Marc Diederichs
Goßlerstraße 17
12161 Berlin
Germany

Date: 01.02.2023

Subject: Application for the Innovation Research Boot Camp 2023

Dear Kevin Bryan, Ina Ganguli and Kyle Myers,

I am writing to express my interest in the second Innovation Research Boot Camp (IRBC) hosted by the NBER with support from Open Philanthropy. As a Ph.D. student in economics, I am deeply interested in exploring the economics of innovation and its impact on various fields of economics.

I have completed two years of Ph.D. coursework in economics and have a solid understanding of the fundamental concepts and institutions in this field. The chapters of my dissertation make use of statistical methods for causal identification on topics of health, labor and network economics and touch on research on innovation. I believe that the IRBC will provide me with the opportunity to engage with leading researchers in the field and gain a deeper understanding of the exciting questions and frontier issues in innovation research.

I am particularly impressed by the program's lineup of esteemed presenters such as Pierre Azoulay and John Van Reenen, among others. Their expertise and experience in the economics of innovation will provide me with valuable insights and perspectives on this important field of research.

In my one-page essay, I have described my current and future research and the reason for wanting to attend the IRBC. I have also attached my curriculum vitae and a list of completed Ph.D. courses. Joshua Angrist is my recommendation letter writer.

Thank you for considering my application. I look forward to the opportunity to participate in the IRBC and to further my research understanding in the economics of innovation.

Sincerely,

Marc Diederichs

Marc Diederichs

Johannes Gutenberg-University Mainz – Chair of Statistics and Econometrics
Jakob-Welder-Weg 4, D-55128 Mainz

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Education

04/2018 - Present: **Ph.D. in Economics** *Goethe University Frankfurt*, Graduate School of Economics, Finance and Management. Advisor: Reyn van Ewijk.

04/2022 - 07/2022: **Research visit to Joshua Angrist** *Massachusetts Institute of Technology*.

10/2018 - 10/2020: **M.Sc. in Quantitative Economics** *Goethe University Frankfurt*, Title of the master's thesis: "Evaluation of a medical emergency call software".

10/2015 - 11/2017: **M.Sc. in International Economics and Public Policy** *Johannes Gutenberg-University Mainz*, Title of the master's thesis: "The Effect of Parental Age at Birth on Education Outcomes and Wages: An Empirical Analysis with the German SOEP".

10/2012 - 08/2015: **B.Sc. in Management and Economics** *University Ouest Nanterre la Denfense Paris; Johannes Gutenberg-University Mainz*, French-German double degree with a bachelor thesis in the domain of behavioral economics.

Work Experience

04/2018 - Present: **Doctoral Researcher** *Johannes Gutenberg-University Mainz*, Chair of Statistics and Econometrics, Reyn van Ewijk.

09/2022 - Present: **Guest Researcher** *Humboldt University Berlin*, Chair for Applied Microeconomics, Alexandra Spitz-Oener.

05/2020 - Present: **Advisor** *Johannes Gutenberg-University Mainz*, Mentoring work with students from non-academic backgrounds as part of the organization Arbeiterkind.de.

10/2015 - 05/2017: **AIESEC** *Johannes Gutenberg-University Mainz*, Member of the non-profit student's organization AIESEC. Tasks: contact with businesses from Mainz, organization of a conference with 100 participants.

08/2016 - 08/2016: **Voluntary Service** *Kenya*, Volunteering work in an orphanage.

05/2015 - 07/2015: **Internship at Taxeo** *Paris*, Tasks: building up a database about customers, contact with potential new customers and affiliates via telephone.

03/2012 - 06/2012: **Voluntary Service** *Kenya*, Work as a volunteer in an orphanage for HIV orphans. Tasks: Coaching of homework and German classes, organization of activities.

08/2011 - 10/2011: **Internship at Ekkharthof** *Swiss*, Tasks: supervision and guidance of handicapped children.

Publications

2022: **Is large-scale rapid CoV-2 testing a substitute for lockdowns? Published in PLOS ONE** *Joint work with René Glawion, Peter G. Kremsner, Timo Mitze, Gernot J. Müller, Dominik Papies, Felix Schulz and Klaus Wälde.* Various forms of contact restrictions have been adopted in response to the Covid-19 pandemic. Around February 2021, rapid testing appeared as a new policy instrument. Some claim it may serve as a substitute for contact restrictions. We study the strength of this argument by evaluating the effects of a unique policy experiment: In March and April 2021, the city of Tübingen set up a testing scheme while relaxing contact restrictions. We compare case rates in Tübingen county to an appropriately identified control unit. We employ the synthetic control method. We base interpretations of our findings on an extended SEIR model. The experiment led to an increase in the reported case rate. This increase is robust across alternative statistical specifications. This is also due to more testing leading initially to more reported cases. An epidemiological model that corrects for 'more cases due to more testing' and 'reduced testing and reporting during the Easter holiday' confirms that the overall effect of the experiment led to more infections. The number of rapid tests were not sufficiently high in this experiment to compensate for more contacts and thereby infections caused by relaxing contact restrictions.

2022: **Schools under mandatory testing can mitigate the spread of SARS-CoV-2. Published in PNAS.** *Joint work with Reyn van Ewijk, Ingo Ishpording and Nico Pestel.* In this paper, we provide the first causal evidence on the impact of opening schools in a situation under virus variants and substantial vaccination rates in the adult population. We show that schools under regular and mandatory rapid testing of the studentship mitigated the growth in case numbers leading to Germany's fourth pandemic wave in Autumn 2021. Our results have important implications for the design of future non-pharmaceutical interventions to mitigate the spread of SARS-CoV-2, but also comparable future diseases. Keeping schools open under mandatory testing rules can provide a means to keep track of infection rates. Our results suggest that school closures, given substantial economic and societal costs, should be thought of as the "last resort", even if inevitable at some point.

Work in Progress

06/2022 - Present: **Measuring advisor advisee apprenticeship effects of economics PhD students.** *Joint work with Joshua Angrist.* Recent work has shown that only a small fraction of economics PhD students produce a credible number of publications after graduation (Conley & Önder, 2014). How big is the impact that advisors have on the research success of their advisees? Does close collaboration between advisor advisee pairs, as measured by coauthorship, increase learning during the PhD, resulting in more publications after graduation? We analyze these questions using data on a sample of nearly 10.000 economics PhDs, that graduated from top departments in the US, during the last 30 years.

11/2020 - Present: **Interdisciplinary research in economics** *Joint work with Tristan Stahl and Stefan Lobin.* Solving complex societal problems often requires combining different streams of knowledge and researchers from different fields. However, it is unclear if research conducted in this interdisciplinary way is indeed impactful. Using more than 13,000 research articles published in economics journals in 2011 and 2012 and three novel measures of interdisciplinary research, we find a robust negative effect of a paper's interdisciplinarity within economics on its impact. Moreover, the selection of authors and institutions into conducting interdisciplinary research and journal publication effects seem to drive large parts of this effect..

06/2020 - Present: **The Advantage of Knowing an Editor during the Peer Review Process in Economics** This study investigates whether economic researchers have an equal chance of publishing in highly ranked economic journals or if those with connections to an editor have an advantage. Panel data on researchers who have been connected to an editor at some point is used, covering the last 31 years of economic publishing in 28 renowned

economic journals. The data is analyzed to determine how a researcher's number of publications in a journal is affected by their connections to the editor(s) of this journal, such as prior co-authorship or affiliation with the same institution. By assuming that the timing of editor appointments is exogenous, conditional on author-journal, journal-year and author experience fixed effects, this study provides causal estimates. The findings suggest that editors' past co-authors and current colleagues at the same institution increase their publication rate by 7% and 17%, respectively, during the years of the connected editor's appointment. Multiple heterogeneity analyses are conducted, examining factors such as proximity between authors and editors, gender, time, and differences in journal type. The results cannot exclude the possibility of editorial favoritism and suggest that editors positively impact the productivity of members of their networks.

04/2018 - Present: **Evaluation of a medical emergency call software.** *Joint work with Reyn van Ewijk.* While much is known about emergency health care provision in hospitals, research about the time before patients enter hospitals is scarce. Using the introduction of electronic dispatch protocols (EDP), a software for supporting dispatchers in structuring and standardizing their calls, this research evaluates potential benefits of EDP software. We have dispatch center specific data on emergency call and vehicle allocation and registry data on death causes at our disposal. With a staggered differences in differences approach with county and time fixed effects and allowing for county specific time trends, we find that EDP software (i) increases the time until an emergency vehicle gets alarmed by 4.3% (ii) does affect the accuracy with which emergency vehicles and staff are allocated (iii) does lead to a significant reduction of fatalities from acute myocardial infarction.

Teaching Experience

Winter term 2021 and 2022: **Lecture on Micro Econometrics** *Discussion of articles; Applications with Stata; Theory covered: OLS, FE, DiD, Lim. dep. vars.*

Winter term 2020: **Lecture on Introductory Econometrics** *Statistics and introduction to simple and multiple regression analysis for first year master students.*

Summer term 2018 - Present: **Supervision of 4 Master Theses** *Topics: Replication of "Did austerity cause Brexit?" by Thiemo Fetzer using specification-curve analysis; The effect of lecture-style teaching on student test scores, an empirical analysis using specification-curve analysis; Evaluation of a medical emergency call software.*

Summer term 2018 - Present: **Supervision of about 50 Bachelor Theses** *Topics: Attitudes towards climate change; Determinants and consequences of obesity; Favouritism in academic peer review; The effect of technology on education outcomes.*

Summer term 2016: **Tutor in Econometrics** *teaching activity in the most advanced undergraduate econometrics course using Stata.*

Scholarships

04/2022 - 07/2022: **Interdisciplinary Public Policy** *2000 Euro.*
10/2019 - 09/2020: **Deutschlandstipendium** *300 Euro per month.*
10/2018 - 09/2019: **Deutschlandstipendium** *300 Euro per month.*
09/2014 - 08/2015: **Erasmus +** *270 Euro per month.*
09/2014 - 08/2015: **Deutsch Französische Hochschule** *250 Euro per month.*

Conferences and Workshops

09/2022: Annual Conference Verein für Socialpolitik (presenting), *Basel.*

09/2021: EuHEA PhD Conference (presenting), *Rotterdam, online.*
03/2021: DGGÖ Conference on Health Economics (presenting), *Nuremberg, online*
09/2019: International Health Economics Workshop (visiting), *Mainz.*
04/2019: Summer School on Advanced Econometrics by Prof. J. Wooldridge, *Mainz.*
09/2018: Annual Conference Verein für Socialpolitik (visiting), *Freiburg.*
06/2018: Mini-course on Econometric Analysis of Experimental Data with Prof. C. Bellemare, *Mainz.*

Skills

Languages: German (native), English (fluent), French (advanced)
Software: Stata (advanced), Microsoft Office (advanced), LaTeX (advanced)

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November 4, 2021

To Whom It May Concern:

We are pleased to confirm that Mr.Marc Diederichs has been a student in the Ph.D in Economics and MSQ in Quantitative Economics Program at the GSEFM since Wintersemester 2018/2019, and is currently in good academic standing.
Mr.Marc Diederichs's grades were as follows:

Course Title	ECTS Credits	Semester	German Scale	Anglosaxon Scale
Advanced Macroeconomic Theory 1 (Tsujiyama/Wälde)	8	WS 18/19	3,7	D+
Mathematical Methods (Weba/Reggio)	8	WS 18/19	4,0	D+
Advanced Econometrics 1 (Entorf/Weiser)	8	WS 18/19	1,7	B+
Advanced Econometrics 2 (Hosseinkouchack/Cheung)	8	SS 19	2,7	C+
Advanced Macroeconomic Theory 2 (Meyer-Gohde/Faia)	8	SS 19	2,0	B
Advanced Microeconomic Theory 1 (Weichenrieder/Eibelshäuser)	8	SS 19	2,3	B-
Advanced Microeconomic Theory 2 (Inderst/Walz)	8	SS 19	1,7	B+
Historical and Normative Foundations of Economics (Caspari)	8	SS 19	1,7	B+
Development Microeconomics (Schündeln)	4	WS 19/20	2,0	B
Accounting and Financial Economics (Schüwer)	6	WS 19/20	5,0	F
Applied Econometrics: Health & Educational Economics (van Ewijk)	4	WS 19/20	1,3	A-
Empirical Banking (Barth)	4	WS 19/20	1,3	A-
Machhine Learning with Applications in R (Süß)	4	WS 19/20	1,7	B+
The Economics of Leadership (Kosfeld)	4	WS 19/20	5,0	F
Topics in Statistics and Econometrics: Health Economics (transfer University of Mai	4	WS 16/17	1,7	B+
Research Module International Economics/Public Policy (transfer University of Mair	6	WS 16/17	1,3	A-
TextualAnalysis (Hillert)	4	SS 20	5,0	F
Innovation (Storz)	4	SS 20	5,0	F
Theoretical and Empirical Organizational Economics (Friebel)	6	SS 20	1,0	A
Research on Innovation: Recent Developments in Theory and Methods (Storz)	4	WS 20/21	1,0	A
ExperimentalEconomics Lab Experiments (Benndorf)	4	WS 20/21	1,7	B+
Textual Analysis (Hillert)	4	SS 21	5,0	F
Intergenerational Economics (Schunk)	4	SS 21	5,0	F

Any failed courses which were successfully repeated are not reflected in this transcript.

Please see http://www.gsefm.eu/ for further details regarding the Program, the contents of the courses and the grading system used for the courses.
Prof. Michael Binder, Ph.D.
Chairperson of the Board of Examiners at GSEFM
This transcript has been produced automatically and is valid without a signature.

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Frankfurt am Main, November 25, 2021

Information about Mr. Marc Diederichs

To whom it may concern,

Hereby I confirm that Mr. Marc Diederichs, born on January 18, 1992, has been a student in the Ph.D. program in Economics and MSQ program in Quantitative Economics at the GSEFM since the Wintersemester 2018/2019. The maximal duration of the Ph.D. and MSQ studies is 16 and 7 semesters, and the average duration is 12 and 6 semesters, respectively. According to the information at our disposal, Mr. Diederichs will make a research stay abroad in the first half of 2022, will retake his studies at the GSEFM in July of 2022, and obtain his Ph.D. degree by October of 2024.

Kind regards,

Hagai Leal
Director of Student Services

STUDENT SERVICES OFFICE GS|EFM GRADUATE SCHOOL OF ECONOMICS, FINANCE, AND MANAGEMENT

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Essay by Marc Diederichs

During the two-year course phase of my PhD, I conceptualized two research projects. The first project is about the effect of an editor connection in the peer review process of economic journals. With data covering the last 31 years of economic publishing in 28 renowned economic journals from the Web of Science and EconLit, this project documents that editors' affiliation colleagues and former coauthors experience publication rate increases during their connected editor's appointments. Moreover, it analyzes potential mechanisms such as editorial favoritism, network productivity increases due to a better informed network, as well as the possibility of a changed journal focus that may simultaneously affect which editors get appointed and which authors publish in a journal.

Using the same data, the second project asses the effect of the interdisciplinarity of a research project on its journal placement and citation count. Interdisciplinarity is here defined as the fact of involving two or more different subjects or areas of knowledge within the discipline of economies. Of this project's three approaches to measure the interdisciplinarity of research papers, two approaches make use of a paper's cited references and the third approach makes use of the specialization composition of author teams. We document a lower citation impact and a worse journal placement of interdisciplinary research papers. This finding is interesting because it suggests that career incentives of researchers, publishing in highly ranked journals and producing impactful research, are not perfectly aligned with research institution's goals that often promote interdisciplinary research. This project has a clear connection to innovation research as interdisciplinarity and innovativeness of research projects are often measured in a similar way by the literature and both concepts aim to contribute to a better understanding of knowledge production. The project on editors and the project on interdisciplinary research in economics are nearing completion and will be included in my dissertation, which I plan to submit this summer.

With the emergence of Covid-19 data, I seized the opportunity to collaborate with different teams on two further research projects that aim to understand the effect of containment measures, such as testing and school closures, on the spread of SARS-CoV-2. In one project we use the synthetic control method to study the effect of a unique policy experiment: In March and April 2021, a mayor German city set up a testing scheme while relaxing contact restrictions. The experiment led to an increase in the reported case rate such that we conclude that the number of rapid tests were not sufficient to compensate for more infections caused by relaxing contact restrictions. In the other project, we make use of the exogenous variation in the timing of school openings after the summer break in 2021 across German federal states and an event study design, to show that schools under regular and mandatory rapid testing of the studentship mitigated the growth in case numbers. These projects have recently been published in the journals PLOS ONE and PNAS, respectively.

During a research visit to Joshua Angrist at MIT last spring, I began a new project with him, focused on understanding the importance of advisors in the education of PhD students. We define and estimate advisor value-added as measured by the number of students advisors see to completion and their students' research success. Advisor value-added is used to examine whether successful advisors cause their students to succeed. This project is likely to be funded by the Rockwool Foundation, Institute for the Economy and the Future of Work, in Berlin, where I will become a postdoctoral researcher after my thesis defense.

In the near future, I plan to submit my editor and interdisciplinarity projects for publication in scientific journals, and to advance the PhD advisor project. I am also interested in exploring further research questions in the field of labor economics, which will likely touch on innovation research. I am eager to write a grant proposal during my time as a postdoctoral researcher to secure further funding.

I would like to participate in the NBER Boot Camp for several reasons. Firstly, I am eager to learn about innovation research. I want to gain an understanding of the most recent works in this field, and become familiar with state-of-the-art empirical methods. Additionally, I want to learn about open research questions of innovation research. Secondly, I am keen to connect with Boot Camp participants and the speakers whose work I have come across in the past, particularly the work of Pierre Azoulay. Exchange about research during the Boot Camp is especially important as personal exchange has been limited during the Covid-19 pandemic. Additionally, I would like to use my stay in Cambridge for an in person catch up with Joshua Angrist about the progress of our ongoing project.