

# MARTIN B. SCHMITZ

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## DEGREES

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### Vanderbilt University

Ph.D. in ECONOMICS, 2023 (expected)

M.A. in ECONOMICS, 2018

### Julius Maximilian University of Würzburg

M.Sc. in ECONOMICS, 2015 (with distinction)

B.Sc. in BUSINESS MANAGEMENT and ECONOMICS, 2011

## RESEARCH FIELDS

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Economics of Innovation, Urban Economics, Economic History (primary)

Applied Econometrics, Empirical Microeconomics (secondary)

## REFERENCES

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William J. Collins

william.collins@vanderbilt.edu

W. Walker Hanlon

whanlon@northwestern.edu

Ariell Zimran

ariell.zimran@vanderbilt.edu

Matthew Zaragoza-Watkins

matthew.zaragoza-watkins@vanderbilt.edu

## WORKING PAPERS AND WORK IN PROGRESS

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“A Penny for Your Thoughts” with Walker Hanlon, Stephan Heblich, and Ferdinando Monte,  
(NBER Working Paper 30076, CEPR Discussion Paper DP17323)

How do communication costs affect the production of new ideas and inventions? To answer this question, we study the introduction of the Uniform Penny Post in Great Britain in 1840. This reform replaced the previous system of expensive distance-based postage fees with a uniform low rate of one penny for sending letters anywhere in the country. The result was a large spatially-varied reduction in the cost of communicating across locations. We study the impact of this reform on the production of scientific knowledge using citation links constructed from a leading academic journal, the *Philosophical Transactions* and the impact on the development of new technology using patent data. Our results provide quantitative causal estimates showing how a fall in communication costs can increase the rate at which scientific knowledge is exchanged and new ideas and technologies are developed. This evidence lends direct empirical support to an extensive theoretical literature in economic growth and urban economics positing that more ideas can emerge from communication between individuals.

“Knowledge Access and Cumulative Innovation: Evidence from the Republic of Letters”

How does knowledge production respond to changes in knowledge accessibility? To answer this question, I study the re-establishment of the packet boat service between Dover and Calais in the peaceful period between the Nine Years’ War (1688-1697) and the War of the Spanish Succession (1701-1714). The packet boat service across the English Channel connected the British and the French postal system and facilitated the bilateral exchange of ideas within a correspondence-based network of scholars called *Republic of Letters*. Citation data from the earliest two academic journals determines the link structure of this network and renders the links indicative of cumulative innovation. How the individual members of the *Republic of Letters* were affected by the reduction of communication restrictions varied with their

geographic location and network of correspondents. Considering each possible pair of scholars as a separate cross-sectional unit, accounting for spillovers, and comparing the pre- to post-period changes in the linking probabilities of initially unaffected and directly affected pairs provides causal estimates showing how the availability of a remote access technology affected scientific knowledge production in the years following the birth of modern science.

#### “GMM Estimation of Network Formation with Degree Heterogeneity”

This chapter generalizes a Generalized Method of Moments (GMM) approach for dynamic panel logit models with fixed effects to logit network formation models with degree heterogeneity. The proposed moment conditions do not depend on the degree heterogeneity parameters, making it possible to leave the distribution of these parameters unspecified. The approach is applicable to panel and cross-sectional network data, sparse or dense, directed or undirected networks and applies to a range of network formation models for which consistent and computationally feasible estimators were previously unavailable. The wide applicability comes at the price of a common distributional assumption in network formation models with degree heterogeneity. Conditional on the previous link structure, the exogenous regressors, and the degree heterogeneity parameters, the distribution of the error term is assumed to be i.i.d. standard logistic across dyads and over time. Consistency and asymptotic normality follow from standard GMM theory. Computationally inexpensive estimation is achieved by employing analytical derivatives of the proposed moment conditions.

## FELLOWSHIPS AND GRANTS

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NSF Doctoral Dissertation Research Improvement Grant SES-2049808, 2021 - 2023

Russell G. Hamilton Graduate Leadership Institute Dissertation Enhancement Grant, 2021

Kirk Dornbush Summer Research Award, Department of Economics, Vanderbilt University, 2021

Graduate Student Summer Research Award, College of Arts and Science, Vanderbilt University, 2019, 2022

Exploratory Travel and Data Grant, Economic History Association, 2019

Council of Economic Graduate Students Research Grant, Vanderbilt University, 2019

Max Planck Society for the Advancement of Science Scholarship, Summer 2017, Summer 2018

Departmental Summer Research Grant, Department of Economics, Vanderbilt University, 2017

Vanderbilt University Economics Fellowship, 2016 - 2022

PROMOS Scholarship, German Academic Exchange Service (DAAD), 2012

Julius Maximilian University of Würzburg exchange with the University of Texas at Austin 2012 - 2013

## RESEARCH VISITS AND NON-DEGREE STUDIES

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### **Max Planck Institute for Innovation and Competition**

Department of Innovation and Entrepreneurship Research, 6/2017 - 7/2017, 6/2018 - 7/2018, 5/2019 - 7/2019

### **Julius Maximilian University of Würzburg**

Undergraduate studies in MATHEMATICS, 9/2014 - 7/2016

### **University of Texas at Austin**

International exchange student, 8/2012 - 5/2013

### **Hawai'i Pacific University, Honolulu**

International student, 9/2009 - 1/2010

## TEACHING EXPERIENCE

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### **Vanderbilt University (Teaching Assistant)**

Econometric Methods, Spring 2019, Spring 2022

Applied Econometrics, Spring 2020

Strategic Analysis, Fall 2020, Spring 2021

Principles of Microeconomics, Spring 2018, Fall 2019

Principles of Macroeconomics, Fall 2017, Fall 2018, Fall 2021

### **Julius Maximilian University of Würzburg (Instructor)**

Tutorials in Macroeconomics II, four hours per week, Winter 2011/2012

Tutorials in Applied Computer Science, four hours per week, Summer 2010

## RELATED EXPERIENCE

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### **Center for Genetic Privacy and Identity in Community Settings, Vanderbilt University**

Research Assistant for Prof. Myrna Wooders, 8/2022 - 10/2022

### **Department of Economics, Julius Maximilian University of Würzburg**

Research Assistant for Prof. Norbert Berthold, 5/2011 - 8/2012 and 9/2013 - 8/2014

### **Federal Ministry of Finance of the Federal Republic of Germany, Berlin**

Intern at division IC2 - Macroeconomic Country Analyses and Bilateral Relations, 3/2012 - 4/2012

### **Halle Institute for Economic Research, Halle (Saale), Germany**

Intern at the Department of Structural Change, 9/2010 - 10/2010 and 4/2011 - 5/2011

## LANGUAGES AND SOFTWARE

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German (native), English (fluent), French (basic), STATA, Python, Mathematica, MATLAB, ArcGIS,  $\LaTeX$

## PRESENTATIONS

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2022: NYU Abu Dhabi, Max Planck Institute for Innovation and Competition, Vanderbilt (2x)

2021: Vanderbilt (3x)

2020: Vanderbilt

2019: Economic History Association Annual Meeting (poster), Max Planck Institute for Innovation and Competition, Vanderbilt (2x)

## MEDIA AND PRESS COVERAGE

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“Communication Costs, Science, and Innovation” with Walker Hanlon, Stephan Heblich, and Ferdinando Monte, (VoxEU column, 7/15/2022)

## DISCUSSANT

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2018: TIME Colloquium, Ludwig Maximilian University Munich