

Business & Economics

The First Brain Drain in the United States

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Given the poor health of its economy and the rise of competitors like China and India, the United States needs high-skilled immigrants more than ever. After all, it is these immigrants who have fueled the country's technology boom and boosted its global advantage. Yet, American political leaders are so deeply embroiled in debates about the plight of low-skilled workers who have entered the country illegally, that immigration itself has become a political quagmire. There is a complete stalemate on immigration reform.

Meanwhile, the number of high-skilled immigrants in the United States who are waiting to gain legal permanent residence now exceeds one million. The wait time for new immigrants from India in this category is now estimated to be seventy years.¹ The result is that fewer high-skilled workers are coming to the United States, and the country is experiencing its first brain drain. The economic growth that could be taking place in the United States is now occurring in India and China.

Consider that of all engineering and technology companies established in the United States between 1995 and 2005, 25.3 percent had at least one immigrant as a key founder. In Silicon Valley, this proportion was 52.4 percent. More than

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half of these founders initially came to the United States to study. Very few, 1.6 percent, came for the sole purpose of starting a company. They typically founded companies after working and residing in the United States for an average of thirteen years. This means that with the backlog of skilled workers waiting for legal permanent residence today, immigrants who would be starting companies are instead caught in “immigration limbo.” The temporary work visas these immigrants hold actually restrict them from working for the companies they start.²

The results of this backlog and the United States’ flawed immigration policies were painfully evident during my recent visits to China and India in September of 2011.

My most recent visit was to Tsinghua University, in Beijing, China, to teach an entrepreneurship program run by UC-Berkeley’s Center for Entrepreneurship. The students there were very much like my students in the United States—smart, ambitious, and open minded—but even more hungry for knowledge, more passionate about completing advanced degrees, and more motivated to become entrepreneurs. They were very eager to come to the United States to study. They saw education as the best path from poverty to prosperity. Entrepreneurship, for these students, was a way to rise above “the system” and to become their own bosses.

But unlike previous generations of Chinese students, the Tsinghua students did not plan to come and stay in the United States. After receiving an American education, they planned to take their knowledge back to China—

where they are wanted. Most would readily start their companies in Silicon Valley or work in the United States after they graduate. But all have heard horror stories from their friends about the challenges that foreign students in the United States face in getting visas and jobs, so they will not even try. They know that many of the country’s leading companies have stopped interviewing foreign students due to the difficulty in obtaining visas and potential backlash for hiring foreigners. Given this, graduates see better opportunities in China and have no reason to consider staying in the United States.

I joined the Masters of Engineering Management program at the Pratt School of Engineering at Duke University in 2005. When I asked foreign students in the graduating class whether they planned to stay permanently in the United States, the vast majority said they did. A few told me they wanted to work in the United States for a few years before deciding whether to make it their home. I have been asking the same question of my students every year since. Now students ask what I mean by “permanently,” or ask for reasons they should stay. It is now customary for students to start looking for opportunities in their home countries well before they graduate, then seek a one- or two-year internship to gain work experience in the United States before heading home.

To validate the anecdotal data we had gathered, my research team at Duke, Harvard, and UC-Berkeley surveyed 1,224 foreign nationals who were studying in U.S. institutions of higher learning or who had graduated by the end of the 2008 academic school year.³

We confirmed that very few foreign students now plan to stay in the United States permanently—only 6 percent of Indian, 10 percent of Chinese, and 15 percent of European students intend to remain after obtaining their degrees. The most important findings were:

were in the United States.

- Most foreign students are more optimistic about their home countries' economic future than that of the United States—7 percent of Chinese students, 9 percent of European students, and 25 percent of Indian

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- A leading reason for students' intentions to depart is the fear that they will not be able to find a job in the United States upon graduation—a fear fueled by their growing belief that the U.S. economy will lag behind average global growth rates.
- A significant majority of foreign students—85 percent of Indian and Chinese and 72 percent of European—are concerned about obtaining work visas. And 74 percent of Indian, 76 percent of Chinese, and 58 percent of European students are worried about obtaining jobs in their respective fields within the United States.
- Chinese students, in particular, strongly feel that the best employment prospects lie in their home country. 52 percent (in comparison with 32 percent of Indian and 26 percent of Europeans) said that their home country offered the best job opportunities. This contrasts starkly with the belief held by a majority of skilled immigrants in the 1980s and 1990s that the best opportunities

students stated that they believe the best days of the U.S. economy lie ahead. 74 percent of Chinese students and 86 percent of Indian students felt that the best days for their home countries' economy lie ahead.

- Most foreign students have entrepreneurial ambitions: 64 percent of Indian, 66 percent of European, and 68 percent of Chinese students indicated that they want to start a business within the next decade. For Indian and Chinese students, the majority (53 percent and 55 percent respectively) hope to start businesses in their home countries, while only 35 percent of European students wish to open a business in their home country.

What Does this Mean? The world's best and brightest now view the United States as a decreasingly attractive place to live and work. After receiving American degrees, they often have better opportunities in their home countries than they have in the United States. The country cannot take it for granted

that everyone wants to come here—the United States has to start competing for the best global talent.

Entrepreneurship in India and China: Catalyzed by Returnees.

I have been traveling frequently to China and India over the past few years to research their education programs for engineers along with their entrepreneurship ecosystems. While in China, I met with small business owners in an effort to get an update on the local entrepreneurship scene. I also observed the impact that returnees from the United States are having on the local economies. In a nutshell, I learned that entrepreneurship is exploding in both countries and that they are beginning to innovate like the United States does.

In technology entrepreneurship, success often comes after several failed attempts to start a company. In both China and India, there used to be such a strong taboo associated with failure and such low social esteem granted to start-ups that parents would discourage their children from becoming entrepreneurs. Failed entrepreneurs were considered outcasts and would rarely be given a second chance.

This is rapidly changing. Wealthy entrepreneurs from the first generation of Chinese and Indian technology start-ups now serve as role models for aspiring youth. These unconventional examples of success have encouraged greater acceptance of entrepreneurial risk from parents. Prospective entrepreneurs are also much more ambitious and confident than their parents were, and they increasingly connect with each other and their counterparts in other corners of the world through social

networks, enhanced by recent advances in social media.

The most important catalyst of entrepreneurship in China and India is the tide of returnees from the West—particularly from the United States. Tens of thousands of highly educated and experienced entrepreneurs, along with students from top universities, have been returning home over the past few years and teaching locals about the ways of the West. They are causing a rapid change in local cultural values and fertilizing the entrepreneurial landscape, while building bridges to the West via social networks.

If you visit start-up incubators in Beijing or Bangalore or attend technology start-up events, you find that 30 to 40 percent of the start-up enterprises are founded by returnees. These returnees are teaching locals how to build world-class companies and how to innovate in a competitive international environment. In almost every high-growth tech company in China, returnees occupy senior management positions. In scientific research, returnees hold lead positions in top research labs.⁴ These scientists are beginning to make breakthroughs at an accelerated pace. They are acting as a catalyst for innovation and economic growth in China and India.

This is a good thing for India and China and will produce long-term dividends for the United States by creating a two-way “brain circulation.”⁵ It will expand American markets and spread American values—also good things. But the greatest economic growth and job creation will take place in India and China. There is a high likelihood that Google-class companies will begin to

emerge from those countries instead of from the United States and that Silicon Valley will, for the first time, face competition from the non-Western world.

Many people believe that the United States is the most entrepreneurial country on earth, providing better opportunities for entrepreneurs than countries such as India and China. To learn more about the entrepreneurship scene and how returnees from the United States are faring once back home in China and India, my team at Duke, UC-Berkeley, and Harvard surveyed 153 skilled immigrants who had returned to India to start companies and 111 who had returned to China.⁶ This is what we learned:

- The most significant factors drawing both Indian and Chinese entrepreneurs home were economic opportunities, access to local markets, and family ties. More than 60 percent of Indian and 90 percent of Chinese entrepreneurs said that

- Surprisingly, 72 percent of Indian and 81 percent of Chinese returnees said that the opportunities to start their own businesses were better in their home countries. The majority of entrepreneurs (54 percent of Indian, 68 percent of Chinese) found opportunities for professional growth to be faster at home than in the United States. For most (56 percent of Indian and 59 percent of Chinese) returnees, the quality of life was better than—or at least equal to—what they had enjoyed in the United States.

What Does this Mean? The United States is losing its perceived advantage in fostering entrepreneurship. It will need to compete to attract the world's best entrepreneurs as it moves forward—people such as the legendary venture capitalist Vinod Khosla and Google founder Sergey Brin.

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the availability of economic opportunities in their home countries had been a major factor in their return. 53 percent of Indian and 78 percent of Chinese entrepreneurs had been lured by the attraction of producing for local markets. 76 percent of Indian entrepreneurs and 51 percent of Chinese entrepreneurs cited family ties as a factor that had brought them back home.

The First American Brain Drain and the Economic Cost of the United States' Flawed Immigration Policies.

The United States has always been a land of immigrants. Throughout its history the country has benefitted from an outflow of talent from the rest of the world. The United States has never experienced a brain drain and does not even recognize its symptoms. Diagnosed or not,

however, the symptoms exist today. Just as there are millions of people around the world trying to come to the United States, there is an outflow of highly-skilled talent in progress that is fuelling the economic growth of countries such as India and China.

In 2006, my research team at Duke and UC-Berkeley surveyed 2,053 technology and engineering firms founded nationwide between 1995 and 2005.⁷ As highlighted earlier in this paper, we found that 25.3 percent had a chief executive or lead technologist who was foreign-born. We estimated that in 2005, tech companies founded by immigrants generated \$52 billion in revenue and employed 450,000 workers in the United States.

Our research revealed that in 2006, foreign nationals residing in the United States were named as inventors or co-inventors in 25.6 percent of World Intellectual Property Organization (WIPO) patent applications filed from the United States, and immigrants had been critical to the success of some of the country's largest companies.⁸ For example, they contributed to 72 percent of the total patent filings at Qualcomm, 65 percent of those at Merck, 64 percent at General Electric, and 60 percent at Cisco Systems. More than 40 percent of the international patent applications filed by the U.S. government were authored by foreign nationals.

An important question arose from the data. Why had foreign-national patent filings increased so dramatically in such a short time frame—by 337 percent from 1998 to 2006? To explain this increase and understand the correlation with immigration trends, we

developed a methodology to estimate the inventors' countries of origin. No such data are currently available from the U.S. Department of State or the U.S. Citizenship and Immigration Services (USCIS).

What we found was shocking: as of 30 September 2006, there were 500,040 principals in the main employment-based categories and an additional 555,044 family members awaiting legal permanent-resident status in the United States. The backlog had been building since the mid 1990s.

The reason for the increasing backlog is that only 120,000 visas are available per year in key visa categories for skilled workers, with no more than 7 percent to be allocated to immigrants from any one country. The result is that immigrants from populous countries such as India and China have the same number of visas (8,400) available as those from low-population countries such as Iceland and Costa Rica.

The "New Immigrant Survey"—a nationally representative longitudinal study of new legal immigrants—collected extensive data on the U.S. immigrant cohort of 2003. It found that the process of applying for permanent residence is so arduous that approximately 17.4 percent of new legal immigrants became depressed as a result of the visa process. Approximately 21.7 percent of new legal immigrants and 34.5 percent of "employment principals" either plan to leave the United States or are uncertain about remaining in the country.

Based on the long, growing queue and high percentage of immigrants who felt aggrieved by the immigration process, we concluded that the potential exists for a sizeable reverse migration of

skilled workers from the United States to their home countries or other countries, such as Canada, that welcome them. In August 2007, my associates and I at the Kauffman Foundation published our paper titled "Intellectual Property, the Immigration Backlog, and a Reverse Brain-Drain: America's New Immigrant Entrepreneurs, Part III," which details these issues and our predictions.

Indeed, dozens of front page articles in major newspapers, CBS and NBC TV prime-time segments, reports from the Chinese government, and investigative visits to India and China have now substantiated our fears that students and skilled workers are returning home in record numbers, and the trend is accelerating.

What Does this Mean? The United States is giving an unintentional gift to China, India, and other rapidly developing nations by causing highly educated and skilled workers, frustrated by long waits for visas, to return home. The country is exporting critical sources of its own growth and competitiveness.

Can the U.S. Reverse the Tide?

There is no way to put the genie back in the bottle at this point, but the United States can give its high-tech companies a fighting chance to compete globally by enabling them to retain the skilled immigrants that are currently working for them and to hire the people that want to work for them. Students may say they want to return home, but once they have worked in American industries and founded their own businesses, it becomes increasingly difficult to do so. The one million high-skilled work-

ers and their families who are waiting for green cards have already made a decision that they want to stay in the United States permanently. The only thing holding them back is the U.S. government. Instead of forcing them to leave, it should:

- Increase the number of visas that are offered to skilled workers in the EB1, EB2 and EB3 categories. To clear the backlog and to give the economy a boost, the conversion of temporary visas to permanent residencies could be tied to the purchase of a house of \$250,000 or more in value.
- Eliminate per-country limits on all visas. These are historical relics that were designed to limit the entry of people from certain high-population countries. They no longer make sense.
- Provide permanent-resident visas for graduates of top U.S. colleges. Considering that among U.S. postgraduate engineering and science students, nearly half of masters and most PhD students are foreign nationals, it makes sense to encourage these students to stay in the United States after graduation. Though it will not guarantee that they will stay, it will certainly make it more likely. To limit abuse of this program, it should only apply to degree holders from research universities or universities with established and well-regarded science, technology, engineering and mathematics (STEM) programs. And it should be tied to a requirement that students receive job offers from legitimate U.S. corporations.
- Create a "Startup Visa," which provides entry visas for foreign entre-

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preneurs to start companies in the United States, and offers them legal permanent residence once their startups employ a significant number of American workers.

Conclusion. The United States has to realize that it is no longer the only land of opportunity for high-skilled workers. It faces brutal competition

from countries that have learned its ways and benefitted from its flawed immigration policies. The low-skilled, undocumented workers that American lawmakers are battling over will still be here for as long as it takes to achieve political consensus. The high-skilled doctors, scientists, and engineers will be long gone.

NOTES

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