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POLICY BRIEF

Putting a Cap on Competitiveness: Arbitrary Limits on H-1B Visas Undermine U.S. Science and Engineering

Arbitrary congressional limits on the number of H-1B visas that can be granted annually to highly skilled foreign professionals may undermine the international competitiveness of U.S. science and technology.

On October 1, 2004 – the first day of Fiscal Year (FY) 2005 – U.S. Citizenship and Immigration Services (USCIS) announced that the new fiscal year's congressionally imposed annual cap on H-1B visas for highly skilled foreign professionals had been reached that very same day. U.S. employers therefore will have to wait until April 1, 2005, to even file new H-1B petitions on behalf of professionals from abroad, and those whose petitions are granted will not be able to start work until October of 2005.[1] While it is important to ensure that demand for H-1B professionals is legitimate, particularly when the economy is slow, arbitrary numerical limits set more than a decade ago do nothing to accomplish this. Moreover, the glaring inadequacy of the current H-1B cap is more than just an inconvenience or economic hardship for particular U.S. businesses. Progress in science and engineering in the United States is heavily dependent upon the contributions of foreign professionals, many of whom enter the country on H-1Bs or remain on H-1Bs after entering as students and completing their studies at U.S. universities. As a result, the current limits on the H-1B program may be undermining the preeminence and international competitiveness of the United States in a wide range of scientific and technical fields that are vital to the economy and security of the nation.

Foreign-Born Scientists and Engineers in the U.S. Workforce

As discussed in a recent report from the IPC, foreign-born scientists and engineers (S&Es) have long played a prominent role in U.S. technological and scientific advancement and are a critical part of the science and engineering (S&E) labor force in corporations, universities, and research centers nationwide.[2] According to data from the 2000 Census, the foreign-born comprised 11.1 percent of the U.S. population as a whole in 2000, but accounted for 16.6 percent (or 1.2 million) of the 7 million S&Es in the United States. The foreign-born presence was most pronounced among physical scientists (24.7 percent of whom were foreign-born) and life scientists (23.3 percent of whom were foreign-born). Moreover, between one-half and two-thirds of foreign-born S&Es (depending upon occupation) had entered the United States more than 10 years before.

Foreign Born Portion of Scientists and Engineers by Occupational Categories: 2000

	Total	Native born	Foreign born	% of FB S&Es in U.S. 10+ years
Computer Scientists	3,010,546	81.8%	18.2%	47.7%
Mathematical Scientists	152,091	88.4%	11.6%	64.1%
Architects, Surveyors, and Cartographers	229,277	87.4%	12.6%	70.1%
Engineers	1,704,862	83.6%	16.4%	67.1%
Drafters and Engineering Technicians	730,378	88.8%	11.2%	69.4%
Life Scientists	217,308	76.7%	23.3%	41.7%
Physical Scientists	361,486	75.3%	24.7%	49.3%
Social Scientists and related	341,983	90.2%	9.8%	63.9%
Science Technicians	282,736	87.2%	12.8%	54.1%
All Scientists and Engineers	7,030,667	83.4%	16.6%	55.2%

NOTE: These figures include foreign-born scientists and engineers in all education levels. The percentage of foreign-born in these categories increases with education level.

Although foreign-born S&Es are not numerically dominant in any S&E occupation, their contribution to the S&E labor force is amplified by the fact that they are highly represented among the most educated professionals in their fields. According to the National Science Board, in 2000 the foreign-born comprised 38 percent of all S&Es in the United States with a doctorate and 29 percent of those with a master's degree, compared to 17 percent of those with only a bachelor's degree. The foreign-born are more prominent still in the most highly educated echelons of particular S&E occupations. The foreign-born share of all doctorate holders amounted to 51 percent among engineers and 45 percent among life scientists, physical scientists, and mathematical and computer scientists. Foreign-born doctorate holders also play a key role in training future generations of both native and foreign-born S&Es. Among all U.S. doctorate holders employed at academic institutions in 2001, the foreign-born accounted for 39 percent in computer sciences, 35 percent in engineering, 28 percent in mathematics, 23 percent in physical sciences, and 20 percent in life sciences.[3]

In addition to being among the most educated members of the S&E labor force, foreign-born S&Es are also a critical component of the workforce in particular industries. Overall, the industries that relied most on foreign-born S&Es in 2000 were the educational and health category (where the foreign-born comprised 18.8 percent of all S&Es) and the professional and scientific category (where the foreign-born constituted 18.4 percent of all S&Es). However, these statistics do not fully capture the importance to certain industries of foreign-born S&Es in specific occupations. For instance, the foreign-born accounted for 42.2 percent of all physical scientists in educational & health services and 26.2 percent in manufacturing. The foreign-born represented 38.6 percent of all life scientists in educational & health services and 28.9 percent in professional & scientific services.

The Importance of H-1Bs

Foreign S&Es who have academic credentials in their professions most commonly enter the country on H-1B visas. The H-1B visa is an employer-sponsored, employer-specific visa category that can be used only if a U.S. employer petitions the government for

approval to employ a foreign worker. The H-1B category requires the employer to make a series of attestations to protect U.S. workers, including a requirement that the employer pay the foreign worker the prevailing wage for the job the worker will perform. These attestations, coupled with the costs both in processing time as well as legal and filing fees, discourage a U.S. employer from hiring a foreign worker unless the employer determines that the worker is needed. Thus, foreign S&Es may remain in the country only if a specific U.S. employer wants and needs them. However, many employers who want to hire foreign S&Es are unable to do so because of annual numerical limitations on how many H-1B visas can be issued. In Fiscal Year (FY) 2004, the annual limit on H-1Bs reverted back to the 65,000 cap originally imposed by Congress in 1990.

Long-Term Solutions

The U.S. need for foreign-born S&Es stems in part from explosive growth and rapid change in many technological and scientific fields which demand a critical mass of expertise to remain competitive. But it is also due in part to the relatively low rate at which native-born students are entering and graduating from scientific degree programs in U.S. universities. The United States has been fortunate in its ability to recruit skilled foreign-born professionals to fill positions that the native-born workforce is unable to fill. In the information age, the United States must make a much greater national investment in K-12 math and science education and the promotion of scientific careers among the native-born. The quality of science instruction must be improved, as noted by Nobel Prize-winning physicist Robert C. Richardson, and students should be educated about the many rewards of a scientific career.[4]

Meeting Today's Needs

However, even if the United States were to increase the number of native-born students choosing S&E careers, the current need for workers cannot wait for new streams of university graduates years or decades from now. U.S. corporations and universities must have access to needed talent today in the face of growing international competition. The programs of study and work that currently exist at universities, corporations and research centers could not easily weather a sudden decline in the number of new workers and students on whom they depend. As long as the U.S. secondary and higher education systems are not producing native-born students in the sciences in sufficient numbers to meet national needs, foreign-born S&Es will remain vital if the nation is to retain its leadership in technical fields. Arbitrary numerical limits on the H-1B visa program, therefore, serve only to deprive the United States of a precious asset – human talent.

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Endnotes

[1] U.S. Citizenship and Immigration Services, Press Office, "USCIS Announces New H-1B Procedures – Reaches Cap," October 1, 2004.
[2] Rob Paral & Benjamin Johnson, *Maintaining A Competitive Edge: The Role of the Foreign-Born and U.S. Immigration Policies in Science and Engineering*. Washington, DC: Immigration Policy Center, American Immigration Law Foundation, August 2004.
[3] National Science Board, *Science and Engineering Indicators 2004* (vol. 1, NSB 04-1; vol. 2, NSB 04-1A). Arlington, VA: National Science Foundation, 2004.
[4] Claudia Dreifus, "The Chilling of American Science," *The New York Times*, July 6, 2004.