

Harvard Business School Working Knowledge

Immigrant Innovators: Job Stealers or Job Creators?

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Executive Summary:

The H-1B visa program, which enables US employers to hire highly skilled foreign workers for three years, is "a lightning rod for a very heated debate," says Harvard Business School professor William Kerr. His latest research addresses the question of whether the program is good for innovation, and whether it impacts jobs for Americans. Key concepts include:

- * An uptick in the number of H-1B visas given to Indian and Chinese engineers correlates with an increase in the number of US patents.
- * The H-1B program seems to have no overall effect on the number of jobs held by American-born scientists and engineers, nor does it affect the number of patents from inventors who have Anglo-Saxon names.

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* More Working Knowledge from William R. Kerr <<http://hbswk.hbs.edu/faculty/wkerr.html>>

* William R. Kerr - Faculty Research

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The House Subcommittee on Immigration Policy and Enforcement met recently to hash out concerns related to the H-1B program, one of the most controversial of foreign visa topics in the United States. At issue was a stubborn question that politicians, corporations, academics, and lobbyists have been arguing since the creation of the program more than 20 years ago: Is the program helpful or hurtful to American workers?

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The program enables US employers to hire highly skilled, specialized foreign workers for three years, with the opportunity to apply for an additional three-year extension. During this period, workers can request green cards and secure permanent residency status if they desire. The current annual cap for the "regular" H1-B category is 65,000 visas. (There is a separate category, capped at 20,000, specifically for beneficiaries who have received advanced degrees in the United States.)

"It's a lightning rod for a very heated debate," says William Kerr, a professor at Harvard Business School who studies how immigration affects innovation in the United States. "What's not debated is that immigrants are extremely important to innovation. What is debated is whether that comes at the expense of native Americans."

Kerr's recent research indicates that while the program is good for innovation, it has limited overall effect on non-immigrant workers.

The government does not limit H-1B visas to any particular industry—both software engineers and

fashion models are considered "specialized"—but 60 percent of the visas go to workers who specialize in science, engineering, and high-tech occupations. Top recipients of H-1B visas include major US-based technology companies Microsoft, Oracle, and IBM. But the program also has granted thousands of visas to India-based technology services companies that have US entities, including Infosys, Wipro, and Tata Consultancy Services.

As with any controversial topic, both program proponents and opponents are prone to hyperbole.

"You have some very prominent high-tech firms that say every immigrant creates jobs, claiming figures as high as six new American jobs for every immigrant hired," Kerr says. "On the opposite side you have people who are fiercely opposed to the program, saying that every immigrant you let in results in an American job lost. The debate has gotten to the point where neither side is willing to cede ground."

The supply side of innovation

Kerr's desire for a systematic study of the H-1B program resulted in the paper *The Supply Side of Innovation: H-1B Visa Reforms and US Ethnic Innovation* <<http://hbswk.hbs.edu/item/6097.html>>, coauthored with William F. Lincoln of the University of Michigan. The researchers set out to quantify the impact of changes in annual H-1B admission levels from 1995 to 2008, when national caps fluctuated from a low of 65,000 workers a year to a high of 195,000.

(The research was especially challenging due to a tremendous lack of detailed data about H-1B applications, says Kerr. "It's an unfortunate event that as the H-1B issue has become more controversial, the amount of available data has shrunk.")

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To gauge the program's effect on job growth, Kerr and Lincoln analyzed Current Population Survey <<http://www.bls.gov/cps/>> data on that time period. Not surprisingly, growth in the H-1B program directly correlated with an uptick in the number of immigrants working in science and engineering. More importantly, the research seemed to rule out the idea that the H-1B program was stealing jobs from born-and-bred Americans. But it also ruled out the opposing idea that the program created a huge number of jobs for Americans.

"We do not find any substantive effect on native scientists and engineers across a range of labor market outcomes like employment levels, mean wages, and unemployment rates," the paper states.

The researchers studied not only the program's effect on American jobs, but also its effect on innovation in general.

"The bigger goal was to try to understand the impact of science and engineering immigration on US innovation and employment and the like," Kerr says.

Patent effects

To determine whether an increase in H-1B visas led to an increase in innovation, the researchers looked at data from the United States Patent and Trademark Office <<http://www.uspto.gov/>>, examining patent applications and grants through May 2009. While patent records do not contain definitive information about inventors' immigration status or ethnicities, they do contain the inventors' names. By utilizing name-matching software, the researchers could infer the ethnicity of inventors at any given firm. An inventor named Chang was likely Chinese, for example.

Kerr acknowledges the problems inherent in the methodology.

"We didn't know if a person was a first-generation immigrant; he or she could be second-generation," he says. "Then you get into things such as name changes due to marriage or, more problematic, names like Lee, which could be Chinese but also has a 'Robert E. Lee' context to it."

But common sense provided enough information to detect definite patterns. As the paper states, "Inventors with the last names Gupta or Desai are more likely to be Indian than they are to be Anglo-Saxon or Vietnamese."

"You can open up a black box on a lot of these issues," Kerr says. "Following the patterns, you can start to say, what's the ethnic composition of Harvard's inventors, IBM's inventors, or Cisco's inventors? This technique allows a much deeper analysis, especially within firms and institutions, than otherwise possible."

The researchers found that the number of inventions by foreign ethnicities, Indians and Chinese in particular, was closely tied to H-1B admission levels. A 10 percent increase in the H-1B population correlated with a 4 percent to 5 percent growth in Indian ethnic invention in dependent cities compared to their less dependent peers. Overall, increasing H-1B admissions by 10 percent resulted in a 1 percent increase of total patented inventions.

However, the H-1B program seemingly had no sweeping effect on the number of patents sporting Anglo-Saxon names, indicating that immigrants were not stealing thunder from inventors whose families came to America on the Mayflower.

"So we come out with this overall conclusion that says that US innovation increases with letting in more immigrant scientists and engineers, primarily due to the contributions of these immigrant scientists and engineers," Kerr says. "But we don't see much impact, positive or negative, on American Anglo-Saxon workers in the short-to-medium time frames that we can evaluate with the H-1B program's fluctuations. We know there are plenty of individual stories about people who have lost their jobs due to the H-1B program. This paper doesn't say that this never happens nor does it downplay the consequences of displacement. But in other situations jobs are created. This paper is about the overall treatment of the economy from the immigration side."

Is the program fair?

Kerr is studying several areas in which the H-1B program may be unfair both to immigrants and to US workers.

Immigrants who come to the country on H-1B visas are very dependent upon the firms that hire them, a situation that critics contend leads some companies to view the program as a source of cheap labor. Kerr is testing this theory by comparing wage levels of immigrants who have received green cards/permanent worker status with those who are on temporary visas, such as H-1Bs.

More obviously unfair is the green card application process itself. Applicants from larger countries such as China and India have to wait much longer than applicants from smaller ones to secure freedoms that come with permanent worker status. "We have a policy that we set aside the same number of employment-based spots per country, regardless of its size," Kerr explains. "So if you happen to be here from Belize, then your green card application gets processed very quickly, but the estimated wait time for India or China is six years or longer."

"This notion of the backlog for the green card has got to be resolved," he says.

Separately, Kerr is researching whether the H-1B program induces age discrimination. While his previous research shows no apparent overall effect on American workers, the current research will home in on whether the program inhibits job growth and career advancement among middle-aged American workers. By studying the ages of workers in firms with H-1B programs, Kerr hopes to learn whether the average age at a firm decreases as H-1B admission levels increase.

"Sophisticated critics of the H-1B program have argued that high-tech firms use the program as a means to keep their workers young and costs lower," he says. "There's no question that when you look across industries, the ones that are very immigration-dependent also have an average younger age than other industries." [cid:image004.gif@01CC51CB.40117A80]

