2018

The Economics of Job Search: New Insights from an Upjohn Institute-Federal Reserve Bank of Chicago Conference

Brad J. Hershbein
W.E. Upjohn Institute for Employment Research, hershbein@upjohn.org

Claudia Macaluso
W.E. Upjohn Institute for Employment Research

The Economics of Job Search

New Insights from an Upjohn Institute–Federal Reserve Bank of Chicago Conference

Brad Hershbein and Claudia Macaluso

The W.E. Upjohn Institute for Employment Research and the Federal Reserve Bank of Chicago jointly conducted the first Job Search and Vacancy Workshop in Chicago on April 21–22, 2018. The two-day conference convened economists from several top research and policy institutions, including the University of California, Santa Barbara; Columbia University; the University of Chicago; Georgetown University; George Washington University; Northeastern University; the University of Toronto; and the Federal Reserve Banks of New York, San Francisco, and the Federal Reserve Board.

Intended to be a balanced mix of theoretical and empirical research on the "inner workings" of hiring in labor markets, the workshop featured six presentations and discussions and gathered many more participants from the sponsoring institutions and Chicagoland universities. The discussion centered on advances in research on the matching of workers to jobs, made possible in part by the increased availability of firm-level data on job postings. These data, typically produced by the private sector through online job boards and hiring platforms, describe in detail and in real time the specific positions and skills businesses advertise and recruit for.

Indeed, the availability of firm-level job postings is a major breakthrough, as no comparable data have been or are currently produced by government statistical agencies. However, the nonofficial nature of the data also exposes them to questions of accuracy and reliability, as online job markets do not necessarily reflect the labor market

> **Among IT jobs, 80 percent of jobs ads receive most of their applications in the first week of posting.**

as a whole, and the exact processes in which the data are collected are usually proprietary.

Labor economists are well aware of the challenges and opportunities these innovative data provide. In work with Brenda Samaniego, **Steven J. Davis**, the William H. Abbott Professor of Economics at the University of Chicago Booth School of Business, uses job postings from an online platform for IT occupations, Dice.com, to learn about the life cycle of a job ad. Davis and Samaniego find that posting duration is fairly short: 80 percent of job ads receive most of their total applications within one week of their first appearance; many have been removed by one month from their initial posting. Though the typical vacancy on Dice.com attracts only about five applicants, the typical applicant competes with many other job seekers because a small share of postings receive the bulk of applications. In particular, job seekers disproportionately target new job postings.

The observation that workers are more likely to apply to new job ads was the start of a novel model with "phantom vacancies" for **James Albrecht** and **Susan Vroman**, professors of economics at Georgetown University, and their colleague, Bruno Decreuse, from Aix-Marseille University. A phantom vacancy is a job posting that remains on a job board, thus looking like an open employment opportunity, even though the position advertised is no longer available. Because there can be little incentive for employers to take down old ads on third-party job boards, the researchers find that many seemingly valid postings are in fact phantom vacancies. Albrecht, Decreuse, and Vroman conclude that the presence of old ads that may not be true vacancies is an example of search frictions in the labor market that can hinder job finding.

Peter Kuhn, a professor of economics at the University of California, Santa Barbara, studies another, more explicit, type of friction:

ARTICLE HIGHLIGHTS

■ *The availability of firm-level job postings is a major breakthrough, as no comparable data have been or are currently produced by government statistical agencies.*

■ *It is crucial to compare job postings data with officially published statistics to determine their representativeness, accuracy, and their appropriate use in policymaking and forecasting.*

the existence of "gendered" ads. Using job board data from a Chinese employment platform, Kuhn and coauthor Kailing Shen show that there is high, but not total, compliance by applicants to jobs stating an explicit preference for male or female workers. The practice—illegal but sometimes occurring informally in the United States—results in remarkable segregation across occupations and often discourages women from applying to "male jobs" that have higher pay or benefits. In addition, as noted during the lively Q&A that followed the presentation, it appears that men applying to "female jobs" have a greater likelihood of being interviewed for the position than women applying to "male jobs," even after controlling for level of skill.

Andreas Mueller, an assistant professor of economics at Columbia University, uses administrative data on employers, applications, and matches from the Austrian Labor Statistics Agency. His work with Andreas Kettemann and Josef Zweimüller focuses on the relationship between the posted wage and the rate at which vacancies are filled. Surprisingly, they find only moderate evidence that high-wage vacancies are filled faster than low-wage ones, suggesting

Because employers have little incentive to take down old job ads on other sites, many of these postings are 'phantom vacancies'.

that the wage is only one piece of information job seekers use to guide their applications. However, as pointed out in the discussion, there is a caveat: the data cover only workers who looked for a job through the Austrian unemployment assistance office. Jobs available to unemployed workers are likely to be lower-skilled than the

average job in the economy, and may display less variation in wages; thus, there may be a smaller role for the wage signal in recruiting.

Ronald Wolthoff, an assistant professor of economics at the University of Toronto, and his colleagues Xiaoming Cai and Pieter Gautier, derive a mathematical condition that describes the extent to which the "best" firms hire the "best" workers and studies how deviations from this optimal matching affect aggregate productivity. Their work highlights how the availability of detailed data on the matching between workers and firms helps economists build more accurate models of the labor market.

Tara Sinclair is an associate professor of economics at George Washington University and a senior fellow at Indeed.com, a job search services company that serves as an aggregator of job postings. Along with Martha Gimbel, she uses data on the flows of postings and applications at Indeed to describe potential mismatch between the demand and supply of labor. In her talk, Sinclair underlined another challenge that awaits economists wanting to take advantage of data from large online job boards: the technical difficulties involved in manipulating data that are derived from text, and the subsequent need for a constant dialogue between the economists using the data and the engineers and computer scientists producing them. In short, there is still a lot to learn from the data and *about* the data.

In general, data on job postings allow researchers to study in unprecedented detail the demand for different skills and types of workers, and what firms do to attract workers, including posting a wage or specifying the length of time a job ad is active. However, a common theme emerged from the discussion at the workshop: the need to compare the different data sources, as each data set has strengths and weaknesses to be assessed with

respect to the specific research question at hand. It is also crucial to compare job postings data with officially published statistics to determine their representativeness, accuracy, and,

'Gendered' job ads can discourage women from applying to 'male jobs' that have higher pay or benefits.

ultimately, their appropriate use in policymaking and forecasting.

The study of job postings also helps characterize firms' recruiting and workers' job search activities, in ways that may help lead to more successful efforts on both fronts. Though research in this field is just beginning, the Upjohn-Chicago Fed Workshop proved to be a fruitful environment for economists, data scientists, and decision makers to come together, present and interpret research results, and discuss common concerns about the functioning of labor markets.

Brad Hershbein is an economist and director of information and communications services at the Upjohn Institute. Claudia Macaluso is a postdoctoral scholar at the Institute.