people-centric explanation to the financial crisis. In other words, networks in finance may also have played a role in furthering financial instability as posited by the financial network literature. Such a finding would provide a powerful people-centred supply-side explanation of crisis to that of demand-side explanations such as the herd-behaviour proposed by Kindleberger and Aliber (2005) and Shiller (2015). Here pre-existing ties could be variably viewed as active and latent, depending on the time passed between leaving a firm and joining the CM, the role that was inhabited and the strength of ties between the CMF and the investment banks. For example, if multiple employees have previously worked for an investment bank that now hires these people as CM, conflicts of interests may arise and these products may as a result perform worse than those where there is no such connection.

By introducing agency to this analysis, actors are seen as having strategic intentions to shape and alter their networks by adding or dropping (Borgatti, Braas & Halgin 2014). CMFs may recruit individuals with specific expertise, for example, an in-depth knowledge of the models employed by credit rating agencies or advance mathematical and computational skills, used to produce highly-rated CDOs on the back of poor-quality reference assets. Creating or retaining connections may therefore be motivated by the ability to realise gains at the level of the individual or collective, and the ability to do so may be determined by the social capital of the actors in the network (Baker 2014). In short, the objective is to understand if and how social connections between financial actors have contributed to the GFC.

Methodology and Resources

This project is organized into three interrelated work programmes which correspond to the three objectives outlined above. The duration of five years of the research project reflects the staggered nature of enquiry where WP 2 builds on WP 1 and WP 3 builds on both WP 1 and WP 2 (see Table 1).

Table 1: Outline of Planned Work

		Year 1	Year 2	Year 3	Year 4	Year 5
WP1 (Obj. 1)	Collection of Career Data, Literature Review					
	Career Sequence Analysis & Tracing of Expert Knowledge Analysis & Write-up					
WP2 (Obj. 2)	SNA of Career & Interorganisational Networks					
	Methods development combining SA & SNA Analysis & Write-up					
WP3 (Obj. 3)	Collection of Financial Data on CDOs					
	Quantitative Analysis & Modelling Analysis & Write-up					
Non-WP Specific	Writing of Monograph and Co- edited Volume					
	International Conference					

A pilot project (25 collateral managers yielding ~600 careers) performed by the PI has demonstrated the achievability of the project's key ambition to develop a people-centric account of networks in finance. Moreover, problems of access data is mitigated as all data – career and product performance data – is publically available in form of documents published for each CDO/CLO derivative – offering circulars – (see Tischer et al., (in print); Tischer & Leaver, (invited submission to SI in *Social Networks* on “empirical network data collection for social networks”)) and from financial databases. The project is interdisciplinary in nature and draws on concepts and theories across sociology, political economy and socio-economics. In addition to employing various sequence and network analytical tools the project seeks to produce a methodological innovation by combining sequence analysis with network analysis building on work by Abbott and Tsay (2000), Bearman et al. (2002), Bison (2014) Broccatelli et al. (2016) and Everett et al (2018). The PI will devote 70 percent of his working time to the project. This involves taking an active role

in managing the work programmes and post-doctoral research assistants (PDRA) employed for the duration of this project, the collection and analysis of data and dissemination of results. The project will be supported by two post-docs over the duration of the project as well as a team of well-established academics who are keen to contribute to this interdisciplinary research programme (Prof. Martin Everett, Dr. Johan Koskinen and Prof. Adam Leaver). In addition, the PI will recruit two PhD students to focus on specific project-related tasks/sub-projects: PhD1, with a background in sociology or political economy, will work on and contribute to the social network analysis; PhD2, with a strong methods background, will be closely engaged with the integration of sequence and network analyses. Both PhDs will work closely with other team members, including the PI and PDRAs.

Dissemination strategies of the project include academic journal outputs (sole and co-authored) targeting high impact journals across the social sciences with a focus on organisation studies, political economy and sociology; working papers and reports for non-academic audiences accessible via the project website. The PI will publish theoretical and empirical research outputs in a monograph and the PI and co-editors will publish an edited volume. Project members will attend international conferences (e.g. SASE, Sunbelt (Social Networks), International Studies Association) and further opportunities to address non-academic audience will be identified throughout the research project (e.g. the Bank of England's *One Bank* research seminars). Three workshops will be organised over the duration of the project to develop an academic community around NiF building on the PI's existing networks including the *Networks in Finance* workshops. The PI and PDRAs will organise and host a final international conference to disseminate findings and to develop future research directions and collaborations with a network of international scholars.

WP 1: Sequencing of careers

This work package uses sequence analysis to develop an in-depth understanding of financial careers for a particular activity (collateral management). The PI and PDRAs will jointly collect time-stamped data on over 3000 individual's careers, including educational attainment and previous employment, from offering circulars (base data) and online database resources (including LinkedIn and Bloomberg). The analysis will specify four different datasets separated by the financial crisis (pre- and post-crisis careers), one that captures the post-crisis career developments of the pre-crisis network and a whole network including all individuals. This programme of research will examine how diverse sets of skills and knowledge are combined to construct collateral management and highlight both continuity and change over a 20 year period. Moreover, it will seek to identify *problematic* expertise – specific knowledge that may have played a role in constructing toxic derivatives which led to multiple bankruptcies during the GFC – using a comparative case study approach (Glaser & Strauss 2006; Stake 2006).

WP 2: Whole-network view of actor interconnectedness with financial firms

Research of financial networks emphasizes how increasing interconnectivity in finance through financial flows and co-ownership can threaten financial market stability. By replacing financial flows with knowledge flows, this work package seeks to advance a social theory of networks in finance based on collateral manager career data. As individuals move between firms they connect these firms and their personal networks could be understood as source of both cooperation and competition between firms. Competitive practices at the industry level visible to the outside may in fact co-exist with cooperative relationships at the individual level (Brailly 2016) which are more difficult to observe between financial actors. To capture knowledge flows between these organisations, different types of relations (including niche of expertise, seniority of the individual and tenure of employment) will be examined in isolation and as multiplex ties to capture the extent of knowledge transfer through the strength of ties (see Ferriani et al. 2012 for discussion). Finally, the PI and PDRA will examine how ties between organisations are reinforced over time captured by people moving from Firm A to Firm B repeatedly in one direction or are reciprocated (Easterby-Smith et. al. 2008). Moreover, tie latency will be examined with respect to the potential future opportunity to realise gains (Haythornthwaite 2002).

WP 3: Multilevel networks and Collateral management's role in creating a crisis

This final work package will model the performance of CDOs based on career patterns and problematic expertise identified in WP1 and interorganisational knowledge transfers examined in WP2. The presence of a specific knowledge holder, for example, with an in-depth understanding of credit rating agencies' CDO models, may have a positive effect on the performance of CDOs managed by that collateral management. The existence of strong ties between the collateral managers and investment banks, on the other hand, may have a negative impact on the performance. In addition to the NiF career data, this work package will make use of financial data for each CDO product to statistically examine the effect different network configurations may have on product performance. This programme speaks directly to theories of contagion and risk/uncertainty in the financial networks literature and provides a potentially powerful alternative sociological explanation of social network effects on financial stability.

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- EDUCATION**

- | | |
|------|---|
| 2013 | PhD in Business and Management
CRESC and Manchester Business School, University of Manchester, United Kingdom
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| 2009 | Master in Global Business Analysis
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- CURRENT POSITION(S)**

- | | |
|--------|--|
| 2018 – | Lecturer in Management
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|--------|--|

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- | | |
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| 2015 – 2018 | Lecturer in Political Economy and Organisation
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- | | |
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| 2017 | Best Paper Notification, Academy of Management
“Through a Glass Darkly: Tracing the Mundane Organisation of a Bubble Network” |
| 2013 | A.SK Postdoctoral Fellow, Berlin Social Science Center (WZB) |

- SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS**

- | | |
|-----------|--|
| 2016–2018 | 1x PhD Supervision, Manchester Business School, University of Manchester, United Kingdom |
|-----------|--|

- TEACHING ACTIVITIES**

- | | |
|-------------|---|
| 2018 – now | International Business Management (w/ focus on contemporary political influences on the global economy); University of Bristol |
| 2015 – 2018 | International Business Analysis Project (w/ focus on Great Financial Crisis & post-crisis regulatory developments in Banking); Manchester Business School, UK |
| 2015 – 2018 | Critical Perspectives in Strategy (w/ focus on strategy under financialization, risk and uncertainty); Manchester Business School, UK |
| 2016 – 2017 | Mitchell Centre for Social Network Analysis Summer School (w/ focus on longitudinal social network analysis); University of Manchester |

- **ORGANISATION OF SCIENTIFIC MEETINGS**

- 2018 Submission of a mini-conference proposal titled “Organization and technology inside fast capitalism: From an infinite present to abysmal futures” to be considered for *SASE*’s 30th Anniversary Conference at The New School in New York City from 27-29 June 2019. Decision: TBC
- 2017 2nd Networks in Finance Workshop w/ 20 participants in Copenhagen, Denmark
- 2016 1st Networks in Finance Workshop w/ 20 participants in Manchester, United Kingdom

- **REVIEWING ACTIVITIES**

- 2017 – 2018 Reviewed journal submissions for *Social Networks* and *New Technology, Work and Employment*;
- 2017 Review of book proposal for Routledge on *Sustainable Investment*

- **MEMBERSHIPS OF SCIENTIFIC SOCIETIES**

- 2016 – now Co-founder of *Networks in Finance* workshop and associated research
- 2017 – 2018 Member of the board of the *Mitchell Centre for Social Network Analysis*@ University of Manchester
- Professional membership:
 International Network for Social Network Analysis (*INSNA*)
 Academy of Management (*AoM*)
 Society for the Advancement of Socio-Economics (*SASE*)

Appendix: All ongoing and submitted grants and funding of the PI (Funding ID)
Mandatory information (does not count towards page limits)

Ongoing Grants (Please indicate "No funding" when applicable):

<i>Project Title</i>	<i>Funding source</i>	<i>Amount (Euros)</i>	<i>Period</i>	<i>Role of the PI</i>	<i>Relation to current ERC proposal¹</i>
A Financial Exclusion Index (FEI): A networked economic geography perspective to financial exclusion	Management Research Platform Funding	£5,085 (€5,700)	Sept 2018 – Dec 2018	Pilot Project - Principle Investigator responsible for 2 Research Assistants	none

Grant applications (Please indicate "None" when applicable):

<i>Project Title</i>	<i>Funding source</i>	<i>Amount (Euros)</i>	<i>Period</i>	<i>Role of the PI</i>	<i>Relation to current ERC proposal²</i>
Social Network Risks in the Post-Crisis CLO Market	"Finance Hub" – ESRC	£89,000 (€100,000)	Aug 2019 – Aug 2020	Co-Investigator	Research will yield documents that benefit career data gathering efforts for this bid; However, the focus of this project is on a different aspect of the data so there is no duplication of research activity

¹Describe clearly any scientific overlap between your ERC application and the current research grant or on-going grant application.

Section c: Early achievements track-record

Selected peer-reviewed journal articles

1. Tischer, D., Maurer, B. & Leaver, A. (in print) Finance as 'bizarre bazaar': using documents as a source of ethnographic knowledge. To be published in *Organization* in 2019. Available from: [https://research-information.bristol.ac.uk/en/publications/finance-as-bizarre-bazaar\(5906dacf-99f0-4c94-9a4a-aeffe8725b9b\).html](https://research-information.bristol.ac.uk/en/publications/finance-as-bizarre-bazaar(5906dacf-99f0-4c94-9a4a-aeffe8725b9b).html)
Note: this paper is first-authored by Tischer.
2. Tischer, D. & Leaver, A. (2017) Through a glass darkly: Tracing the mundane organisation of a bubble network. *Academy of Management Proceedings*, 2017(1): doi:10.5465/AMBPP.2017.254
Note: a developed version of this paper has received a Revise & Resubmit from *Accounting, Organization and Society*.
3. Froud, J., Tischer, D. & Williams, K. (2017) It is the business model... Reframing the problems of UK retail banking. *Critical Perspectives on Accounting*. 42, p.1-1.
Note: This paper is written with my PhD supervisors, however, it is not associated with Tischer's PhD
4. Tischer, D. (2013) Swimming against the tide: Ethical banks as countermovement. *Journal of Sustainable Finance & Investment*, 3(4): 314-332.
Note: First sole-authored article by Tischer
5. Tischer, D. Yeoman, R. White, S. Nicholls, A. & Michie, J. (2016) An Evaluative Framework for Mutual and Employee-owned Business. *Journal of Social Entrepreneurship*, 7(3):342-368.
Note: First-authored by Tischer

Invited presentations

1. "Career networks in finance: Learning from Collateral Managers". *University of Sterling*, 16 August 2018
2. "Giving artefacts a voice - collecting network data on non-participatory populations". Nuffield College, *University of Oxford*, 22 June 2018
3. "Reframing Building Societies and Mutual Insurers: Collaboration as a source of competitive advantage". *BSA Academic Symposium*, London, 11 April 2017
4. "A Networked Anatomy of the CDO Bubble", *University of California Irvine*; 30 March 2016
5. "Evaluative Frameworks for Assessing Mutual Performance". British Academy Symposium *Kellogg College, University of Oxford*; 10 Jun 2015
6. "Network analysis and financial products as "networked" products". Visiting Scholars Programme, Centre for Transformative Innovation, *Swinburne University of Science and Technology*; 06 November 2014.

Prizes, awards, academy memberships

- Best paper notification for AoM Conference 2017 paper submission at Atlanta, USA:
doi:10.5465/AMBPP.2017.254;
- A.SK. Post-doctoral Fellow at *Berlin Social Science Centre*, WZB, 2014;
- Faculty of Humanities PhD funding award, University of Manchester 2009-2012, value ~
£54,000 incl. tuition and bursary

Research funding track record (PI and Co-I only)

Sept 2018 – Dec 2018	PI	A Financial Exclusion Index (FEI)	Management Research Platform Funding	£5,085 (€5,700)
Sep 2016 – Jun 2017	PI	Do patterns of friendship formation predict student satisfaction and academic achievement in higher education?	AMBS Research Support Fund	£5,500
May 2015 – Aug 2016	Co-I	Networks in Finance	UoM - RSF	£10,500
Oct 2014 – Feb 2016	Co-I	Mutual support: Instituting a Coordinated Mutual Finance/Banking Economy in the UK	Association of Financial Mutuals & Building Societies Association	£40,000
Jan – Sep 2015	Co-I	Crafting an Alternative Politics of Debt - Spaces and places of politics as everyday action	ESRC - Knowledge Exchange	£90,000
Mar - Dec 2014	Co-I	Digital Technologies of Debt Resilience	EPSRC - Communities and Culture Network	£31,720

ERC Starting Grant 2019 Research proposal [Part B2]

A Social Theory of Networks in Finance: Financial Careers, Revolving Doors and the Great Financial Crisis

CARFIN

Part B2: The scientific proposal

List of Abbreviations:

CDO – Collateralized Debt Obligation	FCIC – Financial Crisis Inquiry Commission
CLO – Collateralized Loan Obligation	FN – Financial Networks
CM – Collateral Management	NiF – Networks in Finance
CMF – Collateral Management Firm	PGRA – Post Graduate Research Associate
CMer – Collateral Manager	PI – Principal Investigator
GFC – Great Financial Crisis	SEC – U.S. Securities and Exchange Commission
ICMA – International Capital Markets Association	WP – Work Package
ISLA – International Securities Lending Association	

Section a. State-of-the-art and objectives

The aim of the project is to develop a *social theory of networks in finance* (NiF) to complement, but refocus the existing literature on *financial networks* (FN). The project speaks directly to existing theories of FN. At the core, the FN literature theorises how the intertwined nature of financial markets spreads risks throughout the system. Building on early work by Allen and Gale (2000), the uptake of this theory after the financial crisis has become increasingly sophisticated in modelling the network effects of financial flows within an increasingly interconnected financial system (Haldane 2011; Babus 2016). These networks propagate and amplify shocks leading to macro-state financial instability (Acemoglu et al. 2015). It is undeniable to say that the FN literature has influence on policy making since the Great Financial Crisis (GFC), yet both recent academic and practitioner conferences highlight the urgent need for further enquiry (Banque de France 2015; INET 2018).

Notwithstanding FN's contribution, it is important to note the omission of the social from existing theories and models of FN which is both surprising and at the same time not so surprising. It *is not* surprising given the prominent role financial and economic elites played in the aftermath of the financial crisis and the re-imagining of economics and finance from 'cause' to 'saviour' of financial markets (Engelen et al. 2011; Levine 2012, Munir 2011). But it *is* surprising when we examine the evidence available on the causes of the GFC in more detail. For example, the *Financial Crisis Inquiry Commission's* (FCIC 2011) final report highlights a series of wrongdoings by individuals and individual banks. Investigations by the *Securities and Exchange Commission* illustrate how the market for CDOs was subject to fraud, negligence and manipulation by those involved in the creation and marketing of the CDO (see Muñoz 2010; Mähmann 2013; Leaver & Tischer (under submission)). This evidence underlines a need for a sociological exploration of financial activity with a clear focus on relationships between individuals and organisations.

By explicitly focusing on individuals and their collective manifestation through employees of financial firms, this study seeks to do exactly that: to break the silence from the wider social sciences in the aftermath of the GFC raised by various commentators (Walby 2010; Munir 2011). Thus rather than criticising FN scholars, the aim here is to develop a social theory of networks in finance (NiF) that refocuses the finance and economics driven literature on financial networks. The study is important and timely because it provides an alternative angle to financial activity, one that is fundamentally driven by human connectivity. As a result, instability and crises are not viewed solely as an outcome of financial inputs, but as an outcome of interactions between those engaged in financial activities.

The theoretical development of NiF is based on the empirical examination of collateral management (CM). Collateral managers (CMers) are interesting for a number of reasons. First, the activity of CM was at a relatively nascent stage but grew substantially during the early 2000s, both in size and importance (DTCC

2014). This growth is demand-driven, and derivatives – for example, CDOs and CLOs – are key drivers of that demand. Second, the GFC presents an interesting shift within CM towards post-crisis professionalization of this activity. Certification and professional courses in CM provided by, for example, *ICMA* (2018), are becoming more widespread in an effort to develop norms and standards, and reflect more recent post-GFC regulatory changes to CM. Third, collateral management exists at the intersection of multiple financial activities. It is a go-between agent between buyers and sellers of derivatives and interacts with a diverse set of financial actors, including hedge funds, investment banks and brokers.

Studying collateral management opens up an interesting enquiry into networks and knowledge practices within finance. Unlike Riles (2011) who situates *collateral knowledge* firmly in the legal sphere, a pilot study conducted by the PI¹ (includes 25 CMFs and yields approximately 600 careers; available on request) has established a much broader base of expertise of collateral managers – e.g. real estate, insurance, portfolio management and securities – ranging from junior to senior roles at previous institutions. Understanding the flow of expert knowledge into CM is therefore an interesting proposition, not only because of its potential implications for knowledge practices and how CMers manage collateral, but also to demonstrate CMs social embeddedness in a larger network of Wall Street and other financial firms. CM is not a highly technical-legal financial activity at the periphery of finance; it acts as intermediary that spans across diverse financial activities. The relative concentration of CM within cities, in particular New York City and London, and their proximity to high finance echoes previous arguments that these networks exercise power *with*, rather than *over*, others (Allen 2010, also see Beaverstock 2005).

When viewing CM as highly connected within networks in finance, career histories of CMers allow these connections to be traced by laying bare previous positions in investment banks, credit rating agencies or on specific securities trading desks. Collectively then, CM may be best described as colonised from the outside in; as a careful positioning of experts by powerful financial actors; and, therefore as an extension of existing financial knowledge and practices. It is people that both *organise* and are *organised by* financial activity and its ever-evolving demands and opportunities; they innovate products and they create new markets. But knowledge diffusion and in particular unfettered innovation may also give rise to darker explanations of how expertise and social capital is used to influence, or even to manipulate, the development of new product markets.

This research project presents an unprecedented opportunity to develop our understanding of networks in finance. The intertwining of individual financial careers with larger network structures and the resultant flows of knowledge across this network provide key insights on a specific financial activity, collateral management, which so far has received relatively little attention from sociology and political economy. Moreover, the project seeks to offer an alternative account of the GFC, one that complements existing financial network theories, by focusing specifically on social network effects on CDO product performance. That is, do relationships between actors and the presence of specific expert knowledge contributed to the GFC? Answering these questions may present an opportunity for sociology to gain a voice in what is normally the domain of economics and finance scholars, and in doing so, by removing complex models and jargon from the equation, make financial networks more accessible to non-experts. In order to achieve the aim of developing a social theory of networks in finance, this project forwards three objectives:

Objective 1: to explain the establishment of collateral management and its post-crisis professionalization

Riles (2011) provides an in-depth account of what collateral management is and does within the Japanese context. But the Japanese context is rather specific (see ISDA 2005: 80) and in fact, her account seems to differ to observations made by the PI during his pilot study focusing on, mainly, US-based collateral managers. Given the increasingly significant role played by these actors, there is a pressing need to understand who these individuals are. Are collateral managers ivy-league educated elites or are they experts on complex statistical and mathematical models? Are there specific types of firms – investment banks, credit rating agencies or asset managers – that generate expert collateral managers or is CM open to all, even those who are not an alumni from, say, Goldman Sachs or Merrill Lynch?

The GFC provides a vantage point to divide this investigation of collateral managers into two discrete time-periods: 1) the unregulated pre-crisis growth of collateral management with a focus on developments in the market for *collateralized debt obligations*, and 2) post-crisis developments and the ensuing *professionalisation* of collateral management amid shifting regulatory demands. Abbott's (1988) seminal work on the *Systems of Profession* is useful in understanding the overall shift of collateral management towards professionalization after the GFC. But at the same time it raises the question of whether CM was

¹ Available from the PI on request

considered a profession or a financial technique leading up to the financial crisis. Collateral management grew substantially and did so very quickly but recruitment and training of professional CM required time. The colonisation of what has been a relatively uninhabited space by previous employees of Wall Street firms and other holders of specific expertise also renders CM an extension of established networks in finance, an outsourcing of responsibilities to a new intermediary. Moreover, collateral management requires a set of diverse expertises which naturally mitigate competitive practices before 2008. The case of CM growth may therefore present a collaborative endeavour, not because of a lack of competitive ambition, but because of a collectively recognised need to develop the practice of collateral management to support the rapid growth of CDOs leading up to the GFC.

The initial pre-crisis colonising of CM by employees of existing Wall Street actors may have been challenged after the GFC by a newly arising professional class competing for the space (Abbott 1988). Do pre-GFC collateral managers reorient their careers amidst these new professional requirements? Do they find ‘refuge’ in large financial firms which could be understood as a potential form of reward? Regulatory and legislative changes to CM transformed the post-crisis environment. As noted by BNY Mellon (2018) the introduction of regulation (for example via the Dodd-Frank-Act, MiFid II or European Markets Infrastructure Regulation) drove CM growth as financial markets have recognised the value of CM for trading and risk mitigation. This has been a catalyst for CM becoming a standalone activity and the slow but increasing professionalization of CM through professional associations such as ICMA and ISLA and specialised courses, workshops and certificates offered. Moreover, the ISDA published a series of best-practice (2013) and blueprints (2017) to develop professional standards within CM. Taken together, these developments may have altered knowledge practices and expertise of CMers in the post-crisis period which may have implications for those active prior to the GFC.

Both pre- and post-GFC accounts of CM careers will be examined using social sequence analysis to trace career trajectories of CMers. Each collateral manager’s ‘unique’ career trajectory is assessed within the context of all careers to assess differences and similarities between careers using optimal matching (OM) procedures (Abbott 1995; Stark & Vedres 2006). The resulting career patterns allows us to distinguish between groups of careers according to their similarity, and these groups in turn will provide insights into CM careers contingency on social structures (Cornwell 2016). By taking into account the ‘cost’ or effort required to move between groups, OM procedures clustering of careers may also be interpreted as ascribing different professional ecologies based on CM career backgrounds (Seabrooke and Nillson 2015) which are relevant in understanding knowledge diffusion. But these analyses are not only useful in identifying specific career structures and clusters; they can also reveal specific, potentially problematic career patterns for large samples, for example in line with the ‘revolving door’ concept for individuals that cross ecologies, e.g. from commercial to regulatory back to commercial (Henriksen & Seabrooke 2017: 62).

By answering these questions it may be possible to capture the magnitude of changes introduced after the GFC and its ability to reshape career trajectories in finance as regulatory scrutiny increases and ambitions to professionalise emerge.

Objective 2: to situate CM within the wider financial network as source of knowledge and driver of interconnectedness

New financial activities necessarily require new knowledge and expertises to be developed and diffused; and social network studies have played an important role in developing the field (Rogers 1995[1962], Valente 1996). But employees are no blank canvases; they bring with them a set of knowledge and expertises that are seen as relevant to the newly emerging practices in collateral management. Existing studies of knowledge networks highlight how knowledge and innovations are created, diffused and adopted through social relationships (see Owen-Smith & Powell 2004; Phelps et al 2012). But there is also a darker side to diffusion, for example, the spread of viral diseases such as HIV (Rogers 2004; Butts 2009). Scholars have also observed the diffusion of unwanted behaviour such as the *diffusion of fraud* across financial intermediaries (Baker & Faulkner 2006) or *misconduct* more generally (Vaughan 1999). In fact, much of the financial networks literature examines contagion as a key mechanism through which financial systems are destabilised (see Elliott et al. 2014 for a recent review).

The notion of collateral management as independent actor is of particular interest because it suggests a certain distance between CM and investment banks as originators of CDOs (Tischer et al (in print), WSJ 2011). However, the relationships between collateral management firms (involved in selecting and managing collateral for CDOs) and investment banks have been subject to public scrutiny and support claims that collateral managers neglected their fiduciary duties to investors (FCIC 2011). In reviewing CM activity leading up to the GFC Mählmann (2013) highlights a relationship between CM market share and the amenability to act in the interest of the investment bank rather than investors and that this results in a higher

average default rate than for smaller CM. Although extreme cases, these examples provide evidence for the claim that collateral managers are *networked* within a larger ecosystem.

This project will examine relationships between CM and other financial firms by focusing on previous employment relations. By studying individual career profiles and aggregating them into a whole-network state, we are able to identify key actors that connect the whole network and act as knowledge diffusers. A key aim is to identify potentially *problematic network constellations*, for example: 1) where CMFs employ previous employees from a financial firm which then hires the CM to manage a CDO; 2) where CMFs are staffed with a team previously employed in a financial firm; 3) where CMFs are staffed with previous employees of financial firms who have a specific expertise, for example, they may have been integral to the creation of CDOs in that firm and 4) where CMFs are staffed with experts who have previously worked for Credit Rating Agencies. Of course not all CMs have knowingly compromised their independence; however, this is not to say that there is not a subset of CMs that have actively engaged in side-deals with third-parties or acted in the interest of the investment bank (see SEC 2013, Mählmann 2013).

An additional interest lies in understanding the ordering of connections, that is introducing sequence analysis to this network. The integration of both techniques will provide a more nuanced understanding of these networks longitudinally. Rather than simply identifying a connection between CM and, say, investment bank, considering latent ties may be relevant to explanations of investment banks hiring CMs. For example, an investment bank may be reluctant to hire a CM which recently hired a former employee, but may be more amenable to do so, if the employee worked in another firm in between.

Here the project builds on Everett et al.'s (2018; also see Broccatelli et al. 2016) recent work on knowledge transfer in temporal two-mode networks where attendees of events gain a) experience from attending the event, and b) knowledge via the direct exchange of information with other attendees. This basic idea can be translated into a career setting in which employees gain experience by working within an organisational setting, whilst also exchanging knowledge with other employees. Experience gained is relevant as it is both internalised and exists at the network level through shared experience. Experiencing an organisation may in fact provide us with a measure of a rather particular type of social capital expressed through an individual's network interconnectedness (Lazega & Pattison 2001). This measure is general, that is, the connections are not personal but affect employees and alumni of a firm; for example, someone who previously worked for Goldman Sachs can (re-)connect with the Goldman Sachs network with relative ease simply because he or she is an "alumni" (Hall 2011; Tymon & Stumpf 2003). Knowledge exchanged, however, is an individual measure that requires contact between people, and therefore is best understood as a local measure, such as working in the same team. Knowledge exchanged is specific to individuals, accumulative and transferable, whereas experience may require length of tenure, seniority and tie latency to be considered. Developing Everett et al.'s (2018) method thus provides a useful starting point for the project's ambition to integrate sequence and network techniques.

These analyses contribute directly to the development of a social theory of networks in finance by advancing our understanding of the interconnectivity of financial actors. Illustrating how knowledge practices are diffused within this network via direct and latent ties also provides insights into how pre-existing relationships can produce negative outcomes for other market participants.

Objective 3: to examine if and how CM network interconnectedness has contributed to the GFC

Evidence published by the FCIC (2011), SEC (2013) and Chernenko (2017) shows that investment banks sought to hire specific collateral managers who were seen to be amenable to select and manage collateral picked by investment banks and hedge funds with the sole purpose of creating structures that would default (FCIC 2011: 192). This interconnectedness of collateral managers with the rest of finance may explain why CDOs managed by some CMs have a higher chance to default than others (Mählmann 2013). In other words, social, rather than financial, network ties may have played a role in furthering financial instability as posited by the financial network literature. Such a finding would provide a powerful people-centred supply-side explanation of crisis to that of demand-side explanations such as the herd-behaviour proposed by Kindleberger and Aliber (2003) and Shiller (2015).

Building on the problematic network constellations identified in objective 2, this section seeks to model the network effects on product performance; that is, do certain network ties have an above average likelihood of being linked to an event of default within the CDO market than random connections? Different models will be specified taking into account different measures of tie strength expressed by the position and seniority inhabited by the employee and the number of ties between actors, for example, through multiple individual transfers over time or one-off team moves. In addition, longitudinal effects including the latency of ties, length of career and the year of CDO production are taken into account when modelling these network

effects. The latter point is relevant because CDOs issued after 2004 have a higher chance of default because of changes to underlying assets and incremental product innovation.

Two premises guide the analysis: 1) financial firms have colonised CM to manipulate CDO origination for personal gains; and 2) CMs have hired people with specific knowledge or with specific social networks to increase the chance of being hired to manage a CDO. By introducing agency to this analysis, actors are seen as having strategic intentions to shape and alter their networks (Borgatti, Braas & Halgin 2014). These decisions to add or drop a connection may be motivated by the ability to realise gains at the level of the individual socially embedded in a wider network of actors. Opportunities to act are therefore determined by the social capital of the actors in the network, for example, pre-existing connections or being known within a specific network (Baker 2014). For example, individuals may have gained an in-depth knowledge of models used to rate CDOs by working for credit rating agencies and may be inclined to use this insider knowledge to create highly-rated CDOs on the back of poor-quality reference assets. In short, the objective is to understand if and how social connections between financial actors have contributed to the GFC.

Section b. Methodology

Gaining access to financial institutions is notoriously difficult. Where access is granted, it often results in a narrow enquiry based on one or few firms. This project, however, involves data to be collected on well over 100 CMFs and thousands of individuals; hence, a research strategy build on direct access to these firms and individuals is unsuitable. To mitigate the need for data collection across multiple firms, the PI has identified a particular document – *offering circular* – as a key source of biographical data on collateral managers and descriptions of collateral management firms. The PI spend four years working with these documents in-depth (see Tischer et al. (in print) and Tischer & Leaver (in draft) for a detailed discussion of these documents). One paper using data collected from these documents by Leaver and Tischer (co-authors) is currently in *revise & resubmit* stage, and Tischer is first-authoring (w/ Leaver) an invited submission to a special issue in *Social Networks* on “Empirical Network Data Collection in Social Networks” which discusses career data². Tischer has also given invited talks on this data and its collection at *Swinburne University of Science and Technology*, *UC Irvine* and *University of Oxford* (among others). A pilot project (25 collateral managers yielding ~600 careers) conducted by the PI has demonstrated the achievability of the project’s key ambition to develop a social theory of networks in finance.

CDO offering circulars are publically available from stock exchanges, with the *Irish Stock Exchange* providing the most comprehensive selection of documents. Additional data on organisations and CDOs can be gathered via corporate websites and through use of specialist databases including services provided by *Bloomberg* and *Thomson Reuters*, as well as from credit rating agencies. Where suitable, the project will make use of existing databases of CDO performance; however, these may provide insufficient detail which calls for additional data collection efforts by the project team.

To ensure data quality, the PI has developed a data triangulation strategy based on web-based services, in particular *LinkedIn* and *Bloomberg*, which hold comprehensive career accounts. The use of these databases is made possible by our ability to search for individuals by name, education and previous employment in a targeted and comprehensive manner and enables us to match biographies published in documents with those available online. Potential ethical concerns are discussed below under “ethical considerations”. The project is interdisciplinary in nature and draws on concepts and theories across sociology, political economy and socio-economics. The PI will devote 70 percent of his working time to the project. This involved taking an active role in managing the work programmes and post-doctoral research assistants (PDRA) employed for the duration of this project, the collection and analysis of data and dissemination of results. In addition, the PI will recruit two PhD students to focus on specific project-related tasks/sub-projects: PhD1, with a background in sociology or political economy, will work on and contribute to the social network analysis; PhD2, with a strong methods background, will be closely engaged with the integration of sequence and network analyses. Both PhDs will work closely with other team members, including the PI and PDRA.












Research programme

The project is structured around three work packages which map onto the three objectives discussed in Part B1 of this application and above. Work packages are staggered over the duration of this project of 5 year (see Table 1 for an overview). During **year 1**, the PI and PDRA1 will focus on data collection of career data, triangulation and formatting of the database to prepare for sequence and network analyses to be conducted.

² As these are unpublished, the PI will make these papers available to the panel if requested – the latter covers discussions related to: access, process of discovery, coding of information, reflections of what makes a tie, triangulation and ethics deliberation

The amount of data that requires inputting is considerable and machine reading tools are inappropriate for the type of data as it requires a more qualitative reading and continuous cross-referencing. Data management is crucial for a project of this size and appropriate strategies will be implemented with support from the University of Bristol and the School of Management.

Table 1: Outline of Planned Work

		Year 1	Year 2	Year 3	Year 4	Year 5
WP1 (Obj. 1)	Collection of Career Data, Literature Review Career Sequence Analysis & Tracing of Expert Knowledge Analysis & Write-up					
WP2 (Obj. 2)	SNA of Career & Interorganisational Networks Methods development combining SA & SNA Analysis & Write-up					
WP3 (Obj. 3)	Collection of Financial Data on CDOs Quantitative Analysis & Modelling Analysis & Write-up					
Non-WP Specific	Writing of Monograph and Co- edited Volume					
	International Conference					

In **year 2**, the PI and PDRA1 will analyse career sequences as laid out in WP 1. PDRA2 will reformat data as required for network analysis and begin analysing the network data with support from the PI and other academic team members. The PI and PhD1 (networks and finance focus) will identify sub-themes emerging from the analysis and collect additional data on the CDO products created by these networks where each collateral manager is matched to the CDO(s) managed. **Year 3** is spent writing up WP 1 findings (PDRA1 & PI) and finishing the network analysis (PDRA 2). The PI, PDRA2 and PhD2 (method focus) will begin to develop a new methodology combining sequence and network analytical tools with generous support offered by Martin Everett, Steve Borgatti and Johan Koskinen. The PI, PDRA2 and Koskinen will prepare the quantitative analysis of data as proposed in WP3 to examine NiF effects on CDO performance. In **year 4** the team will finalise research on methods and the quantitative models. The dissemination of research outputs via publications and conference attendance will become a key activity. **Year 5** will focus mainly on dissemination of research findings (PDRA2 and PhD2) with the PI focusing on writing the monograph, edited volume and the organisation of the international conference (w/ support from team and host institution). Throughout the project, the PI will liaise with an international advisory board consisting of experts in social network research, social statistics, political economy and sociology. The PI has secured support from leading academics in their respective fields. For a list of academics who voiced an active interest in the research project that will form PI's network please refer to Table 2.

WP 1: Sequencing of collateral managers' careers

This work package is primarily concerned with the mapping and sequencing of collateral managers' careers using social sequence analysis (Abbott 1995; Stark & Vedres 2006). The PI and PDRA1 will collect time-stamped data on over 3000 individual's careers from offering circulars (base data) and additional online databases (including LinkedIn and Bloomberg). The data (see *description and handling of data* below for additional information) is coded based on information available for each individual and based on both deductive and inductive reasoning (see Blair-Loy 1999).

Each collateral manager displays a 'unique' career trajectory consisting of their educational attainment, their employment at different firms in chronological order, changing seniority ranks over time and duration or tenure of specific employments. Trajectories differ substantially ranging from 30+ year careers to recent graduates. But despite the apparent differences, career trajectories may resemble each other; they may consist of similar sub-sequences which show how these trajectories are contingent on social structures (Cornwell 2016). Working for a CMF prior to the GFC is the common factor in all these sequences, hence the outcome of this analysis provides detailed information about common knowledge and expertises it takes to become a CMer. Turning this inside out, the results from the sequence analysis will illustrate how CM is colonised as employees leave their previous position and enter CM.

Table 2: International Academic Advisory Board

Professor Jonathan Beaverstock	Professor of International Management University of Bristol
Professor Stephen Borgatti	Chair of Management of Strategy and Professor of Economics President of the International Network of Social Network Analysis University of Kentucky
Professor Martin Everett	Chair in Network Analysis Mitchell Centre for Social Network Analysis University of Manchester
Professor Julie Froud	Professor of Financial Innovation University of Manchester
Professor Sarah Hall	Professor of Economic Geography University of Nottingham
Dr Johan Koskinen	Senior Lecturer in Social Statistics University of Melbourne (from Jan 2019)
Professor Emmanuel Lazega	President of the European Academy of Sociology Science Po – Centre de sociologie der organisations (CSO)
Professor Adam Leaver	Professor in Accounting and Society Co-Director of the Sheffield Political Economy Research Institute (SPERI) University of Sheffield
Naoki Masuda	Senior Lecturer in Engineering Mathematics University of Bristol
Professor Glenn Morgan	Professor of Management University of Bristol
Professor Len Seabrooke	Professor of International Political Economy Chief Scientist of H2020 project “ENLIGHTEN” Copenhagen Business School

Moving beyond the GFC the dataset provides the opportunity to examine CM careers in two further contexts. First, additional data will be gathered for CMers who worked in CM prior to the GFC. Here the GFC is seen as a breaking point. The effect on CM are neither straightforward nor are they immediate. Of course, some CMFs shared the fate of other financial firms and went out of businesses, but ultimately the CM industry has benefitted from post-crisis regulation and a turn towards collateral management (see DTCC 2014; J.P. Morgan 2012). The interest here lies in exploring what happens to these individuals during and after the GFC: do they continue to work in CM; do they leave CM to work in other roles within finance or outside of finance; or, do they leave CM to retire? Here a particular focus is on CMers that leave CM to explore new destinations of employments. For example, it may be the case that individuals with specific expertise are more likely to be re-hired by financial firms, whereas others may find ‘refuge’ in joining regulators. Considering these possibilities provides insights into continuity and change in this particular network as a result of the GFC.

Second, post-crisis hires of CMers provide an additional context in which to analyse collateral managers’ careers. Increasing attention from regulators and financial firms has created pressures to professionalise and this may impact on CM recruitment strategies. To capture the development of CM career sequences, post-crisis hires into CM will be considered. By comparing the sequences to pre-crisis careers, it is possible to assess if practices have been subject to change or continue. A continuation of pre-crisis practices provides evidence for the reproduction of financial expertise and legitimacy through education and early career socialization (Hall 2017) or the hiring of specific niche expert knowledge, for example advanced knowledge of mathematical or statistical models (Maurer 2002; de Goede 2004). Because CDO issuance has not recovered from the GFC, this section will also gather biographic data of CMers that manage CLOs. More recent statistics published by SIFMA combine data for CLOs and CDOs because of their similarities, and offering circulars issues for CLOs are similar to and equally standardized as CDO OCs. In examining these career trajectories this work programme provides insights into the diverse sets of expertise required for collateral management and highlight both continuity and change within this specific activity.

WP 2: Ego and whole-network view of actor interconnectedness with financial firms

Research of financial networks emphasizes how increasing interconnectivity in finance through financial flows and co-ownership can threaten financial market stability. By replacing financial flows with career

trajectories, this work package seeks to advance a social theory of networks in finance based on the collateral manager career data and preceding sequence analysis (WP1).

A first step focuses on CMer's ego-networks, comprised of ego-alter ties, where alters represent firms they worked for. Equivalence (structural and regular) of ego-alter connections is of particular interest because equivalent actors may also be similar in other ways such as attitudes, behaviours or performance (Wasserman & Faust 1994). A second network analysis uses a whole network approach which focuses on interconnectivity between all actors in the network as arising from employees moving between firms. After sampling different tie measures, this analysis will identify key actors in the network as these networks may be seen as important stepping stones toward a career in CM and may play an important role in the diffusion of knowledge and expertise. Using measures of cohesion and similarity, CMer's can be understood as source of both cooperation and competition between firms. Competitive practices at the industry level, visible to the outside, may in fact co-exist with cooperative relationships at the individual level (see Brailly 2016) which are more difficult to observe between financial actors.

To capture knowledge flows between these organisations, different types of relations (including niche of expertise, seniority of the individual and tenure of employment) will be examined in isolation and as multiplex ties to capture the extent of knowledge transfer through the strength of ties (see Ferriani et al. 2012 for discussion). Thirdly, the PI and PDRA will examine how ties between organisations are reinforced over time captured by people moving from Firm A to Firm B repeatedly in one direction or are reciprocated (Easterby-Smith et. al. 2008). Here the latency of relationships, expressed as time passed since the last move, requires careful consideration, because, whilst it may be that inactive ties weaken as time passes, they can be activated at will. It may well be that a certain time distance provides organisations with incentives to reactivate these ties.

The final aim of this work package sees the integration of sequence and social network analytic tools. Sequences can be understood as a series of interconnections between actors (in this case the CMer and her/his various employers) which can in turn be viewed as longitudinal networks. In other words, combining these two relational approaches can explore how sequences are connected to each other, or when they intersect. These intersections, for example two or more individuals spending one or multiple time periods at a firm, may provide an explanation of how CM is colonised by people socially embedded in finance in similar ways. Furthermore, it reiterates the idea that shared experience result in increased direct tie formation between two individuals which results mutual understandings, or the capacity for coordination (McPherson et al. 2001). More recently, Bison (2014) has illustrated that the integration of sequence and network analyses is technically viable and yields additional insights; however, at the same time Bison notes that network analysis must further develop tools to deal with complex sequences. The challenge in the context of this study therefore is to advance at least one such tool that could be applied to career networks more generally and one that is accessible to non-experts with an interest in careers.

To that end, Everett et al.'s (2018) recent work on knowledge transfer in temporal two-mode networks will be developed to account for career networks in which employees gain experience by working within an organisational setting, whilst also exchanging knowledge with other employees. Here two different relationships will be considered: 1) employee to firm-network-ties to capture experience; and 2) employee-employee-ties to capture knowledge. The former represents a more collective measure of "belonging" to a particular intra-organisational network, for example, working for Goldman Sachs, whereas the latter measure interactions and knowledge transfers between individuals, for example, two CMers worked as Head and Co-head of the *Structured Products Group* at Goldman Sachs. Different information of tie strength, tenure and latency will be taken into account in this approach. Developing Everett et al.'s (2018) method thus provides a useful starting point for the project's ambition to integrate sequence and network techniques in more complex ways.

WP 3: Multilevel networks and collateral managers' role in creating a crisis

This final work package will model the performance of CDOs based on career patterns and problematic expertise identified in WP1 and classic network measures – centrality, flow, cohesion, positions and roles – examined in WP2. In addition to the NiF career data, this work package will make use of financial data for each CDO product, gathered by the PDRA 2 and the PI, to statistically examine the effect different network configurations may have on product performance. This programme speaks directly to theories of contagion and risk/uncertainty in the financial networks literature and provides a potentially powerful alternative sociological explanation of social network effects on financial stability.

Knowledge diffusion is of interest because it is a key mechanism through which practices spread through a system with positive and negative effects – for example, innovation or manipulation – for the network (Borgatti & Foster 2003). Davis's (1991) paper on the adoption of the *poison pill* demonstrates how firms

and their managers are not atomistic actors but exist in a social system within which they learn about and adopt the poison pill.

CDO performance is interesting because of its calamitous impact on specific banks and the financial system, but more importantly, not all products were affected in the same way. The FT (2009) highlights that CDO issues after 2005 were more likely to default than those issued earlier and Cordell et al. (2012) confirm this in an in-depth analysis of event of defaults using a large number of financial performance measures. Using results from sequence and network analysis this WP seeks to explore how the presence of specific expertise at the level of the collateral manager affects CDO performance. CDOs managed by a CM who employed a former employee of a credit rating agency may perform better than average, because it benefits from an in-depth understanding of credit rating agencies' CDO models. However, negative effects on CDO performance could be explained by close ties between investment banks and CM. For example, a team of technical and senior staff may leave an investment bank to establish a CMF. These strong relationships between the bank and CM – 'knowing the right people' (Blair-Loy 2001) – may result in that CM being hired by the bank to manage a CDO even though other CMs may possess better skills. A more sinister explanation could be that CMs were complicit in producing CDOs specifically created to fail with no costs to the CM and potentially significant gain for the investment bank (see FCIC 2011, pg. 143 for a detailed account of Goldman's and CM's role in Abacus 2004-1).

The presence of specific collateral manager expertise in relation to CDO performance can be modelled within the whole-network structure to identify the likelihood of above-average negative outcomes that result from these interconnections. The ability to show such a relationship between network structure and product performance would underline the importance of expanding the notion of financial networks to take social relationships into account.

Description of data and handling

All data used for this project is publically available from product documents and CDO databases. The collection of data is time consuming, despite the standardised format of offering circulars (Tischer et al (in print)) and the relative concise length of the biographies. The collection requires manual labour, rather than automation, because many of these documents are scanned which continues to pose difficulty for reading data within those documents. However, and more importantly, even where it is possible, data is not uniform and requires a qualitative researcher to make sense of the data and transform it into a unified format. For example, for few cases biographies contain cryptic information – e.g. "Prior to joining [CM1] in 2004, [Person B] worked for six years at [Firm Y] and [Firm Z]" – where the tenure is not explicit (six years at both firms; or is it six years divided between two firms). In these cases the research team has to decrypt and triangulate the data using alternative sources. In addition, LinkedIn does not allow automation of data collection and therefore requires a manual approach to data collection.

The data gathering process and usage reflects the staggered nature of the project where data is added to the initial career dataset to expand the analytic scope and meet the objectives of this research project. Data format and use is summarised below:

- WP1 is based on collateral manager career data which will be anonymised for sequence analysis. This data includes the following data points: ID; gender; university education; career progressions incl. name of firm, tenure and role description; CMF.
- WP2 will use a version of the CM career data transformed for network analytical purposes. Different matrices will be constructed based on different ideas about the content of the relationship (see below for a more detailed discussion). In addition, the PI and team will construct attribute data to widen the analytic scope including organisational attributes which includes type of firm, size and location amongst others.
- WP3 requires additional data on the CDO product to be collected, including various financial information (for example, initial rating, asset pools ownership and downgrades) to model the network effect on product performance.

The project makes use of three basic levels of network data that can be constructed for WP2 and WP3. The "basenet" contains ties between ego (the individual) and alters (the firms they worked for). A second network "indinet" contains ties between two egos that have worked for the same firm. A third network of interorganisational ties ("orgnet") is constructed where an individual, or multiple individual move from one firm to another.

Because the data is extracted from secondary sources, rather being collected for the specific purposes of the enquiry, two questions are crucial: "what constitutes a tie?" and "how do we measure tie strength"? Question 1 is relatively straight-forward as we can assign an individual working at Firm A a connection with Firm A. However, that would assume that all relationships are equal, for example, a one year apprenticeship would be

equal to a ten year partnership role, which is unrealistic. With regards to question 2, the PI and PDRAs will trial and test different tie constructs based on Marsden and Campbell's observation that tie strength has two distinct aspects – time-spent and depth (1984, also see Breashers & Quintaine 2018 for critical reflection). These can be measured, for example, via tenure and role at the individual level; as well as multiple moves between two firms and tie latency at the interorganisational level (Todo et al. 2016). These considerations map onto discussions of Granovetter's (1973) *strength of weak ties* thesis and the research team will examine different scenarios based on existing research on the importance of weak and strong ties in different scenarios (for different approaches, see Hansen 1999; Krackhardt 2003; and Borgatti & Halgin 2011). Data will be handled only by members of the project team and adequate training will be in place prior to accessing this data to ensure compliance with all national and international legal requirements. All data will be anonymised and only the PI and the PDRAs will have access to the codes which will be kept on a secure device in a secure location at any time to guarantee the integrity of the research project and minimise risk for individuals.

Ethics Considerations

Baseline research data is publically available through the document – offering circulars – published for each CDO. To be clear, all data will be anonymised and treated confidentially with an appropriate data management plan in place prior to conducting the research. The anonymisation of data will apply to all individuals named in the dataset and may also be applied to all organisations. The PI will ensure that all members of staff adhere to these guidelines throughout the study and the sharing of data, or the transfer will be subject to relevant national and EU legislation as regards to privacy and data protection, in particular new requirements by GDPR.

The collection of data beyond those collated from offering circulars, primarily via the use of LinkedIn and Bloomberg, has been subject to rigorous internal debates about what constitutes personal information and the public vis-a-vis private nature of data (see Bos et al. 2009, Zimmer & Kinder-Kurlanda 2017). In addition, it is worth pointing out that LinkedIn data is less “social” and more instrumental in nature compared to, for example Facebook data. LinkedIn does not target naive individuals but, it may be argued, more sophisticated professionals and this is reflected in the service it offers: hire, market, sell and learn, and professional³. Whilst professionals may have ultimately different reasons for joining LinkedIn, the underlying principle is to become visible beyond their traditional professional network through contents that carefully crafted and distinctly work-related in character. LinkedIn itself notes that “When you share information on our Services, others can see, copy and use that information” (Linked User Agreement 2018⁴). Of course this does not provide us with a clean slate to use data for whatever purpose but it highlights that LinkedIn profiles are distinctly work-related and professional.

LinkedIn data is used to triangulate and add to data originally collated from document-based biographies. Thus the primary use of LinkedIn is to ensure the accuracy and completeness of existing data. Where additional data is collected; it does not generate an ethics conflict as long as they correspond with already existing categories, rather than collecting additional and unrelated data – for example, hobbies, relationship status or sexual orientation – as doing so would violate the “data minimisation” principle under GDPR (see Summers 2018 for detail).

Issues of consent require careful engagement with the purpose of the research and the private/public nature of the data. As argued by Wilson et al. (2012) it is insufficient to claim that all data is public to avoid consent. However, equally the difficulty of eliciting consent from all participants must be considered; a widely recognised problem given the distance between individual and researcher (Zimmer and Kinder-Kurlanda 2017; Buchanan & Zimmer 2018). Yet the question here is really whether or not we require consent at all. This may sound counter-intuitive, however, new GDPR guidelines stipulate that it is legitimate to process publically available, secondary data without consent if it is in the public interest (see ICO 2018).

Practical Impact

The proposed research project will yield a number of significant conclusions for academics and a range of non-academic organisations. With respect to the former, the primary contribution will be to formalising a people-centric, social theory of networks in finance. Furthermore, the research will provide a methodological advancement by integrating sequence and network analytical approaches to the study of career data and

³ see LinkedIn for its own description of the nature of the database: <https://about.linkedin.com/> and <https://business.linkedin.com/#>

⁴ See <https://www.linkedin.com/legal/user-agreement> for detail - accessed 15 Oct 2018

knowledge diffusion in new markets. More broadly, the findings of this study are relevant to broader debates across social sciences and law, in particular the social studies of finance literature and the wider political economy literature concerned with processes of financialisation, and power and legitimacy of financial market actors and activities.

Beyond the academy, outcomes of this study will be of relevance to national and transnational regulatory and legislative attempts to ensure financial stability by providing a detailed micro-actor account (individuals) of how knowledge networks were participant in creating the GFC. Such a finding would encourage the regulatory engagement with people movement across financial activity and issues of “revolving doors”. Findings therefore may also have implications for financial firms, by potentially closing of current practices of hiring experts to gain a knowledge advantage or access new markets without due consideration for how this may impact relationships with their clients and fiduciary requirements.

Dissemination Plan

The dissemination of research results will incorporate diverse media outlets. The University of Bristol will support dissemination by setting up a project website to offer a one-stop overview of progress made and outputs generated, including a blog with regular updates co-produced with PDRAs, PhD students and affiliated academics.

Publishing: Academic journal outputs (sole and co-authored) will target high quality and impact journals across the social sciences with a focus on organisation studies, political economy and sociology, and where suitable finance/economics journals. Working papers will be made accessible through the *Social Science Research Network* or other suitable working paper series hosted by universities. Publications for non-academic audiences will be published throughout the project as suitable (no less than 3 reports). Towards the end of the project, the PI will combine theoretical and empirical research outputs in a monograph (working title: *Rethinking Networks in Finance*). In addition, the PI and co-editors will publish an edited volume and a special issue in an academic journal on NiF.

Conferences and Workshops: Starting in Year 1, project members will attend 2 international conferences (SASE, Sunbelt Social Networks, International Studies Association) a year (1/year for PhD students) covered by the grant to disseminate research outputs to academic audience. Further opportunities to address non-academic audience will be identified throughout the research project (e.g. the Bank of England’s *One Bank* research seminars). Three workshops will be organised during the 4 years to develop an academic community around NiF building on existing networks including the *Networks in Finance* workshops Co-founded by the PI. In year 5 the PI and PDRAs will organise and host an international conference to disseminate findings and to develop future research directions and collaborations with a network of international scholars.

Section c. Resources (including project costs)

Personnel

To achieve the objectives of this programme of research, the PI – Dr. Daniel Tischer, will devote 70% of his time to the project over 5 years. He will spend the majority of this time in Europe with exceptions of research visits (10 months) for skill development and research collaboration and conference travel to disseminate information. The PI will lead each work programme and is responsible for the overall administration of the study. The length of the project as discussed in section 2 is required to conduct the work packages as outlined.

The PI requests the assistance of two PDRAs for a duration of 4 years each. It is envisaged that a four year term will allow PDRAs to develop into well-rounded academics with a proven track record of publications to progress to the next stage of their academic career at a prestigious institution in Europe.

PDRA1 will be employed at year 1 of the research project and is assigned to WP1 – data collection efforts for CMers’ careers, including the triangulation and management of this data. With the PI, PDRA1 will be conducting the sequence analysis and contribute to the integration of sequence and network analytical approaches that spans WP1 and WP2. PDRA1 will have a strong social science or political economy background and will have gathered experience in social sequencing analysis and will have obtained both quantitative and qualitative research skills.

PDRA2, employed at year 2, will have obtained excellent quantitative research skills required to conduct the social network analyses (WP2) and contribute to the methods development. PDRA2, using expertise in *ERGM / R Siena* and/or multilevel networks, will contribute to the quantitative analysis and modelling of WP3.

In addition, the PI will recruit 2 PhDs – one at year 2 and one at year 3. The PhDs will focus on specific and emerging problems defined by either data or research outputs and their skills reflect the interdisciplinary approach to the study:

PhD1 is social networks-focused and will work on the dataset using both quantitative and qualitative skills;

PhD2 is methods-focused and will work closely with the team on the integration of sequence and network approaches into a unified method;

Research Travel

Skill development and collaboration:

In addition to the research personnel, the project seeks to develop a research network with established academics in the field who have voiced their interest in participating on specific research questions (Martin Everett, Steve Borgatti and Johan Koskinen). It is envisaged that the PI and PDRA visit these project partners to develop project-critical research skills during the duration of the project. The PI will also use these visits to advance specific methodological debates with the project partners.

The PI will go on two research visits to the University of Melbourne, each lasting up to three months, to work with world-leading experts on ERGM and multilevel models (Johan Koskinen & Peng Wang). The complexity of task and dataset requires close and intensive interaction between the PI, Koskinen and Wang to ensure the model specification accurately reflects the empirical reality. In addition, the PI will take two research visits to the LINKS Centre (University of Kentucky), each lasting up to two months, to develop methods with Steve Borgatti. The costing of these trips is based on return flights and accommodation during the stay.

To make best use of Koskinen's expertise and make it available to all project members based at the University of Bristol, Koskinen will also benefit from three return flights to the UK and accommodation for one month for the duration of each visit hosted by the University of Bristol. Key emphasis of these visits is to provide training for and collaborate with the PI and research team.

PDRA's will go on two extended research visits each (up to two months) to develop research-critical skills relevant to the success of the project. PhD students will benefit from a small research budget to develop relevant skills at summer schools or research centres across Europe.

Research and dissemination:

Other direct travel costs are incurred by the project in relation to research and dissemination or outcomes. These include all further research related activities, including potential interviews and conference attendance (two per year for the PI and each PDRA)

UK travel for research team of 60 round trips within UK

Other research/conference travel within the EU for the research team of 30 round trips

Other research travel internationally for the research team up to 15 round trips

Workshops:

The project team led by the PI will organise three international workshops, one for each work package, to bring together an interdisciplinary set of researchers and advisors with relevant expertise in the specific field. The aim is to receive commentary from a broader set of established researchers, to situate the research within current debates and to identify future opportunities to develop project outputs. The theme of each workshop and timing are as follow:

- Workshop1: *Networks in Finance* will discuss how people-centric networks participate in the organisation of financial activities and will be organised towards the end of year 2
- Workshop2: A methods-focused workshop that features state-of-the-art approaches to integrating sequence and network analytic approach and will be held at the end of year 3.
- Workshop3: will focus on the quantitative analysis and modelling of the network effects on the GFC and feature theoretical and empirical discussions.

The funding requested for each workshop includes: travel, accommodation and catering for up to 20 attendees.

International Conference:

Towards the end of the research project the PI and team will host a three day conference themed around networks in finance at the University of Bristol. The aim is to produce a relatively intimate gathering of approximately 50 academic and non-academic experts with an active interest in networks in finance. Outputs from this conference are twofold: 1) a co-edited book that builds on the social theory of networks in finance,

but seeks to widen its insights into network effects to related professions, for example, accounting and law; 2) the development of new research agendas to develop NiFs empirically and theoretically.

The funding requested for this event is based on the following expenditures:

- 3x international return flights for invited speakers
- 3x four nights accommodation in Bristol
- 5x UK/European return travel
- 5x 3 nights accommodation in Bristol
- Room hire, support and technical services
- Day-time food & beverages per day
- Conference banquet for 50 guests

Other goods and services:

Research equipment will be provided by the host institution, including office space, IT and software. The budget includes *Open Access* costs. The PI does not envisage a need for additional finance to be made available.

Cost Category			Total in euro
Direct Costs	Personnel	PI	291,299
		Senior Staff	
		Postdocs	441,977
		Students	158,419
		Other (Technician)	
	i. Total Direct costs for Personnel (in euro)		891,695
	Travel		158,211
	Equipment		
	Other goods and services	Consumables	7,813
		Publications (including Open Access fees), dissemination activities, etc.	6,511
		Other (please specify): Audit Fees, Conferences, Courses and Training	69,378
	ii. Total Other Direct Costs (in euro)		241,913
A – Total Direct Costs (i + ii) (in euro)			1,133,608
B –Indirect Costs (overheads) 25% of Direct Costs (in euro)			283,402
C1– Subcontracting Costs (no overheads) (in euro)			
C2–Other Direct Costs with no overheads (in euro)			
Total Estimated Eligible Costs (A + B + C) (in euro)			1,417,010
Total Requested Grant (in euro)			1,417,010

Please indicate the duration of the project in months:	60 months
Please indicate the % of working time the PI dedicates to the project over the period of the grant:	70%

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Commitment of the host institution for ERC Calls 2019^{1, 2, 3}

The University of Bristol, which is the applicant legal entity, confirms its intention to sign a supplementary agreement with Dr Daniel Tischer, in which the obligations listed below will be addressed should the proposal entitled **CarFin: A Social Theory of Networks in Finance: Financial Careers, Revolving Doors and the Great Financial Crisis** be retained.

Performance obligations of the *applicant legal entity* that will become the beneficiary of the H2020 ERC Grant Agreement (here after referred to as the Agreement), should the proposal be retained and the preparation of the Agreement be successfully concluded:

The *applicant legal entity* commits itself to hosting [*and engaging*] the *principal investigator* for the duration of the grant to:

- a) ensure that the work will be performed under the scientific guidance of the *principal investigator* who is expected to devote:
 - *in the case of a Starting Grant at least 50% of her/his working time to the ERC-funded project (action) and spend at least 50% of her/his working time in an EU Member State or Associated Country;*
 - *in the case of a Consolidator Grant at least 40% of her/his working time to the ERC-funded project (action) and spend at least 50% of her/his working time in an EU Member State or Associated Country;*
 - *in the case of an Advanced Grant at least 30% of her/his working time to the ERC-funded project (action) and spend at least 50% of her/his working time in an EU Member State or Associated Country.*

¹ A scanned copy of the signed statement should be uploaded electronically via the Participant Portal Submission Service in PDF format.

² The statement of commitment of the host institution refers to most obligations of the host institution, which are stated in the H2020 ERC Model Grant Agreement (MGA). The H2020 ERC MGA is available on the ERC website at <http://erc.europa.eu> & http://ec.europa.eu/research/participants/portal/desktop/en/funding/reference_docs.html. The reference to the time commitment of the Principal Investigator is stated in the ERC Work Programme 2019.

³ This statement (on letterhead paper) shall be signed by the institution's legal representative and stating his/her name, function, email address and stamp of the institution.

- b) carry out the work to be performed, as it will be identified in Annex 1 of the Agreement, taking into consideration the specific role of the *principal investigator*;
- c) enter — before signature of the Agreement — into a ‘*supplementary agreement*’ with the *principal investigator*, that specifies the obligation of the *applicant legal entity* to meet its obligations under the Agreement;
- d) provide the *principal investigator* with a copy of the signed Agreement;
- e) guarantee the *principal investigator's* scientific independence, in particular for the:
 - i) use of the budget to achieve the scientific objectives;
 - ii) authority to publish as senior author and invite as co-authors those who have contributed substantially to the work;
 - iii) preparation of scientific reports for the project (action);
 - iv) selection and supervision of the other *team members* (hosted [*and engaged*] by the *applicant legal entity* or other legal entities), in line with the profiles needed to conduct the research and in accordance with the *applicant legal entity's* usual management practices;
 - v) possibility to apply independently for funding;
 - vi) access to appropriate space and facilities for conducting the research;
- f) provide — during the implementation of the project (action) — research support to the *principal investigator* and the team members (regarding infrastructure, equipment, access rights, products and other services necessary for conducting the research);
- g) support the *principal investigator* and provide administrative assistance, in particular for the:
 - i) general management of the work and his/her team
 - ii) scientific reporting, especially ensuring that the team members send their scientific results to the *principal investigator*;
 - iii) financial reporting, especially providing timely and clear financial information;
 - iv) application of the *applicant legal entity's* usual management practices;
 - v) general logistics of the project (action);
 - vi) access to the electronic exchange system (see Article 52 of the Agreement);

- h) inform the *principal investigator* immediately (in writing) of any events or circumstances likely to affect the Agreement (see Article 17 of the Agreement);
- i) ensure that the *principal investigator* enjoys adequate:
 - i) conditions for annual, sickness and parental leave;
 - ii) occupational health and safety standards;
 - iii) insurance under the general social security scheme, such as pension rights;
- j) allow the transfer of the Agreement to a new beneficiary ('portability'; see Article 56a of the Agreement).
- k) take all measures to implement the principles set out in the Commission Recommendation on the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers⁴ - in particular regarding working conditions, transparent recruitment processes based on merit and career development – and ensure that the *principal investigator*, researchers and third parties involved in the project (action) are aware of them.

For the host institution (applicant legal entity):

Date

17/10/2018

Name and Function

SARAH TILLEY; FINANCE BUSINESS PARTNER

Email and Signature of legal representative

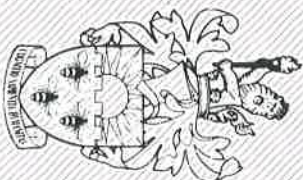
sarah.tilley@bristol.ac.uk; Sarah Tilley



Stamp of the host institution (applicant legal entity)

IMPORTANT NOTE: In order to be complete all the above mentioned items are mandatory and shall be included in the commitment of the host institution.

⁴ Commission Recommendation 2005/251/EC of 11 March 2005 on the European Charter for Researchers and on a Code of Conduct for the Recruitment of Researchers (OJ L 75, 22.3.2005, p. 67).



The University of Manchester

By virtue of the powers granted to it by the Charter and Statutes and the authority of the Senate the University has this day awarded the Degree of

DOCTOR OF PHILOSOPHY

Manchester Business School

Business and Management

to

Daniel Tischler

who has satisfied the Examiners in the Final Examination for the Degree.



S. W. 853
Registrar and Secretary

Overview of ethical issues relating to the proposed research

The proposed research will use the following data from existing, publically available source:

1. Individual career data from a specific document – *Offering Circulars* – which are publically available for each financial product – *Collateralised Debt Obligation* – and can be downloaded from the Irish Stock Exchange
2. Career data available from publically available online databases, including *LinkedIn*, *Bloomberg* and company websites.

These existing data do not contain any sensitive data or special categories of personal data (e.g. sexual orientation, religion, ethnicity, race etc.). The research only makes use of basic demographics data [age (5-year age group); sex (male or female)] and career data including higher education and employment and brief descriptions of activity. Only data that is directly required to answer the research questions is collected and the data collection strategy adheres to the ‘data minimisation principle’. No new data will be collected from participants for the proposed research. All data used is publically available from the above sources and the PI will not contact individuals about their specific data, nor will the PI discuss specific anonymised individuals in any publications. However, the PI reserves the right to discuss aggregate research findings, with experts throughout the duration of the project.

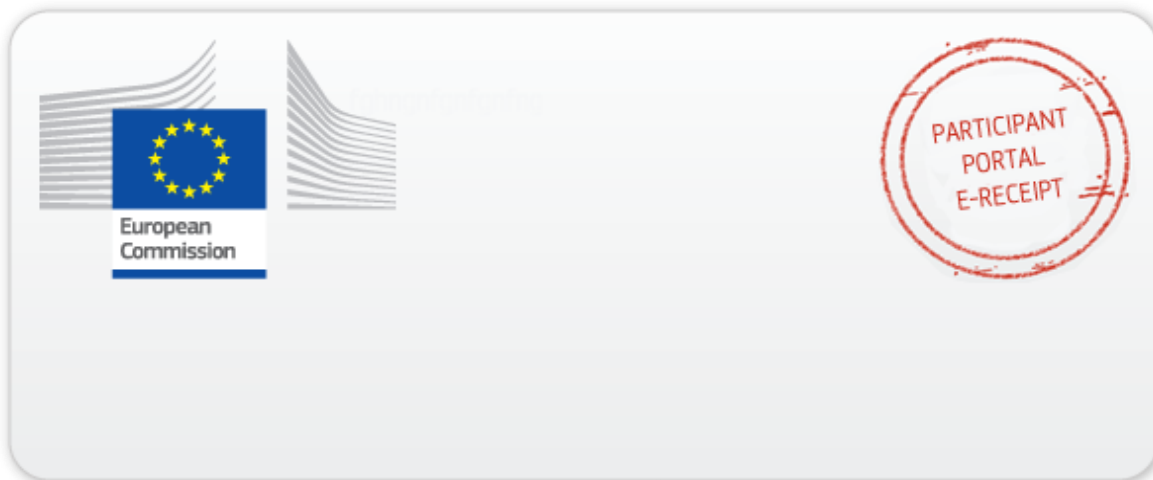
Data collected from LinkedIn and other publically available online sources is primarily used to ensure data accuracy and completeness of data collected from offering circulars through triangulation. The PI will only collect data on categories already available from OCs; that is no data on additional data categories (e.g. political opinions, charitable work or memberships etc.) will be collected.

The PI has made contact with LinkedIn to discuss the project and ensure it all collated data is in accordance with LinkedIn rules. A key limitation is that data must not be collected automatically using bots, API or machine learning; however, it may, as is the case in this proposal, be collected manually. LinkedIn itself makes users aware that “When you share information on our Services, others can see, copy and use that information” (Linked User Agreement 2018¹), which renders LinkedIn as a professional context in which all information is available to use by others.

Data processing is subject to the University of Bristol (UoB) ethics procedures and the PI has been in contact with the School of Economics, Finance and Management’s School Research Ethics Committee. The PI will, with support from UoB’s Research Ethics Committee and Data protection Officer, implement a comprehensive data management plan. All data will be anonymised in such a way that individuals can no longer be identified to minimise potential harm. This includes the anonymisation of employers (firms) and higher education institutions using categories, rather than names. All data will be stored in a secure location and only the PI will have access to the codes that allow for the data to be de-encrypted.

Overall, it is believed that the benefits of the research overall outweigh any potential risk to individual.

¹ See <https://www.linkedin.com/legal/user-agreement> for detail - accessed 15 Oct 2018



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