Rachel Schuh

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March 27th, 2020

To whom it may concern,

My application for the NBER Entrepreneurship Research Summer Boot Camp is attached. My recommendation letter (included) is from Professor Nicholas Bloom. I am very excited about the prospect of attending the summer school, although I am aware that because of the pandemic, the program might not happen, at least not in person. Please contact me if you need any additional information.

Sincerely,

Rachel Schuh

# Rachel Schuh

schuhr@stanford.edu (608) 577-4238

## Education

**Stanford University**, Stanford, CA
Ph.D. Candidate in Economics 2017–present

**New York University**, New York, NY
Special Student in Graduate Mathematics; GPA 3.85 2015–2016

**Carleton College**, Northfield, MN
B.A. in Economics and Mathematics, *summa cum laude*; GPA 4.0 (top 2%) June 2015
Summer Mathematics Program for Women June–July 2012

## Relevant Work Experience

**Research Assistant to Professor Nicholas Bloom,** Stanford University July 2018–present
- Estimate and run simulations on models of management and firm dynamics using Matlab
- As U.S. Census Bureau Special Sworn Status Researcher, perform econometric analysis using firm-level microdata in SAS and Stata

**Senior Research Analyst,** Federal Reserve Bank of New York July 2015–July 2017
- Contributed analysis of aggregate labor market conditions to aid in preparation for FOMC meetings
- Performed econometric analysis using data from surveys including the CPS, SIPP, and ACS for academic research papers
- Calibrated and estimated search theoretic models using Matlab

**Research Assistant,** Carleton College Department of Economics Sept. 2014–Mar. 2015
- Gathered import, export, and multifactor productivity data from the Bureau of Labor Statistics
- Cleaned and analyzed data in Stata for paper concerning the effects of offshoring on labor productivity and wage volatility

**Analyst Intern,** Analysis Group, Boston, MA June–Aug. 2014
- Supported economists writing expert reports for price-fixing litigation cases
- Analyzed transaction-level data in Stata to create damages exhibits for expert report
- Conducted literature review regarding cartel formation

**Research Intern,** Center for Community & Economic Development, Madison, WI June & Aug. 2013
- Coauthored article on the population demographics of Wisconsin downtowns
- Created, administered, and analyzed the results of a survey of development professionals regarding internet access and downtown development

## Teaching Experience

**Teaching Assistant,** Growth and Stabilization in the Global Economy, Stanford Graduate School of Business Apr.–June 2020
**Prefect,** Introduction to Macroeconomics, Carleton College Mar.–June 2015
**Tutor & Counselor,** MathPath Summer Program July 2013
**Tutor,** Carleton College Math Skills Center 2012–2013

## Academic Honors

Honorable Mention, National Science Foundation Graduate Research Fellowship 2017
Phi Beta Kappa 2015
Distinction on Senior Theses in Economics and Mathematics, Carleton College 2015
Ada M. Harrison Prize in Economics, Carleton College 2015
Foreman Scholarship for Academic Excellence in Economics, Carleton College 2014
Exemplary rating on writing portfolio, Carleton College 2013
Dean's List, Carleton College 2011–2015

## Programming Languages and Technologies

- Java, Python, R, Matlab, Stata, SAS, ArcGIS

**Publications**

"Do Job-to-Job Transitions Drive Wage Fluctuations over the Business Cycle?" with Fatih Karahan, Benjamin Pugsley, Ryan Michaels, and Ayşegül Şahin. bit.ly/2RH07mW

We investigate the importance of job-to-job transitions for cyclical wage dynamics. Using data from the LEHD, CPS, and QWI, we find that wage growth is tightly linked to variations in the job-to-job transition probability and that conditional on job-to-job transitions, the job-finding rate of the unemployed lacks explanatory power.

**New York Fed's *Liberty Street Economics Blog* Posts**

"How Do People Find Jobs?" with Jason Faberman, Andreas Mueller, Ayşegül Şahin, and Giorgio Topa. nyfed.org/2ADmnUZ

Compared search behavior across individuals of varying labor force status using data from the Survey of Consumer Expectations to inform the construction of a search model of the labor market.

"Human Capital and Education in Puerto Rico" with Rajashri Chakrabarti and Giacomo De Giorgi. nyfed.org/2M2hIjX

Using U.S. Census data and achievement test scores, showed that despite similar education levels in Puerto Rico and the U.S. mainland, test scores are far worse in Puerto Rico.

"Exploring Differences in Unemployment Risk" with Benjamin Pugsley and Ayşegül Şahin. nyfed.org/2C9YB39

Analyzed CPS data to show that the risk and duration of unemployment are particularly high for younger and less educated workers, Hispanic and black workers, and low wage workers.

**Works in Progress**

"Demographic Frictions to Reallocation"

Estimating a structural model to document the relative importance of skill differences and gender norms in explaining occupational gender segregation. Running model-based counterfactual exercises to estimate the effects of structural changes favoring female-dominated occupations on men's labor market outcomes.

"Management as a Technology" with Nicholas Bloom, Rafaella Sadun, and John Van Reenen

We document several novel facts about management practices and firm growth and merger and acquisition activity using the US Census's Longitudinal Business Database and Management and Organizational Practices Survey, and estimate a model of firm dynamics which places management in the production function to understand the role of management differences in firm growth, entry and exit, and mergers and acquisitions.

"Firm Outcomes and Parental Leave Policies" with Beatrize Pousada

We investigate the choice of firms to offer extended parental leave benefits in the context of a 2008 policy change in Brazil that allowed firms to opt-in to a two-month extension of the federally mandated maternity leave. We focus on how offering extended leave changes the employment composition in these firms, and whether the additional amenity is reflected in lower wages.

**Significant Research Assistance**

"Job Search Behavior of the Employed and Non-employed" by Jason Faberman, Andreas Mueller, Ayşegül Şahin, and Giorgio Topa. NBER Working Paper No. 23731. August 2017.

Experimented with calibration of job ladder model in Matlab to match moments from novel survey on job search behavior. Coded extensions to model including competing offers, *i.i.d.* search costs, and multiple wage distributions. Analyzed model results and produced graphics.

"Disaggregating the Matching Function" by Peter Diamond and Ayşegül Şahin. January 2017.

Used data from the CPS, JOLTS, HWOL, and BLS to construct multiple measures of vacancies and hires and empirically estimate the matching function across time. Created data visualizations using Python. Completed shift-share analysis of job-filling across industries.

"Gross Worker Flows over the Business Cycle" by Per Krusell, Toshihiko Mukoyama, Richard Rogerson, and Ayşegül Şahin. *American Economic Review*, vol. 107, no. 11. November 2017.

Updated data and model for cyclicality of gross worker flows. Compiled data from the SIPP to calculate gross worker flows by wealth quintile.

**PhD Coursework**

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|---|---|
| Microeconomics I — A | Fall 2017 |
| Macroeconomics I — A+ | Fall 2017 |
| Intermediate Econometrics I — A+ | Fall 2017 |
| Microeconomics II — A | Winter 2018 |
| Macroeconomics II — A+ | Winter 2018 |
| Intermediate Econometrics II — A | Winter 2018 |
| Microeconomics III — A | Spring 2018 |
| Macroeconomics III — A- | Spring 2018 |
| Intermediate Econometrics III — A | Spring 2018 |
| Data Mining and Analysis — Pass | Summer 2018 |
| Advanced Macroeconomics I (Growth) — A | Fall 2018 |
| Financial Economics I (Macro-Finance) — A | Fall 2018 |
| Labor Economics I — A | Fall 2018 |
| Topics in Economic History — A | Winter 2019 |
| Financial Economics II (Heterogeneous Agent Macro) — A | Winter 2019 |
| Labor Economics II — A | Winter 2019 |
| International Finance and Exchange Rates — A | Spring 2019 |
| International Finance and Exchange Rates II — A | Spring 2019 |
| Labor Economics II — A | Spring 2019 |

# Application Essay

I am a third year PhD student at Stanford, and my current research is focused on labor market dynamics. I hope to attend the 2020 NBER Entrepreneurship Research Boot Camp so I can learn more about entrepreneurship to better integrate my research in labor with relevant topics in entrepreneurship, entrepreneurial finance, and firm dynamics. I believe that by better incorporating topics from entrepreneurship into my research I can understand the ties of worker outcomes and wage inequality to firm behavior and how policies can be crafted that are beneficial for both workers and firm growth.

For one current project, I am researching the importance of gender norms for occupational gender segregation and investigating the relative importance of skills and gender preferences for explaining the degree of occupational gender segregation. For this project, I am augmenting a Roy model of comparative advantage across occupations as in Grigsby (2019) following the framework of Bonhomme, Lamadon, and Manresa (2019) to estimate occupational skill distributions separately for men and women and estimate workers' preferences for working with their own gender. My goal is to understand the productivity costs of gender segregation, and whether the combination of gender norms and the growth of traditionally female-dominated occupations can help explain the worsening labor market outcomes for low-skilled men in the past several decades.

I am also coauthoring a paper with my advisor Nick Bloom, and John Van Reenen and Rafaella Sadun, on the dynamics of management and mergers and acquisitions. Through this project, we are working to understand how managerial technology is disseminated across plants within a firm and ultimately across firms through sales and acquisitions. We ultimately hope to understand whether positive management spillovers are an unmeasured benefit of acquisition activity, and how acquisitions can reallocate resources from worse- to better-managed firms.

For this paper, I have written, solved, and simulated a structural model of firm dynamics with management, multi-plant firms, and sales of plants between firms. I have also used U.S. Census data from the Longitudinal Business Database and Management and Organizational Practices Survey to estimate how intensive and extensive margin growth and acquisition and sales activity varies across firms with differing management practices. Participating in the ERBC would be a valuable opportunity to learn more about management and firm dynamics and apply what I learn to this project and future research.

I have also recently begun work with another PhD student at Stanford, Beatriz Pousada, on a project on firm parental-leave policies. We are focusing on a policy change in Brazil that allowed companies to extend the federally mandated maternity leave by two months, and we hope to leverage this policy change to better understand the consequences for firms of offering extended maternity leave and ultimately why firms choose to offer maternity leave. We hope to better understand extended maternity leave as a non-wage amenity that can be offered to attract a specific type of worker, and whether offering extended leave helps firms attract more high-skilled women. More broadly, this project can help us understand if policies designed with a

social benefit in mind can also be beneficial for firms, and thus aid in the design of future policies that can benefit both workers and firms.

As I continue my PhD, I hope to continue to research aggregate labor market dynamics and better tie my research in labor to the areas of entrepreneurship and firm dynamics. In particular, I plan to continue to research how the effects of long-run structural changes in the economy, like a shifting occupational and industry composition, have different effects on different types of workers. I hope to tie this into research on entrepreneurship through a more nuanced understanding of the role of new firms and firm growth in growing and declining industries, and how workers reallocate across young and old firms both within and across sectors. I also hope to do more research on the heterogeneous effects of business cycles and the role of firms in shielding workers from business cycle shocks to income and employment.

The exposure to the latest research in entrepreneurship at the ERBC would help me tie frontier ideas from entrepreneurship with labor economics to produce research on worker outcomes that includes a more nuanced understanding of the firms that employ these workers. With my PhD, I hope to ultimately do policy-relevant research on labor markets and firm dynamics, and a better understanding of entrepreneurship will help me focus on policy topics that can improve both worker welfare and firm dynamism. I hope the ERBC will also help me generate new research ideas that tie together the fields of labor, entrepreneurship, and firm dynamics. This will also be an opportunity to connect with other PhD students researching entrepreneurship and to meet potential coauthors.

Going forward, I hope to continue to research labor market dynamics but with an increased emphasis on firm dynamics. I believe the NBER Entrepreneurship Research Boot Camp would be a valuable opportunity to quickly get up to speed on cutting-edge research in entrepreneurship to better fit my research into this area.

## References

Bonhomme, S., Lamadon, T., & Manresa, E. (2019). A distributional framework for matched employer employee data. *Econometrica*, *87*(3), 699-739.

Grigsby, J. (2019). Skill Heterogeneity and Aggregate Labor Market Dynamics.

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UNIVERSITY



March 20th 2020

Dear David,

**Recommendation Letter for Rachel Schuh**

I am writing to recommend Rachel Schuh to participate in the NBER entrepreneurship summer school. She is really great – energetic, asks questions in class and very enthusiastic. I know it's unlikely it runs – at least in person – this summer, but either way great to take Rachel as somebody that would benefit a lot (her research is very entrepreneurship focused) and would create massive spillovers to the rest of the group.

As background Rachel started working for me as a research assistant in her second year of graduate school. In this role, she has primarily worked on a paper about management and mergers and acquisitions. Because she made great contributions to the project, I and my coauthors (fellow bootcamp presenters John Van Reenen and Rafaella Sadun) decided to bring her on as a coauthor, and we have continued to work on this paper throughout the past year. Rachel also took my labor class in her second year. She often provided insightful contributions to class discussions, and for her term paper she began working on a project on occupational gender segregation, on which I have continued to advise her.

Rachel has made many insightful contributions to our paper on management and mergers and acquisitions. This paper explores how management contributes to the production function in multi-unit firms and how plant acquisitions reallocate managerial capital among firms. In addition to augmenting a model of firm dynamics to account for M&A activity among multi-unit firms, Rachel has used U.S. Census Bureau data from the Longitudinal Business Database (LBD) and Management and Organizational Practices Survey (MOPS) to analyze how growth and M&A behavior vary with management practices across firms. This paper will ultimately help us understand how management contributes to intensive and extensive margin firm growth. Rachel's work on this paper made clear her extensive knowledge on how to build an economic model and her ability to creatively use data to show the validity of a model.

In addition, I am advising Rachel on her paper about the causes and consequences of occupational gender segregation. In this project, she is using cutting-edge methods from empirical labor economics to disentangle the contributions of gender norms and skill differences to gender segregation across occupations. Furthermore, she uses a structural model to understand whether men have faced negative consequences from gender segregation given the recent growth of female-dominated occupations. Through this project, she will attempt to determine how

gender segregation and the enforcement of societal gender norms can lead to missing growth from the misallocation of talent across sectors.

I have also recently started advising Rachel on a new project that looks at the factors that lead firms to offer paid parental leave. The aim of this project is to understand how offering paid maternity and paternity leave affects firm outcomes, such as employment, growth, and revenue; and how firms use parental leave to compete for high-skilled women. This project has the potential to affect our understanding of how firm behavior interacts with public policy and whether policies that are desirable from a societal perspective can contribute to firm growth.

Through her work on our coauthored paper and her novel research ideas focused on topics that are policy relevant, Rachel has shown great promise as a researcher thus far in graduate school. I think she would be an excellent addition to the NBER Entrepreneurship summer school. Rachel's research covers exciting topics in labor economics that have potential synergies with research in entrepreneurship, and this summer school would be a beneficial opportunity for her to tie her research into this field. In addition, because she is in her third year, the summer school will also be a valuable opportunity for her to learn about the entrepreneurship literature that would allow her to develop novel research ideas.

Yours Sincerely,



Nicholas Bloom