

## The Debate Over Quotas on Highly Skilled Legal Immigrants

**W**HILE MUCH DEBATE IN THE PAST TWO YEARS has centered on illegal immigration, there are also many critics of legal immigration, including the entry of highly skilled foreign-born scientists, engineers, and students.

Much of the discussion over highly skilled immigrants has focused on H-1B visa holders and the wages they receive. Employers and immigrants know insufficient quotas and processing delays make it virtually impossible to hire someone directly on a green card (permanent residence). Therefore, the primary way skilled foreign nationals are hired to work in the United States is through H-1B temporary visas (generally limited to 6 years). In many cases the individual first graduated from a U.S. university before being hired by employer in H-1B status.

In 9 of the past 11 years, employers have used up the entire quota of H-1B visas prior to the end of the fiscal year. Before 1990, Congress placed no numerical limitation on the number of skilled foreign nationals employers could hire in H-1 temporary status. In the Immigration Act of 1990, Congress chose an annual cap of 65,000 and introduced several requirements in establishing a new H-1B category. Congress has changed this limit at least three times in the past eight years, though the number has reverted back to the original 65,000. In fiscal years 2005, 2006, and, most recently, 2007, the supply of visas was exhausted before the *start* of the fiscal year. Even the recently added 20,000 exemption from the H-1B cap for those who graduated with an advanced degree from a U.S. university was exhausted by January 2006. Employers also expect this exemption to be used up before the end of fiscal year 2007.

An alleged negative impact on natives is generally cited as a reason why Congress has not raised the H-1B cap in recent years. But there is little evidence that native information technology (IT) workers and other native professionals, including scientists and engineers, are harmed by the entry of H-1B professionals.

### H-1B Visas in Demand

A study by Madeline Zavodny, a research economist at the Federal Reserve Bank of Atlanta, examined the flow of Labor Condition Applications (LCAs) for information technology professionals. Employers file such applications when petitioning for a skilled worker on an H-1B visa<sup>1</sup>. Zavodny found that “H-1B workers ... do not appear to depress contemporaneous earnings growth.” Since the period examined by Zavodny showed a higher concentration of H-1B visa holders entering a field than would be expected in other fields, it is reasonable to conclude Zavodny’s findings have broader application.

Concerning unemployment, the study concluded that the entry of H-1B computer programmers “do not appear to have an adverse impact on contemporaneous unemployment rates.” However, there is some degree of ambiguity on employment, since the study also noted that some results “do suggest a positive relationship between the number of LCA [Labor Condition] applications and the unemployment rate a year later.” But Zavodny concluded: “None of the results suggest that an influx of H-1Bs, as proxied by Labor Condition Applications filed relative to total IT employment, lower contemporaneous average earnings. Indeed, many of the results indicate a positive, statistically significant relationship”<sup>2</sup> This would mean H-1B employment is actually associated with better job conditions for natives, according to the study, which could be because H-1B professionals are complementary to native professionals.

There is little evidence foreign-born professionals in information technology, engineering, and science fields present unfair competition by working for substantially



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lower wages than their native counterparts. Under the law, employers hiring H-1B professionals must pay the greater of the prevailing wage or “the actual wage level paid by the employer to all other individuals with similar experience and qualifications for the specific employment in question.” While H-1B visas are temporary visas, employers sponsoring individuals for permanent residence through an employment-based green card must also pay employees at least as much as comparable U.S. citizens.

### **Equal Wages for Citizens and Non-Citizens Alike**

Paul E. Harrington, associate director of the Center for Labor Market Studies at Northeastern University, has conducted research that shows foreign-born and native professionals earn virtually identical salaries in math and science fields. This is further evidence that foreign-born do not work for far less as a way of undercutting wages, even though it may be reasonable for an employer to pay less to someone with weaker language skills. Harrington found salaries in computer or math sciences were actually higher for the foreign-born among bachelor degree holders and doctoral degree holders and the same for recipients of master’s degrees. He found similar salaries for natives and foreign-born at the bachelors, master’s, and Ph.D. levels in life sciences, as well as at the doctoral level in engineering, and a greater edge for natives at the bachelor and master’s level for engineering.<sup>3</sup>

### **Support for Foreign Students**

It is easy to miss the broader picture if one concentrates solely on the more narrow issue of the impact of immigration on small segments of the U.S. native-born workforce. In a paper for the Washington, D.C.-based Immigration Policy Center, economist Giovanni Peri, explains, “The United States has the enormous international advantage of being able to attract talent in science, technology, and engineering from all over the world to its most prestigious institutions....The country is certainly better off by having the whole world as a potential supplier of highly talented individuals rather than only the native-born.”<sup>4</sup>

Peri describes why his research shows a gain from immigration to native-born Americans with a college degree:

The relatively large positive effect of immigrants on the wages of native-born workers with a college degree or more is driven by the fact that creative, innovative, and complex professions benefit particularly from the complementarities brought by foreign-born scientists, engineers, and other highly skilled workers. A team of engineers may have greater productivity than an engineer working in isolation, implying that a foreign-born engineer may increase the productivity of native-born team members. Moreover, the analysis in this paper probably does not capture the largest share of the positive effects brought by foreign-born professionals. Technological and scientific innovation is the acknowledged engine of

U.S. economic growth and human talent is the main input in generating this growth.<sup>5</sup>

Foreign graduate students, particularly those who study science or engineering, are indeed a boon to the U.S. economy and education system. They are critical to the technological leadership of the United States in the world economy. “Foreign students, skilled immigrants, and doctorates in science and engineering play a major role in driving scientific innovation in the United States,” according to a study by Keith Maskus, an economist at the University of Colorado, Aaditya Mattoo, lead economist at the World Bank’s Development Economics Group, and Granaraj Chellaraj, a consultant to the World Bank. Their research found that for every 100 international students who receive science or engineering Ph.D.s from U.S. universities, the nation gains 62 future patent applications.<sup>6</sup>

In conducting their research, Maskus, Mattoo, and Chellaraj found that “increases in the presence of foreign graduate students have a positive and significant impact on future U.S. patent applications and grants awarded to both firms and universities.”<sup>7</sup> One of the issues the economists examined, which they answered in the affirmative, is “the possibility that skilled migrants may generate dynamic gains through increasing innovation.” One reason this issue is important to policy discussions is such gains would aid future productivity and increase real wages for natives. “Put differently, in a dynamic context immigration of skilled workers would be complementary to local skills, rather than substitutes for them,” note Maskus, Mattoo, and Chellaraj. “Thus, more realistic theory suggests that skilled migration would support rising aggregate real incomes in the long run.”<sup>8</sup> The bottom line conclusion, the researchers note, is that “reducing foreign students by tighter enforcement of

visa restraints could reduce innovative activity significantly” in the United States.<sup>9</sup>

Do international students “crowd out” U.S. students who wish to attend college? The authors dispute as “questionable” a contention by Harvard economist George Borjas that suggests U.S. domestic and foreign graduate students are highly substitutable. The authors argue that results from international tests “indicate that the native U.S. student pool for engineering and science programs is likely to be limited due to lower math and science achievement.” Pointing to research by Richard Freeman, Maskus, Mattoo, and Chellaraj are not asserting that U.S. students aren’t as smart as potential foreign graduate students, but point to data over the last three decades showing “The number of Ph.D.s granted to undergraduates of U.S. institutions, most of whom were U.S. citizens, did not change much during this period, while there was a substantial growth in the number of foreign bachelor’s graduates obtaining U.S. doctorates. Thus the change in proportion is mostly due to the expansion of Ph.D. programs, with a majority of the new slots being taken for foreign students rather than through substitution.”<sup>10</sup>

It is striking how a restrictive policy toward immigration could carry implications beyond the immediate future. At the 2004 Intel Science Talent Search, the nation’s premier science competition for top high school students, I conducted interviews to determine the immigration background of the 40 finalists. The results were instructive. Two-thirds of the Intel Science Talent Search finalists were the children of immigrants. And even though new H-1B visa holders each year represent only 0.03 percent of the U.S. population, it turns out more of the children (18 percent) had parents who entered the country on H-1B visas than had parents born in the United States (16 percent). In other words, if critics had their way, most of the coming generation’s top scientists would not be here in the United States today, since we never would have allowed in their parents.<sup>11</sup>

### **A Fixed Number of Jobs?**

Much of the anxiety over immigration appears to stem from a belief that new entrants to the labor force compete with existing workers for a fixed number of jobs. However, it is easy to forget that people work today in companies and industries that did not even exist in the early 1990s. Within sectors, jobs increase or decrease from year to year based on product demand and other factors. “When I was involved in creating the first Internet browser in 1993, I can tell you how many Internet jobs there were, there were 200. I can tell you how many there are now, there’s two million now,” said Marc Andreessen, a founder of Netscape.<sup>12</sup>

Job creation through immigrant entrepreneurship receives little attention in the immigration policy discussion. Indian and Chinese entrepreneurs appear to have founded nearly one-third of Silicon Valley’s technology companies, according to research by University of California, Berkeley professor Annalee Saxenian. She writes, “Silicon Valley’s new foreign-born entrepreneurs are highly educated professionals in dynamic and technologically sophisticated industries. And they have been extremely successful. By 2000, these companies collectively accounted for more than \$19.5 billion in sales and 72,839 jobs.”<sup>13</sup>

The enormous churning of jobs in the economy is another often overlooked phenomenon. While nobody wishes anyone to lose a job, it is a common occurrence in the United States. As Dallas Federal Reserve Bank economist W. Michael Cox and his colleague Richard Alm have explained, “New Bureau of Labor Statistics data covering the past decade show that job losses seem as common as sport utility vehicles on the highways. Annual job loss ranged from a low of 27 million in 1993 to a high of 35.4 million in 2001. Even in 2000, when the unemployment rate hit its lowest point of the 1990’s expansion, 33 million jobs were eliminated.” Cox and Alm further note, “The flip side is that, according to the labor bureau’s figures, annual job gains ranged from 29.6 million in 1993 to 35.6 million in 1999. Day in and

day out, workers quit their jobs or get fired, then move on to new positions. Companies start up, fail, downsize, upsize and fill the vacancies of those who left...”<sup>14</sup> While it is understandable why individuals come before Congress and plead to prevent competition for their company or employment category, the experience in countries with highly regulated labor markets is that attempts to limit competition do far more harm than good.

### **Immigrants Positively Impact U.S. Citizen’s Wages**

In the past year, many economists and commentators have cited research performed by Gianmarco I.P. Ottaviano, with the Department of Economics at the University of Bologna, and Giovanni Peri, with the Department of Economics at the University of California, Davis. “It turns out empirically and theoretically that immigration, as we have known it during the nineties, had a sizeable beneficial effect on wages of U.S. born workers,” concluded Gianmarco and Peri.<sup>15</sup>

The economists explain that a key reason this increase in wages occurred was “because U.S.-born and foreign-born workers are not perfectly substitutable even when they have similar observable skills. Workers born, raised and partly educated in foreign environments are not identical to U.S.-born and raised workers. Such differences that we may call the diversity of foreign-born workers, is the basis for the gains from immigration that accrue to U.S.-born workers. Even a small amount of differences that translates in a relatively high elasticity of substitution between U.S. and foreign-born workers (between 4 and 7 percent) is enough to generate the average wage gains.”<sup>16</sup>

In his analysis published by the Immigration Policy Center, Giovanni Peri found much different results than Harvard economist George Borjas. Peri found that immigration increased the real wages of U.S. native-born workers as a whole by approximately 1 percent between 1990 and 2000, compared to the 1.3 percent decline in a study by Borjas and his Harvard colleague Lawrence Katz.<sup>17</sup> And rather than the 7 to 8 percent decline

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in real wages for native high school dropouts found in the Borjas-Katz research, Peri's analysis shows only a 1.2 percent decline for such workers between 1990 and 2000.<sup>18</sup>

Peri explains that his research differs from Borjas's by "(1) accounting for the different occupational distribution of native and foreign-born workers within the same educational group (which more accurately gauges the 'complementary' effects of immigration); (2) allowing investments to follow opportunities (with the presence of more workers stimulating the creation of new businesses); and (3) calculating the overall effect of immigrants on natives' wages (factoring in the 'complementary' distribution of foreign-born workers across occupations and educational groups)."<sup>19</sup>

Using this approach explains why Peri's findings differ from those of Borjas: "Because immigrants stimulate investment, have skill sets and educational levels that complement those of natives, and do not compete for the same jobs as most natives, this analysis finds that immigration increased the average wages of all native-born workers in the 1990s except those who did not have a high-school diploma (whereas the traditional Borjas approach finds a decrease among workers in all educational groups). Even for native-born workers without a high-school diploma, the decline in wages from immigration was much smaller than the Borjas approach suggests."<sup>20</sup>

### Immigrants Are a Positive Economic Force

The immigration issue remains complex, as evidenced by how results differ on its impact depending on the chosen methodology. It appears immigrants increase specialization in

the economy, enhance the nation's productive capacity, and aid innovation in the United States. The best evidence suggests that immigrants improve their own lot and that of their children by coming to the United States and exert little adverse impact on natives.

Pia Orrenius, a senior economist at the Federal Reserve Bank of Dallas who served on the President's Council of Economic Advisers from 2004 to 2005, has provided a clear explanation of how a dynamic approach to the issue of immigration leads one to conclude there is relatively little negative impact, if any, on native workers: "Market forces on both the demand and supply sides also mitigate the labor market impact of immigration. With an influx of immigrants, the return on capital rises, spurring investment. Firms also increase production of labor-intensive goods, further dampening any adverse effects on low-skilled native workers. Meanwhile existing workers, like firms, respond rationally to immigration. Natives and previous immigrants move, upgrade their skills or switch jobs in response to immigrant influxes, much as they do in response to broader market forces, such as the rising skill premium. These responses reduce immigration's negative impact. And as consumers we all benefit from the greater output and lower prices of many goods and services resulting from an immigrant workforce."

Furthermore, Orrenius notes, "It should not be surprising that most studies find immigrants have little effect on average wages. New immigrants are more likely to compete with each other and with earlier immigrants than with native-born workers. Those just arriving in the U.S. are not close substitutes for U.S. workers, because they typically lack

the language skills, educational background and institutional know-how of native-born workers. As immigrants gain this human capital over time they become more substitutable for native workers—but they also become more productive."<sup>21</sup>

In June 2006 more than 500 economists of varying political perspectives, including five Nobel Prize winners, signed a letter to President Bush and members of Congress declaring the economic consensus among economists is that immigrants are a positive force in America. The letter stated:

Throughout our history as an immigrant nation, those who were already here have worried about the impact of newcomers. Yet, over time, immigrants have become part of a richer America, richer both economically and culturally ... Immigrants do not take American jobs. The American economy can create as many jobs as there are workers willing to work so long as labor markets remain free, flexible and open to all workers on an equal basis ... While a small percentage of native-born Americans may be harmed by immigration, vastly more Americans benefit from the contributions that immigrants make to our economy, including lower consumer prices. As with trade in goods and services, the gains from immigration outweigh the losses... We must not forget that the gains to immigrants coming to the United States are immense. Immigration is the greatest anti-poverty program ever devised. The American dream is a reality for many immigrants who not only increase their own living standards but who also send billions of dollars of their money back to their families in their home countries—a form of truly effective foreign aid.

The letter concluded with a powerful statement that resonates with international educators that will hopefully keep our borders open to accepting the brightest foreign students and scholars from around

the world: "America is a generous and open country and these qualities make America a beacon to the world. We should not let exaggerated fears dim that beacon."<sup>22</sup>

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### Notes

<sup>1</sup> Labor Condition Applications (LCAs) include such information as the job the individual will fill and the "prevailing" wage for that type of job in the geographic region he or she will work. Under the law, an H-1B visa holder must be paid at least the prevailing wage.

<sup>2</sup> Madeline Zavodny, "The H-1B Program and Its Effects on Information Technology Workers," Federal Reserve Bank of Atlanta, *Economic Review*, Third Quarter 2003.

<sup>3</sup> Paul E. Harrington, "Understanding & Responding to Imbalances in Engineering & IT Labor Markets," Presentation to Business Roundtable, September 15, 2004. Salary data are for 1999.

<sup>4</sup> Giovanni Peri, *Immigrants, Skills, and Wages: Measuring the Economic Gains from Immigration*, Immigration Policy Center, March 2006, p. 7.

<sup>5</sup> *Ibid.*, p.6.

<sup>6</sup> Gnanajaraj Chellaraj, Keith E. Maskus, and Aaditya Mattoo, "The Contribution of Skilled Immigration and International Graduate Students to U.S. Innovation," March 17, 2005; Stuart Anderson, "America's Future is Stuck Overseas," *The New York Times*, December 1, 2006.

<sup>7</sup> Chellaraj, Maskus, and Mattoo, p. 5.

<sup>8</sup> *Ibid.*, pp. 6-7.

<sup>9</sup> *Ibid.*, pp. 6-7.

<sup>10</sup> *Ibid.*, p. 9.

<sup>11</sup> Stuart Anderson, "The Multiplier Effect," *International Educator*, summer 2004.

<sup>12</sup> Marc Andreessen interviewed on *Lou Dobbs*

*Tonight*, March 4, 2004.

<sup>13</sup> AnnaLee Saxenian, "Brain Circulation, How High-Skilled Immigration Makes Everyone Better Off," *Brookings Review*, Winter 2002. In past years, the majority of H-1B visa holders have been from India and China.

<sup>14</sup> Michael Cox and Richard Alm, "The Great American Job Machine," *The New York Times*, November 7, 2003.

<sup>15</sup> Gianmarco I.P. Ottaviano and Giovanni Peri, "Re-thinking the Gains from Immigration: Theory and Evidence from the U.S.," August 2005, p. 28.

<sup>16</sup> *Ibid.*

<sup>17</sup> See George J. Borjas and Lawrence F. Katz, "The Evolution of the Mexican-Born Workforce in the United States," Working Paper 11281, National Bureau of Economic Research, April 2005.

<sup>18</sup> Peri, Immigration Policy Center.

<sup>19</sup> *Ibid.*, p. 6.

<sup>20</sup> *Ibid.*, p. 6.

<sup>21</sup> Pia Orrenius, "The Impact of Immigration," Commentary, *The Wall Street Journal*, April 25, 2006.

<sup>22</sup> The letter can be found at <http://www.independent.org/newsroom/article.asp?id=1722>.

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