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Subcommittee Chairman Elton Gallegly and ranking member Zoe Lofgren, Committee Chairman Lamar Smith and ranking member John Conyers, and distinguished members of the subcommittee, thank you for the opportunity to testify today.

I am an immigrant who came to the U.S. in 1980, to study. I ended up founding two software companies that created jobs for hundreds of American workers and that helped improve the productivity of many American businesses. Then, as a way of giving back to this great country for the opportunities it has given me, I became an academic. I now teach at several universities, conduct academic research on U.S. competitiveness, and share my ideas through my *Washington Post* and *Bloomberg BusinessWeek* columns.

What I learned since becoming an academic is that the world has changed much faster than academics and policy makers understand.

Foreign students' beliefs and intentions

The week of September 19, I taught classes at Tsinghua University, in Beijing, China, for an entrepreneurship program run by UC-Berkeley's Center for Entrepreneurship, and I met local entrepreneurs at a local technology incubator.

The students there were very much like my students here—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 be their own bosses. It is an opportunity to customize a path to success. The reason Tsinghua University, which is considered to be China's Harvard, spends hundreds of thousands of dollars to bring in lecturers from UC-Berkeley is that they know that American education is the best in the world—that it is what gives America its superior advantage in innovation and competitiveness.

But, unlike previous generations of Chinese students, the Tsinghua students didn't plan to come and stay in the U.S. 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 U.S. after they graduate. But all have heard horror stories from their friends about the challenges that foreign students in the U.S. face in getting visas and jobs, so they won't even try. They know that many of America's leading companies have stopped interviewing foreign students because it's hard to obtain visas and because they may face a backlash for hiring foreigners. Given this, they see better opportunities in China and have no reason to consider staying in America.

This is consistent with the trend in the U.S.

I joined the Masters of Engineering Management program in 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 U.S., the vast majority said they did. A few said they wanted to work in the U.S. for a few years before deciding whether to

make America their home. I have been asking the same question of my students every year since then. Now students ask what I mean by “permanently,” or they ask why. It is now customary for students to seek a one- or two-year internship to gain U.S. work experience before heading home. Students here have heard horror stories from their predecessors similar to the ones told to the students I taught in China. They start looking for opportunities in their home countries well before they graduate.

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. We published our findings through the Kauffman Foundation, in a report titled *Losing the World’s Best and Brightest: America’s New Immigrant Entrepreneurs, Part V*. We confirmed that very few foreign students now plan to stay in the United States permanently—only six percent of Indian, 10 percent of Chinese, and 15 percent of European students. Here are the most important findings:

- 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 fuelled 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 fields.
- Chinese students, in particular, strongly feel that the best employment prospects lie in their home country. Fifty-two 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 ‘80s and ‘90s that the best opportunities were in the U.S.
- Most foreign students are more optimistic about their home countries’ economic future than the United States’. Whereas 7 percent of Chinese students, nine percent of European students, and 25 percent of Indian 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 have entrepreneurial hopes: 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. Only 35 percent of European students wish to open a business in their home country.

What does this mean? It means the world’s best and brightest aren’t begging to be let into the United States any more. They often have better opportunities in their home countries than they have in the U.S. We can’t take it for granted that everyone wants to come here, we have to start competing for the best global talent.

Entrepreneurship in India and China: catalyzed by returnees

In China, I also met with local entrepreneurs in an effort to get an update on the local entrepreneurship scene. I have been travelling frequently to China and India over the past few years to research their education programs for engineers as well as their entrepreneurship ecosystems. I also observed the impact that returnees from the U.S. 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 we do.

In technology entrepreneurship, success comes after several attempts at starting companies. 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 not be given a second chance.

This is rapidly changing. Chinese and Indian youth now have role models as a result of success of the first generation of technology start-ups, a success that has encouraged acceptance by their parents of entrepreneurial risk. Prospective entrepreneurs are also much more ambitious and confident than their parents were, and they connect with each other and their counterparts in other parts of the world through social networks.

The most important catalyst of entrepreneurship in China and India is the tide of returnees from the West—particularly from the U.S. 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 have been causing a rapid change in local cultural values and fertilizing the entrepreneurship landscape. They are building bridges to the West via social networks.

If you visit the start-up incubators in Beijing or Bangalore or attend technology start-up events, you find that 30 percent to 40 percent of the start-ups have returnee founders. These returnees are teaching locals how to build world-class companies and how to innovate. In almost every high-growth tech company in China, you find returnees in senior management positions. In scientific research, top research labs have returnees in lead positions. And these scientists are beginning to make breakthroughs. 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 America by creating a two-way “brain circulation.” It will expand American markets and spread American values—both are also good things. But the greatest economic growth will be in India and China. There is a high likelihood that Google-class companies will emerge from those countries instead of from the U.S. and that Silicon Valley will, for the first time, face unprecedented competition.

Many people believe that America is the most entrepreneurial land in the world, that it provides better opportunities for entrepreneurs than can countries such as India and China. To learn more about the entrepreneurship scene and how returnees from the U.S. 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. The title of the paper (again published by Kauffman Foundation) tells the story: *The Grass is Indeed Greener in India and China for Returnee Entrepreneurs: America's New Immigrant Entrepreneurs, Part 6*. Here is what we learned:

- The most significant factors drawing both Indians 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 the availability of economic opportunities in their countries had been a major factor in their return. Seventy-eight percent of Chinese entrepreneurs, and 53 percent of Indian ones, had been lured by the attraction of local markets. And 76 percent of Indian entrepreneurs and 51 percent of Chinese entrepreneurs cited family ties as a factor that had brought them back home.
- 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 professional growth faster there than in the U.S. And for most (for 56 percent of Indian and 59 percent of Chinese) returnees, the quality of life was better than — or at least equal to — what they'd enjoyed in the United States.

What does this mean? It means the U.S. doesn't have the advantage in entrepreneurship that some people believe it does. We are going to have to compete to attract the world's best entrepreneurs—people such as the legendary venture capitalist Vinod Khosla and Google founder Sergey Brin.

The first American brain drain and effect of visa and per-country limits

The U.S. has always been a land of immigrants. It has historically benefitted from an outflow of talent from the rest of the world. America has never experienced a brain drain and does not even recognize its symptoms. But, 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 conducted a survey of 2,053 technology and engineering firms founded nationwide in the period from 1995 to 2005. We found that 25.3 percent had a chief executive or lead technologist who was foreign born. We estimated that in 2005, immigrant-founded tech companies generated \$52 billion in revenue and employed 450,000 workers.

We learned that the majority of immigrant entrepreneurs—who start 52 percent of Silicon Valley’s companies—came to the U.S. to study. On average, they started their companies 13 years after their arrival in the U.S.

We determined that, in 2006, foreign nationals residing in the U.S. were named as inventors or co-inventors in 25.6 percent of World Intellectual Property Organization (WIPO) patent applications filed from the U.S., and immigrants had been critical to the success of some of America’s largest companies. For example, they contributed to 72 percent of the total patent filings at Qualcomm, 65 percent of the total at Merck, 64 percent of the total at General Electric, and 60 percent at Cisco Systems. More than 40 percent of the international patent applications filed by the U.S. Government also had foreign national authors.

We were puzzled as to why foreign-national patent filings had increased so dramatically—by 337 percent in eight years. 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 available from the U.S. State Department or the Citizenship and Immigration Services (USCIS).

What we found was shocking. As of September 30, 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 ’90s.

The reason for the increasing backlog is that only 120,000 visas are available per year in the key visa categories for skilled workers, with no more than 7 percent of them to be allocated to immigrants from any one country. So, 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 or Costa Rica.

The “New Immigrant Survey” — a nationally representative longitudinal study of new legal immigrants — collected extensive data on the 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.

Based on the long and growing queue and the 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 U.S. to their home countries or other countries, such as Canada, that welcome them. In August 2007, 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 by the Chinese government, and our 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.

A new research report by Stuart Anderson Executive Director of the National Foundation for American Policy, determines that the backlog is particularly severe for Indian nationals. According to this report, a highly skilled Indian national sponsored today for an employment-based immigrant visa in the third preference could wait for 70 years to receive a green card (this number is based on dividing an estimate of 210,000 or more Indians waiting for EB-3 visas by 2,800—the number of Indian professionals who receive permanent residence in this category each year).

What does this mean? This means the U.S. is giving an unintentional gift to China and India by causing highly educated and skilled workers, frustrated by long waits for visas, to return home. We are exporting our growth and competitiveness.

How can we reverse the tide?

There is no way to put the genie back in the bottle, but we can give Silicon Valley and America's hi-tech industries a fighting chance to compete globally by enabling them to retain the skilled immigrants that are 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 industry and founded their start-ups, it becomes increasingly difficult to do so. The million skilled workers and their families who are waiting for green cards have already made a decision that they want to stay in the U.S. permanently. The only thing holding them back is the U.S. government. Let's not force these doctors, scientists, engineers, and researchers to leave by delaying their visas.

1. The right solution is to significantly increase the numbers of visas that are offered to skilled workers in the EB1-through-3 categories. We also need to remove the per-country limits. If a move such as this proves politically untenable, then the conversion of temporary visas to permanent residencies could be tied to the purchase of a house, of say \$250,000 or more in value.
2. We should provide permanent-resident visas for graduates of top U.S. colleges. Given 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 U.S. 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. We should also require that students receive job offers from legitimate U.S. corporations.

3. Another solution is to allow skilled workers to get a green card if they start a company that employs Americans. As we noted from our research, the majority of the foreign-born entrepreneurs who started Silicon Valley companies entered the U.S. for education or work. They started companies 13 years, on average, after their arrival in the U.S. So, this was the cohort that had entered the U.S. in the '80s and early '90s. A sizeable proportion of the 2000 cohort is stuck in "immigration limbo." There are tens of thousands of such immigrants who are ready to start companies that create jobs if we let them.

Why does this matter? It matters because we are now in a knowledge economy—in which skilled talent plays a vital role. We face brutal competition from all over the world. Other countries have learned to play our game and they have the advantage of larger populations. We want their best and brightest scientists and engineers playing on our team and making us more competitive.