Holden A. Diethorn

Postdoctoral Researcher
hdiethorn@nber.org | hdiethorn.com

Employment

National Bureau of Economic Research — *Cambridge, MA*
Postdoctoral Researcher — *2020 - Present*

Education

University at Albany, SUNY — *Albany, NY*
Ph.D., Economics — *2020*
M.A., Economics — *2016*
Saint Vincent College — *Latrobe, PA*
B.S., Economics, Politics — *2013*

Research Fields

Primary Field: Labor Economics
Secondary Fields: Economics of Innovation, Education, Immigration

Research Experience

U.S. Census Bureau Special Sworn Status Researcher — *2016 - Present*

1. *Economic Impact of Science and Engineering Workers* [Active Project]
2. *How Does High-Skill Immigration Affect Domestic Labor Markets and Firms* [Approved Project]

Research Assistant (Supervisor: Gerald R. Marschke) — *2016 - 2020*

Teaching Experience

Instructor of Record (4 sections), *University at Albany, SUNY* — *2015 - 2017*

- Intermediate Macroeconomics: Spring 2017 (2 sections), Fall 2015 (1 section)
- Labor Economics: Summer 2015 (1 section)

Teaching Assistant**,** *University at Albany, SUNY* — *2014 - 2016*

- Ph.D.-level: Macroeconomics I & II
- M.A.-level: Macroeconomics & International Macroeconomics

Economics Department Tutor**,** *University at Albany, SUNY* — *2013 - 2014, 2016*

- Principles & Intermediate Microeconomics
- Principles & Intermediate Macroeconomics

Research

Working Papers

1. ***Green Card Quotas and the Misallocation of Talent: Evidence from the STEM Doctoral Labor Market***;
   Job Market Paper (Submitted)
   The rates of startup formation, business dynamism, and productivity growth in the US economy have declined since the early 2000s, and a growing literature seeks to identify common forces driving these trends. In this paper, I show that binding green card quotas may contribute to these declines by diverting the most highly-skilled workers in the economy away from entrepreneurial ventures resulting in a misallocation of talent. Using a simple job choice framework, I show that the sudden emergence of country-specific green card delays in October 2005 incentivized Chinese and Indian STEM doctorates to seek employment at established firms over startups as the latter are more likely to shut down prior to the resolution of delays. A difference-in-differences analysis reveals that STEM doctorates who faced green card delays reduced their likelihoods of working in US startups

over established firms in the first decade of their careers by 42%. This suggests that policies enabling foreign-born STEM doctorates to avoid green card delays or maintain green card eligibility in the face of job destruction are likely to increase the share of such doctorates working at startups early in their careers.

2. ***Task Mismatch and Salary Penalties: Evidence from the Biomedical PhD Labor Market*** (with Gerald R. Marschke); Latest Version

   We develop a task-based framework of wage determination where a mismatch between the tasks performed as part of current and previous employment leads to persistent salary penalties. We exploit novel worker-level and longitudinal job task information from a labor market where task mismatch is endemic—the US biomedical PhD labor market—finding that task mismatch explains between-sector heterogeneity in the pecuniary returns to postdoctoral training: a positive postdoc salary premium emerges when task mismatch is low and a negative premium when it is high. Differences in accumulated task-specific human capital explain the sizably negative returns to postdoctoral training in industry.

3. ***STEM Employment Resiliency During Recessions: Evidence from the COVID-19 Pandemic*** (with James C. Davis, Gerald R. Marschke, and Andrew J. Wang); *NBER Working Paper No. 29568*; Latest Version (Submitted)

   STEM occupational employment suffered smaller peak-to-trough percentage declines than non-STEM employment during both the Great Recession and COVID-19 recession, suggesting a relative resiliency of STEM employment during recessions in the digital age. We exploit the sudden peak-to-trough declines in STEM and non-STEM employment during the COVID-19 recession to measure STEM recession-resiliency during the pandemic, decomposing our difference-in-differences estimate into parts explained by various sources including differences in demographics, educational attainment, job tasks, remote work capability, industry, and STEM knowledge importance on the job. We find that STEM knowledge importance on the job explains the greatest share of STEM employment resiliency, and that workers in non-STEM occupations who nonetheless use STEM knowledge experienced higher employment rates during the pandemic. We show that R&D expenditures and employment also remained resilient, suggesting only a mild effect of the COVID-19 pandemic on innovative activity. Altogether, our findings suggest that increasing opportunities for STEM training—including outside the college-track—may help improve the employment resiliency of workers during future recessions.

4. ***A Machine Learning Approach to Identifying Postdocs in LEHD Data*** (with James C. Davis, Gerald R. Marschke, and Andrew J. Wang); Latest Version

   This paper details the creation of the ACS-LEHD Doctorate Panel—a new linked employer-employee longitudinal dataset of the doctoral workforce enabling researchers to analyze the quarterly labor market outcomes of STEM doctorates and postdocs within the secure environment of a Federal Statistical Research Data Center (FSRDC). To impute the quarterly postdoc employment status of doctorates in matched ACS-LEHD data, we train a machine learning algorithm on the small share of data for which quarterly postdoc employment status is known, yielding an out-of-sample imputation accuracy of over 97%. We include a preliminary analysis of the earnings disparity between postdoc-trained and nonpostdoc-trained biomedical doctorates in the ACS-LEHD Doctorate Panel, finding that postdoc-trained biomedical doctorates tend to earn less than their nonpostdoc-trained counterparts, and that this difference in pay narrows, but does not disappear, when including firm and occupation fixed effects.

Work in Progress

1. ***Worker Mobility, R&D Human Capital, and Firm Productivity*** (with Erling Barth, James C. Davis, Gerald R. Marschke, and Andrew J. Wang)
2. ***The Impact of High-Skilled Immigration on Domestic Workers*** (with Richard B. Freeman, Gerald R. Marschke, and Xiupeng Wang) [Working Title]
3. ***The Impact of High-Skilled Immigration on Firm Innovation and Productivity*** (with Richard B. Freeman, Gerald R. Marschke, and Xiupeng Wang) [Working Title]

Conference Proceedings

1. ***US Engineering Employment During the COVID-19 Pandemic*** (with James C. Davis, Gerald R. Marschke, Andrew J. Wang); *2022 ASEE Annual Conference Proceedings*; (Link)

Presentations

NBER Summer Institute 2022: Science of Science Funding *2022*
Task Mismatch and Salary Penalties: Evidence from the Biomedical PhD Labor Market

American Society of Engineering Education (ASEE) 2022 Annual Conference *2022*
US Engineering Employment During the COVID-19 Pandemic (Poster)

Society of Labor Economists (SOLE) 2022 Conference *2022*
Task Mismatch and Salary Penalties: Evidence from the Biomedical PhD Labor Market

American Economic Association (AEA) 2022 Annual Meeting *2022*
Better Safe than Sorry: The Impact of Green Card Delays on the Propensity of Foreign STEM Doctorates to Work at Startups (Poster)

NBER Investments in Early Career Scientists (Fall 2021) *2021*
Task Mismatch and Salary Penalties: Evidence from the Biomedical PhD Labor Market

NBER Investments in Early Career Scientists (Fall 2021) *2021*
Leveraging Census Data to Study the PhD (and Postdoc) Labor Market

Society of Labor Economists (SOLE) 2021 Conference *2021*
Better Safe than Sorry: The Impact of Green Card Delays on the Propensity of Foreign STEM Doctorates to Work at Startups

Society of Labor Economists (SOLE) 2021 Conference *2021*
Exploring the STEM Worker Advantage in Weathering the COVID-19 Recession

Bruce Weinberg Micro Research Group Seminar *2020*
The Biomedical Postdoc Salary Penalty: Evidence and Possible Explanations

Census Bureau @ Cornell Seminar Series *2020*
Postdoc Career Paths and Labor Market Outcomes

2019 IRIS Summit *2019*
Postdoc Career Paths and Labor Market Outcomes

Honors & Awards

Coleridge Initiative Applied Data Analytics Training Full Scholarship *2019*
National Science Foundation (NSF)

Helen Horowitz Award for Outstanding Teaching *2017*
University at Albany, SUNY

Pong S. Lee Endowment Award for Outstanding Research *2016*
University at Albany, SUNY

Service, Outreach, and Development Activities

Coleridge Initiative Applied Data Analytics Program, Attendee *2019*
National Science Foundation (NSF)

Grad School Panel Q&A, Panelist *2015*
Office of Career and Professional Development, University at Albany, SUNY

UAlbany College Teaching Symposium for Graduate Students, Attendee *2013*
Institute for Teaching, Learning, & Academic Leadership, University at Albany, SUNY

Software Skills

Stata, R, SAS, Python, SQL, LaTeX, MS Office, Qualtrics Survey Platform