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Measuring the Impacts of the H-1B Visa Program on U.S. Labor Markets: Two Recent Quasi-Experimental Studies

The H-1B visa program, created by the Immigration Act of 1990 (P.L. 101-649), allows U.S. employers to hire temporary foreign workers in specialty occupations requiring a college degree. Many H-1B workers eventually become lawful permanent residents through the employment-based immigration system.

Congress has a longstanding interest in the H-1B program, sometimes increasing and sometimes decreasing the number of new H-1B visas. Under current law, cap-subject employers may receive new H-1B visas for 65,000 workers each year, as well as an additional 20,000 workers with masters' degrees or greater education levels. There is no similar cap on H-1B visa renewals, or on new H-1B visas available to university and nonprofit research employers.

Proponents of the H-1B program say it helps U.S. employers hire workers with skills difficult to find in the domestic labor market, increasing these employers' overall production and employment. Critics of the H-1B program say it enables employers to displace domestic workers with cheaper foreign labor. Difficulties in measuring the impacts of the H-1B program contribute to these disagreements.

Measurement Issues

Several fundamental challenges make it difficult to measure the impacts of the H-1B program on domestic labor markets. These issues are discussed below, as are steps taken to address them in the studies profiled.

Selection Issues

Increasingly, H-1B workers are hired by a small group of very large firms in the scientific and business services, computer, and information technology staffing industries with expertise in navigating the H-1B application process. These large employers are not typical of U.S. employers; they are a *selected* group. This *selection* problem means that comparing outcomes for employers that use the H-1B program (and their employees) with employers that do not use the H-1B program (and their employees) will not yield accurate estimates of the impact of program.

Data Availability

Data availability issues affect the time horizon that can be studied, and require using proxy measures to examine certain outcomes. For example, the U.S. Customs and Immigration Service (USCIS) has posted H-1B employer petition data on its website for petitions filed starting in FY2009. The researchers who conducted the studies profiled here, examining long-term impacts of the H-1B program on employment and wages, filed Freedom of Information Act (FOIA) requests with USCIS to gain access to H-1B petition data for years before 2009. USCIS only retained data for FY2007 and FY2008 for approved petitions. To construct comparisons involving these years, researchers infer which companies entered the H-1B lottery and did not win by using data from the Labor Condition Applications (LCAs) employers must file with the U.S. Department of Labor before filing H-1B petitions.

Researchers who want to study the impact of the H-1B program on employment and wages have linked data on employers using the program with large confidential tax datasets that can be used to illuminate employer and employee outcomes. However, these tax datasets do not identify which employees have H-1B status; the closest available proxy measure is information on which employees of these firms are foreign-born. This proxy measure is limited because there are many ways employers can hire foreign-born workers other than via H-1B visas. Some foreign-born workers have permanent residency or citizenship. Employers may hire foreign graduates of U.S. colleges and universities through the Optional Practical Training (OPT) program, or use other visa programs.

Time Lag

Studying the impacts of the H-1B program can require many years of data, as impacts may take time to observe. Data access issues cause further delays. For example, gaining FOIA access to older USCIS data takes time. Gaining research access to federal corporate tax data or state unemployment insurance data is a lengthy process. Meanwhile, the U.S. labor market changes, as do the ways firms use the H-1B program. These delays affect the timeliness of study results.

Quasi-Experimental Studies

Because of the above-mentioned measurement issues, until recently, research on the H-1B visa program has not directly examined whether the program expands or displaces employment in the United States.

However, annual employer demand for new H-1B visas exceeded the number available to cap-subject firms in FY2006-FY2009. In these years, USCIS used lotteries to select which petitions to consider. Having H-1B petition acceptance decided by lottery makes it possible to avoid selection bias issues in studying the impacts of the H-1B program by comparing outcomes for firms whose petitions were accepted ("won the lottery") with outcomes for firms whose petitions were denied ("lost the lottery"). Studies using random variation that was not intended as an experiment are called *quasi-experimental studies*. They provide the best available evidence of how H-1B petition decisions affect outcomes for cap-subject firms that apply for the program and their incumbent employees.

There are two recent quasi-experimental studies of the impacts of the H-1B program on employment and wages in the United States. They are summarized in **Table 1**. These two studies use data on firms selected or not selected to receive H-1B visas by random chance. However, they differ in many ways. They focus on different years, with differences in how many (and which) firms were subject to the lottery; use different data; and rely on different assumptions.

Most findings on the employment and wage outcomes of H-1B visas differ across these two studies. One area of similarity is that the first study finds negative employment impacts of H-1B petitions that fall most heavily on other foreign-born workers. This complements the finding in the second study of no overall employment loss for native-born workers when their employers win H-1B petitions.

Table 1. Methodology and Findings from Two Recent Quasi-Experimental Studies of the H-1B Program

	Doran, Gelber, and Isen (2022)	Mahajan et al. (2024)
Primary data used	Corporate income tax records linked with USCIS data on employers that were subject to the FY2006 or FY2007 H-1B petition lottery (about 2,750 employers in total).	Unemployment insurance tax records linked with USCIS data on the employers that won the FY2008 H-1B visa lottery, linked with data on all employers that filed LCAs in preparation for the FY2008 H-1B visa lottery (about 20,000 employers in total).
H-1B variation studied	A comparison of winners and losers of the FY2006 and FY2007 H-1B lotteries, which occurred months after USCIS began accepting petitions those years. Firms subject to these lotteries were larger than the typical H-1B employer and most already had H-1B petitions accepted the same year.	A comparison of all winners and losers of the H-1B lottery in FY2008, when the cap was unexpectedly reached on the first day petitions were accepted.
Assumptions that differ between studies	This study assumes each H-1B petition won means one additional H-1B worker for the employer.	This study makes assumptions about which employers lost the FY2008 H-1B lottery because USCIS did not retain data on lottery losers in FY2008. It uses LCA files to try and identify the lottery losing employers.
Employment findings	• Winning an additional H-1B petition means a decline in employment of 1.5 other workers on average. • These employment effects are similar for employers with differing initial employment levels. • The decline in employment of other workers is driven by reduced employment of other workers who were not born in the United States rather than by reduced employment of U.S.-born workers.	• Winning an additional H-1B petition means an increase in employment of 0.29 college-educated foreign-born workers. • There is no association between winning the H-1B lottery and a loss in employment of native-born workers overall. • For employers with <10 employees at the time of the H-1B lottery, winning the lottery was associated with an increase of 0.46 college-educated foreign-born workers, 0.18 college-educated native-born workers, and 0.37 non-college-educated native-born workers. • Firms that initially paid higher wages or had greater revenue per employee increased employment more than average. • Firms that won the lottery were 2.5 percentage points more likely to survive as employers than firms that lost the lottery.
Wage findings	Wage findings apply to firms with 200 or fewer employees: • Overall, there was no statistically significant difference in total payroll per employee between firms that won and lost the H-1B lottery. • For employers with 30 or fewer employees at the time of the H-1B lottery, average payroll per employee was $2,725 lower for firms that won the H-1B lottery.	Wage findings apply to firms with 100 or fewer employees and their employees at the time of the H-1B lottery: • College-educated workers aged 40 or younger who had been with these employers for less than three years had wages that were 4%-5% higher if their employer won the lottery. • College-educated native-born workers aged 40 or younger who had been with these employers for three years or more had wages that were 5% lower if their employer won the lottery. • Workers without college degrees earned wages that were 3% higher if their employer won the lottery.

Sources: Kirk Doran, Alexander Gelber, and Adam Isen, "The Effects of High-Skilled Immigration Policy on Firms: Evidence from Visa Lotteries," *Journal of Political Economy*, vol. 130, no. 10 (October 2022), pp. 2501-2533, https://doi.org/10.1086/720467; and Parag Mahajan, Nicolas Morales, Kevin Shih, Mingyu Chen, and Agostina Brinatti, "The Impact of Immigration on Firms and Workers: Insights from the H-1B Lottery," Federal Reserve Bank of Richmond Working Paper, no. 24-04, April 2024, with non-technical summary: Nicolas Morales, "How Do College-Educated Immigrants Affect US Firms and Workers?," Federal Reserve Bank of Richmond Economic Brief, no. 24-15.

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