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THE ROLE OF FOREIGN STUDENTS IN THE FUTURE OF U.S. SCIENCE AND TECHNOLOGY INDUSTRIES

by TIM REEB

According to a March 2009 Duke University study, fewer international students are applying to U.S. engineering schools each year.¹ Additionally, more foreign engineering graduates are choosing to leave the United States after graduation.² The Duke study suggests that these trends may be caused by the U.S. H-1B visa program.³

Given the importance of foreign graduates to their industries, U.S. science and technology companies have lobbied Congress to change the H-1B program to

make it easier for foreign graduates to work in the United States.⁴ However, Congress has not altered the program.⁵ At least one congressman cited concerns that an influx in foreign workers would take jobs away from Americans.⁶

Despite the current stalemate on the H-1B visa program, both sides appear to agree that changes need to be made if the United States is going to stay competitive in science and technology industries in the future.⁷

THE ROLE OF FOREIGN ENGINEERS IN THE UNITED STATES

Traditionally, foreign students received a large percentage of the engineering degrees awarded in the United States and, upon graduation, constituted a large portion of the U.S. science and technology workforce. As recently as 2007, foreign students received nearly 60 percent of all engineering doctorate degrees awarded in the United States.⁸ Additionally, immigrant entrepreneurs founded 25 percent of U.S. engineering and technology companies established in the past decade and contributed to approximately 24 percent of international patent applications.⁹

However, a current trend suggests that U.S. science and technology industries may need to look elsewhere for future innovation. In 2006, the number of foreign students applying to American engineering schools grew at a rate of 19 percent.¹⁰ That number then dropped to 13 percent in 2007 and to 4 percent in 2008 and 2009.¹¹ To compound this decline, a growing number of foreign students who do study in the United States are returning home after graduation.¹²

WHY THE DECLINE?

The Duke study suggests that the U.S. H-1B visa program may be the cause of these trends.¹³ The study found that a substantial majority of foreign students, including 85 percent of Indian and Chinese students, express concerns about obtaining H-1B work visas following graduation.¹⁴

The H-1B is a non-immigrant visa that allows U.S. employers to temporarily employ foreign workers in “specialty occupations,” such as engineering and mathematics.¹⁵ The annual supply of H-1B visas, limited by a statutory cap, is often filled within days of the application process opening.¹⁶ With limited H-

1B visas available, some foreign students believe attending an American graduate school is too risky because they may not be able to work in the United States following graduation.¹⁷

EXPANDING THE H-1B PROGRAM: SOLUTION OR OBSTACLE?

Jim Reeb, Director of Manufacturing at Caterpillar, one of the United States' largest employers of engineers, understands the plight science and technology companies are facing.¹⁸ "Many U.S. science and technology companies blame their difficulty in finding qualified workers, in part, on the H-1B program, and want the cap expanded or removed altogether," Reeb says.¹⁹

Microsoft Chairman Bill Gates has consistently urged Congress to let more foreign-born engineers work in the United States.²⁰ "I can't overstate the impact [the cap] has, not only on the decision of the people who are educated here to stay here, but also on their decision to even come to the United States in the first place."²¹

Some members of Congress, however, do not appear persuaded by the views of individuals such as Gates. Rep. Dana Rohrabacher, R-Calif., for example, believes that companies may be seeking more H-1B visas because foreign-born workers can be paid less.²² In order to hire enough Americans, "you'd have to raise wages," he said in response to Gates' remarks.²³ "There are plenty of [Americans] out there to hire, but people want to have the top-quality people from India and China and elsewhere."²⁴ Rohrabacher added, "There is no excuse for keeping out 'B' and 'C' American students just because there was an 'A' student from India."²⁵

ENCOURAGING FUTURE AMERICAN ENGINEERS

Jim Reeb believes the U.S. educational system can solve this problem.²⁶ "Regardless of your view relative to the H-1B program, the key issue is educating Americans," Reeb states.²⁷ "Right now, not enough Americans want to be engineers, but if we change that, the H-1B issue becomes irrelevant."²⁸

Congress appears to agree. In 2007, the House of Representatives passed a bill aimed at increasing the number of math and science teachers in the United States by 10,000 per year and increasing the number of math and science

students to 10 million.²⁹ Included in the bill is a program that creates grants for centers that develop engineering and technology curriculum and teaching methods.³⁰ These grants are aimed at increasing the number and performance of undergraduate students in engineering and technology courses.³¹

If the goal is to increase the number of American engineers in the United States, it is important that more Americans start enrolling in engineering programs. Fortunately, there is good news on this front. A recent survey found an 11 percent surge in American students entering engineering programs in 2009.³² Though the increase in American engineering students is a great start, it may come too late. If recent foreign-student trends continue, U.S. science and technology companies may not be able to meet their future demands for engineers.

NOTES

1 *Findings from the 2009 CGS International Graduate Admissions Survey Phase I: Applications*, Council of Graduate Schools, 2009, at 4.

2 *Id.*

3 Vivek Wadhwa, AnnaLee Saxenian, Richard Freeman & Alex Salkever, *Losing the World's Best and Brightest: America's New Immigrant Entrepreneurs, Part V*, March 2009, at 1, www.kauffman.org/. . ./Losing_theWorld's_Best_and_Brightest.pdf.

4 Mark Schoeff Jr., *Bill Gates Seeks Rise in Immigration of Highly Skilled Workers*, Workforce Management, Mar. 12, 2008, <http://www.workforce.com/section/00/article/25/41/45.html>.

5 *Id.*

6 *Id.*

7 Telephone Interview with Jim Reeb, Director of Manufacturing, Caterpillar, Inc. (Nov. 3, 2009).

8 Wadhwa, *supra* note 3.

9 Rachel Konrad, *Immigrants Behind 25 Percent of Tech Startups*, MSNBC, Jan. 3, 2007, <http://www.msnbc.msn.com/id/16459952/>.

10 Council of Graduate Schools, *supra* note 1.

11 *Id.*

12 Wadhwa, *supra* note 3.

13 *Id.*

14 *Id.*

15 *H-1B Foreign Workers Better Controls Needed to Help Employers and Protect Workers*, United States General Accounting Office, Sept. 2000, at 3, www.gao.gov/cgi-bin/getrpt?GAO/HEHS-00-157.

16 *FY 2010 H-1b Cap Resource Page*, National Association of International Educators, Sep. 25, 2009, http://www.nafsa.org/regulatory_information.sec/fy_2010_h_1b_cap_resource/.

- 17 Alison Damast, *World to U.S. B-Schools: Thanks, but No Thanks*, BUSINESS WEEK, Mar. 19, 2009, available at http://www.businessweek.com/print/bschools/content/mar2009/bs20090319_113428.htm.
- 18 Interview with Reeb, *supra* note 7.
- 19 *Id.*
- 20 Damast, *supra* note 17.
- 21 *Id.*
- 22 *Id.*
- 23 *Id.*
- 24 Interview with Reeb, *supra* note 7.
- 25 *Id.*
- 26 *Id.*
- 27 *Id.*
- 28 *Id.*
- 29 *H.R. 362: 10,000 Teachers, 10 Million Minds Science and Math Scholarship Act*, GOVTRACK.US, <http://www.govtrack.us/congress/bill.xpd?bill=h110-362>.
- 30 *Id.*
- 31 *Id.*
- 32 Peter Schmidt, *Growth in International Enrollments Slows at U.S. Graduate Schools*, THE CHRONICLE OF HIGHER EDUCATION, Sept. 16, 2009, <http://chronicle.com/article/Growth-in-International/48421/>.