

Kieran Marray

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Citizenship: Britain, Ireland

Interests	Primary: Economics and Econometrics of Networks Secondary: Machine Learning for Economics	
Education	PhD Economics, Vrije Universiteit Amsterdam and Tinbergen Institute	2022–present
	Supervised by Dr Michael König, and Prof. Ozan Candogan (University of Chicago). <i>Thesis:</i> Essays in econometrics of networks.	
	MPhil Economics and Econometrics, Tinbergen Institute	2020-2022
	<i>Major:</i> Econometrics. <i>GPA:</i> 8.42 (summa cum laude).	
	BA Philosophy, Politics, and Economics, University of Oxford	2016-2019
References	Dr Michael König	Prof. Ozan Candogan
	School of Business and Economics, Vrije Universiteit Amsterdam, De Boelelaan 1105, 1081HV Amsterdam <i>m.d.konig@vu.nl</i>	Booth School of Business, University of Chicago 5087 S. Woodlawn Avenue, Chicago, IL 60637 <i>ozan.candogan@chicagobooth.edu</i>
	Prof. Gordon Phillips	Dr François Lafond
	Tuck School of Business Dartmouth College 100 Tuck Hall, Hanover, NH 03755 <i>gordon.m.phillips@tuck.dartmouth.edu</i>	INET Oxford Manor Road Building, Manor Road, Oxford OX1 3UQ <i>francois.lafond@inet.ox.ac.uk</i>
Employment	Predocctoral researcher, Mathematical Institute, University of Oxford	2018-2020
	Supervised by Prof. J. Doyne Farmer and Dr François Lafond	
Academic affiliations	Fellow, Institute for Advanced Studies, University of Amsterdam	2022-present
	Visitor, INET Oxford, University of Oxford	2023
Working papers	Estimating spillovers from sampled connections <i>Job market paper</i> , ArXiv pre-print 2410.17154. Abstract: Empirical researchers often estimate spillover effects by fitting linear or non-linear regression models to sampled network data. We show that common sampling schemes bias these estimates, potentially upwards, and derive biased-corrected estimators that researchers can construct from aggregate network statistics. Our results apply under different assumptions on the relationship between observed and unobserved links, allow researchers to bound true effect sizes, and to determine robustness to mismeasured links. As an application, we estimate the propagation of climate shocks between U.S. public firms from self-reported supply links, building a new dataset of county-level incidence of large climate shocks.	

Network rewiring and spatial targeting: optimal disease mitigation in multilayer networks with Ozan Candogan, Michael König, and Frank Takes.

Resubmission invited, American Economic Review: Insights

Abstract: *We study disease spread on a multi-layered social network where susceptible individuals rewire contacts away from the infectious. Rewiring complements mitigation policy by allowing more intergroup contact as the rewiring rate increases. We then show how to formulate the planner’s problem of targeting lockdowns to prevent disease becoming endemic at minimum cost with rewiring as a semidefinite program that is tractable with many groups and layers. As an application, we compute counterfactual optimal spatially-targeted lockdowns for the Netherlands during Covid-19, building a population-level contact network and estimating the rewiring rate from epidemiological data to do so.*

Estimating unobserved networks with heterogeneous characteristics, and an application to the Swing Riots

SSRN pre-print 5338970.

Abstract: *Often, researchers do not observe interactions between individuals that mediate outcomes but do observe rich individual-level characteristics. We present an estimator for unobserved networks from individual outcomes and characteristics that determine who links with whom. The estimator recovers the network by decomposing the covariance matrix of outcomes, penalising possible links differently based on pairwise individual characteristics. We provide theoretical bounds on estimation error, and a fast coordinate descent algorithm that makes estimation tractable for large networks. As an application, we estimate which parishes, distributed in space, rose together during the Swing Riots of 1830–1831. We find evidence of a small core of connected uprisings centered on known radical parishes amongst otherwise sporadic unrest. Exposure to different types of uprising polarises elite preferences to expand the right to vote.*

Research in progress

Global competitor networks

with François Lafond, Gordon Phillips, and Michael König

Place-based policy in endogenous production networks

with Xianglong Kong, Katie MacDonald, Peter Ohlinger, and Ruochen Dai.

Awards, grants, and scholarships

Alfred P. Sloan Foundation Minor Grant in Mesoeconomics

2024

(with Xianglong Kong, Katie MacDonald, Peter Ohlinger, and Ruochen Dai)

Scholarships: Full scholarship and tuition waiver, Tinbergen Institute (2020-2022); Laidlaw research and leadership scholarship, value of £10,000 (2018)

Studentships: Sloan Foundation studentship in Mesoeconomics, University of Cambridge (2024); ‘Optimisation-Conscious Econometrics’, University of Chicago (2023).

External travel grants: Workshop on Firm-Level Supply Networks, University of Oxford (2025); 12th Warwick Phd Conference, University of Warwick (2024); Workshop on Firm-Level Supply Networks, University of Cambridge (2023).

Invited talks (selected)

Network Science in Economics conference (poster), **Stanford University**

2025

10th **Monash-Paris-Warwick-Zurich-CEPR** Text-as-Data Workshop

Workshop on Firm-Level Supply Networks, **University of Oxford**

2025

European Economic Association summer meeting

2024

European summer meeting of the Econometric Society

12th Warwick Phd conference, **University of Warwick**

Complexity Economics Seminar, **Oxford Martin School, University of Oxford**

Workshop on Firm-Level Supply Networks, **University of Cambridge**

2023

1st International Workshop on Population-Scale Social Network Analysis,
Institute for Advanced Studies, University of Amsterdam

Refereeing	<i>Journal of Economic Behaviour and Organisation, Applied Network Science</i>	
Teaching	Urban economics: challenges and policies (Msc), TA	2023-present
	Interactive lecture notes . Lecture on nonparametric/semiparametric estimation.	
	Applied econometrics (Msc), TA	2023-present
	Econometrics I (MPhil), TA	2021
	Introductory R lecture notes	
Programming	Proficient: Julia (preferred), R , and Python , HPC and AWS environments.	
Unprofessional Activities	Rock-climbing, squash	