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THE GLOBAL COMPETITION FOR TALENT

The Rapidly Changing Market for International Students and the Need for a Strategic Approach in the US*

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ABSTRACT:

There is growing evidence that students throughout the world no longer see the US as the primary place to study; that in some form this correlates with a rise in perceived quality and prestige in the EU and elsewhere; and further, that this may mean a continued decline in the US's market share of international students. There clearly are a complex set of variables that will influence international education and global labor markets, including the current global economic recession. Ultimately, however, we think these factors will not alter the fundamental dynamics of the new global market, which include these facts: the international flow of talent, scientific or otherwise, is being fundamentally altered as nations invest more in educational attainment and human capital; the US will continue to lose some of its market share over time — the only question is how quickly and by how much; and without a proactive strategy, nations such as the US that are highly dependent on global in-migration of talented students and professionals are most vulnerable to downward access to global talent, with a potentially significant impact on future economic growth. This study provides data on past and recent global trends in international enrollment, and offers a set of policy recommendations for the US at the federal, state, and institutional level. This includes our recommendation of a national goal to double the number of international students in the US over the next decade to match numbers in a group of competitor nations, and requires recognition that the US will need to strategically expand its enrollment capacity and graduation rates to accommodate needed increases in the educational attainment rate of US citizens, *and* to welcome more international students. Attracting talent in a global market *and* increasing degree attainment rates of the domestic population are not mutually exclusive goals. Indeed, they will be the hallmarks of the most competitive economies.

> *"The number of international students in the United States — and whether it is going up or down — matters because it is a surrogate for competitiveness."*[1]

On the surface, there seems to be good news. Recent data on the enrollment of international students at US universities and colleges suggest that the US has recovered some of its historic strength as a magnet for foreign talent after several years of declining or stagnant growth. The

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Institute of International Education's *Open Doors* report trumpets a new record of 623,805 foreign students enrolled during AY 2007-2008, up 7 percent over the previous year.[2]

That students from throughout the world study in the US and that a sizable number of them then stay has been one of our core strategies in building a highly skilled work force, and will be a key to our future economic competitiveness. As we are often reminded, the US remains the number one international study destination for intelligent students from across the world — in particular from India, China, and Korea, the big three sources of international students globally.

In the past, one of America's greatest economic and social advantages has been the world-renowned strength of its network of higher education institutions, characterized by the nation's early commitment to mass higher education and its relative openness to talent from throughout the world.

Over most of the last century, more Americans went to college and graduated, with many entering graduate programs, than did citizens of any other nation in the world. As noted, a relatively open-market approach to attracting students, academics, and researchers from abroad has also dramatically added to the nation's supply of talent.

Perhaps most famously, in the 1930s, the US provided a haven for pre-eminent scientists escaping Nazi Germany and the ongoing war who, in turn, significantly bolstered the nation's scientific capability. American universities already had a tradition of being relatively open to foreign nationals, reflecting the immigrant-nation ethos; but the exodus from Europe, and the growing recognition of the prowess and increasing wealth of America's growing universities, helped elevate the US to be the premier destination for the mobile student and professor. The only exception to this dominant position was the relatively minor stream of students from the colonial holdings of European nations to universities such as Oxford and Cambridge.

In the long term, there is little doubt that US higher education will remain extremely attractive to foreign talent, due to the academic quality of a large number of its research universities; the legacy of a relatively open society for immigrants; and America's still-brilliant, if slightly tarnished, reputation as a land of opportunity. However, a closer look at shifting higher education markets and at the possible impact of the evolving global recession on those markets provides a more nuanced perspective for policymakers.

In sum, there are already signs that the world market for student talent is shifting to the benefit of the US's competitors, and in bad economic times we may find that shift accelerating. Currently the US remains a good performer in attracting the world's growing cadre of international students to its graduate and professional schools, although it could do much better, and its once-dominant position is eroding. But it is an underperformer at the first-degree level when compared to its competitors. Perhaps most importantly, the US lacks a strategic approach to capitalizing on the global pool of mobile students.

So what has changed? Two macro-trends help explain the shift: growing demand and increased competition.

1. Demand – the short and long of it

The global demand for higher education is creating a surge in the number of students seeking an international experience in higher education. The Organization for Economic Cooperation and Development (OECD) estimates there are now 135 million students in tertiary education worldwide, a number that has doubled over the last ten years, with huge increases in Asia and across Europe especially. Increasing numbers of them are seeking to study outside their home countries. Between 1975 and 1990, the number of international students grew from some 600,000 to 1.2 million; by 2000 the total was 1.9 million, and in 2006 it reached 2.9 million. As the world's population increases in number and in mobility, the pool of international students will continue to grow.

In the short term, the global recession may dampen this trend. The leading "exporters" of higher education (i.e., those that enroll the most international students) —such as the US, Australia, and the UK — are rightly concerned about their current market position. Although the full impact of the recession will not be felt until the next academic year, we can probably anticipate a steady stream of international graduate and professional students, many of whom will still receive funding from universities in the hunt for the best talent, particularly in the STEM (science, technology, engineering, and mathematics) fields. But undergraduate student and graduate student enrollments outside the STEM fields will be more vulnerable.

SMALL COUNTRIES, BIG GROWTH

The countries with the highest growth rates and most significant change at the national level are often smaller and less visible than the top five. The following countries have very high growth rates in the period 2000-2006 (rates shown in parentheses):

- New Zealand (725%)
- South Africa*
- The Netherlands (160%)
- Spain (100%)
- Italy (96%)
- Japan (95%)
- Sweden (60%)

**South Africa has the highest growth rate. However, it started with such a low base in 2000 that its growth rate is off the charts.*

International students are likely to become more price-sensitive, as many public universities (in the US particularly) raise fees while major source countries such as Korea see the market value of their national currencies plunge.[3] One projection is that the UK may grow more attractive, particularly at the first-degree level, as the British pound continues to decline and tuition fees remain relatively low when compared to most US private, and even public, universities.[4]

At least in the short run, the economic downturn in places like China, India, and other developing economies will test the willingness of families, and often governments, to subsidize foreign study.[5] Initial reports from a Council of Graduate Schools admissions survey based on data collected in June show a decrease of 3 percent in graduate school admissions for fall 2009. While final enrollment figures may vary, this does suggest that there will be the first decline in international student enrollments at the graduate level in five years. India and South Korea each experienced a decline of 16 percent in admission offers as well as major declines in applications (-12 percent and -9 percent respectively).

In contrast, China continued to see an increase in applications (14 percent) and admissions offers (8 percent). Business, engineering, and the physical / earth sciences experienced slightly greater declines than other fields.[6]

AUSTRALIA
Most Aggressive?

- More than a decade of national policy to recruit international students aided by Australian Education International, a government agency with staff in most consulates and embassies
- 75% increase in international students 2000-2006
- International students generate $12 billion income, the third-largest national export.
- International students are 20% of all tertiary students and 30% of graduate students.
- Welcoming immigration policies with efficient student visa delivery and permission to work for students and spouses
- Major source of tuition revenue for institutions, often representing 15% or more of financial resources
- Students mainly from Asia (China, India, Malaysia, Indonesia, South Korea, Japan)
- Universities partially own IDP International, a private student recruitment firm that recruits 20% of all international students in Australia.

Source: *World Education News and Reviews,* July/August 2009.

In the long term, we surmise that the trend will be a large expansion in the number of international students, fueled in part by overall population growth and in part by the changing needs of the global labor market. The open question is how those students will distribute themselves.

2. New Competitors

Once, the international mobility of academic talent was limited and universities across the globe enrolled only native students, exclusively hired nationals as faculty, and offered few avenues for non-nationals to gain citizenship. As noted earlier, the US was the exception and actively recruited faculty and graduate students from Europe and beyond beginning in the 1930s. We dominated a much smaller market for talent and the early openness to foreigners and immigration at leading US universities certainly helped sustain a leadership role that continued well into the 1980s. But now, both developed and developing nations are improving their higher

education systems, seeking to raise the international profile and attractiveness of their universities, and integrating higher education into their domestic and foreign policy initiatives. Consequently, new competitors for international students are emerging outside of the US.

One reason for the increased competition is the relatively recent recognition that international students are a potential profit center. That profit may accrue to the colleges and universities where, by paying their full freight or more, they help subsidize native students (most nations, like most American states dealing with out-of-state enrollments, cap tuition for native students but not for international students). In the UK, for example, international students now produce some 10 percent of the entire income of the higher education system, while in Australia, they fund some 15 percent of all income for the national universities.[7] New Zealand also relies heavily on international students to support its national higher education system; Japan is now following a similar path.

FRANCE

Fastest Growth Among the Top Four

- National policy to increase international enrollments led to 80% increase between 2000 and 2006.
- Encouraged recruitment with government scholarship monies, more efficient and flexible visa processes, and permission to work for students and access to some loan programs.
- Created government agency to coordinate marketing and scholarships for international recruitment, with operations in most consulates and embassies.
- Fourth-largest recipient of international students after US, UK, and Germany
- International students are 11% of tertiary enrollments and 36% of graduate-level enrollments.
- New initiatives to offer courses and degrees in the English language in professional fields such as business, engineering, and science

But the economic benefits of foreign students extend beyond higher education. In Australia, for instance, international students and university ventures abroad generate about $12 billion (US), making higher education the nation's third largest export.[8] In the US, international students inject over $15 billion directly into the economy through tuition and living costs, making it a bright spot in an otherwise rather dismal balance of trade. States like California receive some $1.4 billion from foreign students in tuition and fees alone, and a total of $2.4 billion when counting living expenses and related costs.[9] Adding multiplier effects – the additional business activity generated by this net infusion of money – would mean an even larger economic impact.

Figure 1.
Economic Impact of Foreign Students in the US: Tuition and Living Expenses 2007-08
Source: National Association of International Educators

	# of Foreign Students	Tuition and Fees (billion)	Total Contribution (billions)
Top Ten States			
California	85,009	$1.40	$2.45
New York	69,940	$1.30	$1.90
Massachusetts	31,683	$0.80	$1.00
Texas	51,823	$0.60	$1.05
Pennsylvania	25,994	$0.60	$0.72
Illinois	28,604	$0.56	$0.71
Florida	26,780	$0.43	$0.67
Michigan	22,967	$0.43	$0.52
Ohio	19,346	$0.33	$0.43
Indiana	15,502	$0.30	$0.37
US Total	**623,805**	**$10.60**	**$15.54**

Recognizing these potential economic benefits, nations with mature higher education systems are looking to capitalize on one of their major market advantages. The commercialization of higher education, *a la* WTO,[10] has its problems and needs to be viewed with caution. Nevertheless, the potential for increased institutional revenues and a positive contribution to local economic development should be taken into consideration when debating policies related to the rationale for increasing international student enrollments. This is especially true at public universities where state legislatures tend to view the admission of international students as a drain on state funds. This moves the debate from focusing on the immediate costs to the more appropriate debate of longer term benefits accrued by individuals, the economy, and society.[11]

An even more important way in which international students contribute to nations' economic health is as part of a workforce development policy. Canada and the Netherlands, for instance, are openly using higher education to attract and retain highly educated immigrants — to the near exclusion of all other immigrant groups. They — along with Japan, New Zealand, Australia, and most of Europe — are all experiencing declines in population and are thus recruiting and enrolling more international students as a means to remain economically competitive.

In the aftermath of 9/11, the US offered the world a golden opportunity in the race for talent by creating, in the form of the Patriot Act, a much more complicated and lengthy visa application and approval process. Along with a largely negative international view of preemptive US foreign policy under the Bush administration, this policy shift sent the message that the US was not as welcoming a place for foreign academics as in the past. Australia, New Zealand, the UK, and France, among other nations, then announced their intention to exploit America's restrictive visa policies for students, visiting faculty, and researchers. These and other countries expedited visa approvals and modified their immigration policies to include greater opportunities for foreign nationals to work following the completion of a degree program. [12]

Competitor countries are now creating more relevant curricula and degree programs for a world market, and providing targeted financial aid for foreign students, particularly at the graduate level. More universities in non-English-speaking nations are also rapidly adopting English as the language of instruction at the graduate and first-degree program level.

The University of Maastrict in the Netherlands, for example, has introduced a number of English-language master's degree programs intended to attract international students. Ecole des Mines (Paris Tech) in Paris, like numerous other French engineering schools, offers English-language master's programs also targeted to an international student market. The MBA degree market is noteworthy for the number of English-language programs that have been created in recent years in schools such as Instituto de Empresas in Madrid, International University of Japan, and Bocconi University in Milan.

Many nations have begun to set goals for the percentage of international students they hope to enroll. In 1999, for instance, then–Prime Minister Tony Blair set a goal for Britain to attract 75,000 more international students over a six-year period and outlined programs to market England's universities to the world. The initiative far exceeded its goals. So in 2006, the British government set a new target of 100,000 additional students by 2011, allocating some $48 million for that purpose.

Today, the Labour government's strategy includes seeking a greater diversity of source nations for students, initiatives to maintain quality (a

CANADA
Increasingly Competitive

- Nationally coordinated marketing and branding program
- 2008 reform offers work permits for international students during studies and for three years following graduation.
- Offers permanent residency to graduates of Canadian universities who have two years of work experience in Canada
- Tuition rates vary by province and university, but are typically less than in the US.

Source: *World Education News and Reviews,* September 2008

JAPAN
Now Second in Asia after China

- Dramatic 95% increase in international students between 2000 and 2006 as part of national strategy to combat projected declines in population and reposition Japan's competitive position in Asia
- "Global 30" national plan includes tripling the number of international student enrollments to 300,000 by 2020 and to ease visa restrictions, improve accommodations, increase Japanese language teaching, and help foreign students find work in Japan after graduation.
- 30 of Japan's top universities will be designated as key centers of international recruitment.
- Currently a major portion of international students in Japan are from China and South Korea.

Source: Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT); Asahi Shimbun as cited in *World Education News and Reviews*, September 2008.

problem in that some UK universities overextended themselves in the rush to enroll international students), and new policies allowing foreign students to work in the UK for up to 12 months after graduation under certain circumstances. There is also discussion of a break with European Union policy that international students from the EU pay tuition rates that are charged to native UK students. That change, if possible, would likely lead to more global market rates for these students, and an even larger infusion of funds to UK higher education institutions.

Japan has set similar goals for enrolling foreign students, outlining a series of policy initiatives intended to recruit some 300,000 students from abroad, and mostly from throughout Asia. With projected large declines in population, recruiting overseas is one strategy for repositioning Japanese higher education that is now beginning to bear fruit.

Federal and state policymakers in the US have not fully comprehended the sea change in the global competition for talent. This may stem from the American tradition of decentralized higher education, in which the federal and state governments vie for control of higher education while individual universities and colleges proceed as largely independent actors. This formula worked well in the past when the market was less complex and fierce, but it is outmoded today.

SOUTH KOREA
Big Plans, Big Investments

- Government plans to double international student enrollments to 100,000 by 2012.
- Significant expansion of government scholarships to foreign students to attract students from 130 countries
- Currently 68% of international students are from China and 93% from Asia.
- Seeks to achieve some balance as 220,000 Korean students study abroad annually (30% to US)
- Government has allocated $600 million over five years as part of a "World Class University Project" designed assist Korean universities to develop research capacities.
- 81 foreign faculty including 9 Nobel laureates will spend time in S. Korea over the next few years supported by the Korean government's BrainKorea21 project. $2.3 billion is allocated over 3 to 4 years.
- New Songdo City's Global University Campus has invited 15 foreign universities to open a branch campus with financial incentives.

Source: *Chronicle of Higher Education,* June 26, 2009.

CHINA
Emerging Asian Leader

- Dramatic growth in international student population; 190,000 is a 500% increase since 1997
- Clear intent to become a major player in international student market. Concerted effort by national government to stimulate recruitment. Established a goal of 500,000 foreign students by 2020.
- China Scholarship Council to provide 20,000 scholarships for international students in 2010, doubling the 2007 number. Currently approx. 5.2% of international students have a Chinese government scholarship.
- Major source countries include South Korea, Japan, the U.S., Vietnam, and Thailand.
- Major fields of study include Chinese language, medicine, and management.
- Government will finance recruitment of 2,000 foreign academics from the US and Europe to increase research and graduate training capacity.

Source*: China Daily* as cited in *World Education News and Reviews,* September 2008, and *Times Higher Education Supplement* as cited in *World Education News and Reviews,* July/August 2009

3. Shifting Market Share

This inattention to international students has had demonstrable effects on the US's dominance of that market. The number of international students in the US grew by nearly 110,000 between 2000 and 2006, according to the most recent OECD data. But those numbers obscure the fact that America's world market share of international students at both the undergraduate and graduate levels is eroding.

During that same period, the US market share of all international students dropped from 25 percent to 20 percent. Meanwhile, most EU nations and countries such as Australia, New Zealand, Canada, and Japan have retained, and in some cases expanded, their share of international students (see Figure 2).

Comparisons emphasizing America's status as the number one destination for foreign college students typically do not correct for the population size of nations. At around 350 million people, the US population is bigger than five of the largest EU nations combined. Germany at approximately 83 million, the UK and France at 61 million each, Italy at 59 million, and Spain at 41 million come in with a total population of 305 million. If one adds Belgium, Sweden, Switzerland (not an EU member), Austria, and the Netherlands — all major providers of tertiary education for international students — the

EU/Europe sample group approximates the population size of the US.

So the combined enrollment of these 10 European nations offers a more rational basis for comparison to the US. Between 2000 and 2006, international students in the European sample group grew by 410,000, as well as increasing their percentage of overall enrollments. On average, foreign students represent 10.9 percent of total national enrollments in the comparison group, with the largest numbers in the UK, Germany, and France. In contrast, the US grew by only 110,000 students during the same period. And the foreign student population is hardly visible on American campuses, representing only about 3.3 percent of all enrolled students.

It is important to note that much of the growth in international students within Europe relates to the Bologna and Lisbon Declarations, and the creation of an evolving European Higher Education Area. The result of these policy reforms and the general concept of EU citizenship have resulted in growing mobility within the EU for tertiary-bound students. About half of all international students in EU nations at the first-degree level cited in the OECD data are EU members; many of these students are not enrolled in degree programs, but are in one-year exchange programs.

While it could be argued that intra-European exchanges of students should not be included in the data, the authors generally agree with the convention of counting them as international students. Since language, culture and educational structures remain as significant differences between European nations (despite the Bologna Agreement) these exchanges still represent a form of international education. This issue does illustrate the complexity of defining the parameters of what constitutes an international student. If the European Union eventually creates a more fully integrated tertiary education system, then the issue could be revisited.[13]

Another related issue is whether it is feasible or useful to differentiate between students pursuing a degree and students not studying for a degree. Currently most data do not differentiate between the two types of students as they are often on the same type of visa. In the future, it would be useful to be able to refine the data collection to include this kind of distinction.

Figure 2.
International Student Enrollment in National Systems of Higher Education: Sample Group 2000 and 2006*
Source: OECD Education at a Glance 2008

	% Global Market Share		Number of Enrolled Foreign Students		Student Growth in #	% of Total National HE Enroll 2006	% Doctoral and Research 2006
	2000	2006	2000	2006			
EU/Europe Sample							
UK	11.8	11.3	222,936	330,078	107,142	17.9	42.7
Germany	9.9	8.9	187,033	261,363	74,330	11.4	nd
France	7.2	8.5	137,085	247,510	110,425	11.2	35.8
Spain	1.3	1.7	25,502	51,013	25,511	2.9	19.2
Italy	1.3	1.7	24,929	48,766	23,837	2.4	5.0
Belgium	2.0	1.6	38,799	47,012	8,213	12.1	31.0
Sweden	1.3	1.4	25,548	41,410	15,862	9.8	20.6
Switzerland (not an EU member)	1.4	1.3	26,003	39,415	13,412	19.2	44.2
Austria	1.6	1.3	30,382	39,329	8,947	15.5	20.9
Netherlands	0.7	1.2	14,012	36,427	22,415	6.1	nd
Subtotal EU Sample	38.5	38.9	732,229	1,142,323	410,094	10.9	27.4
Oceania/Asia Sample							
Australia	5.6	6.3	105,764	184,710	78,946	20.9	29.7
Japan	3.5	4.4	66,607	130,124	63,517	3.2	16.8
New Zealand	0.4	2.3	8,210	67,698	59,488	28.5	42.8
Subtotal Oceania/Asia Sample	9.5	13.0	180,581	382,532	201,951	17.5	29.8
Other Major Recipient Nations							
Canada	5.0	5.1	94,401	148,164	53,763	14.6	38.3
Russian Federation	2.2	2.6	41,210	77,438	36,228	0.9	nd
South Africa**	0.1	1.9	1,546	33,647	32,101	m	nd
United States	25.1	20.0	475,169	584,817	109,648	3.3	23.7
OECD Nations Totals	83.6	83.5	1,583,744	2,440,657	856,913	9.6	18.5
Global Market Total	100.0	100.0	1,894,792	2,924,679	1,029,887		

* Largely defined as students with citizenship outside of the national higher eduation system they are enrolled in.
** 2005 data not 2006

As indicated in Figure 2, and of perhaps even more importance than the first-degree level, the US does remain a major global provider of doctoral and other research-related degrees: 24 percent of all graduate students are foreign nationals. Thus graduate education remains America's strong suit, particularly in engineering, the sciences, and business management. But indicative of shifts in the global talent pool, there is now an even higher percentage of international graduate students in the European sample group. They now represent nearly 28 percent of all students enrolled. In Australia it is 30 percent; in the UK and France it is 43 and 35 percent respectively.

The larger picture offered by the OECD data is of continued growth in the overall market for foreign students worldwide. But in the rate of growth in foreign student enrollment, the US currently trails Europe, Canada, Japan, Australia, Russia, and New Zealand.

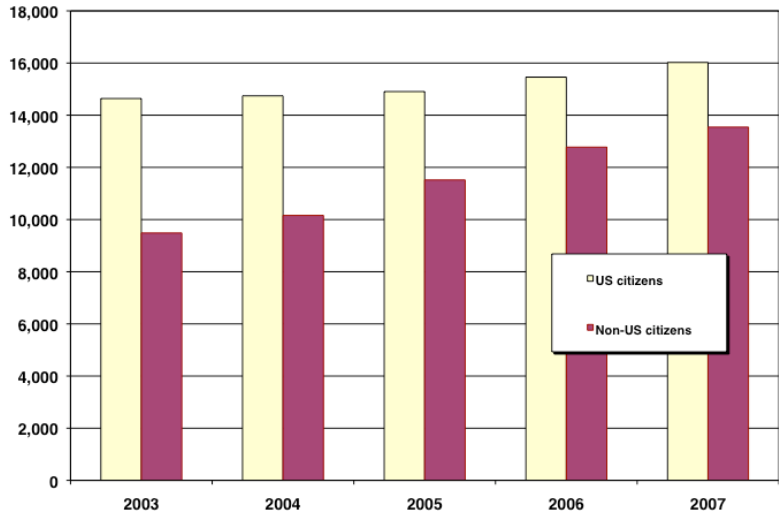
4. Market Vulnerabilities

For the US and other major higher education providers, there are serious consequences to not keeping up in the emerging global market for talent, particularly in the STEM fields.[14]

Indeed, since 1977 the growing number of doctorates awarded to foreign students on temporary visas has accounted for virtually all of the overall growth in the number of conferred doctorates in the sciences and engineering (see Figure 3). In 2007, students on temporary visas received 34 percent of all the 44,515 doctorates granted by US institutions, up from just 11 percent in 1977.[15] Citizens of China, India, Korea, and Taiwan secured about 20 percent of those doctorates, with China becoming the increasingly dominant source of talent. During that same year, international students received 46 percent of all doctorates in the sciences and engineering, compared to 39 percent just four years earlier.

While students came from throughout the world, after 1960 foreign nationals from Asia became the largest single source of talent coming to the US for their education, largely in graduate programs in science and engineering. Bolstered by Chinese government initiatives, students from China became the largest single source of foreign students in the US beginning in the early 1990s (see Figure 4).

Figure 3.
Number of US Doctoral Recipients in Science and Engineering by Citizenship: 2003–2007
Source: National Science Foundation, *Science and Engineering Indicators 2008*



Over the past decades, those international students who gained a doctorate increasingly chose to stay in the US. Between 1987 and 2001, the stay rate increased from 49 to 71 percent, with the highest rates of residency by students from China, India, the UK, Canada, Germany, Israel,

Argentina, and increasingly from Eastern Europe.

In previous years, these advantages fed on themselves. As more students came to the US, more stayed in the US and entered the job market. Their presence has markedly influenced technological innovation and the overall competitiveness of the US economy. For example, one study indicates that in the 1990s, more than one-third of all the successful startups in Silicon Valley were founded by foreign nationals, most of whom gained their training in American universities. Another study estimates that immigrants helped start one of every four of all US technology startups between 1997 and 2007, and that those companies employed 450,000 people and generated $52 billion in sales in 2005.[16]

Figure 4.
Global Origin of Foreign US Doctorate Recipients: 1960–1999
Source: National Science Foundation, *Science and Engineering Indicators 2008*

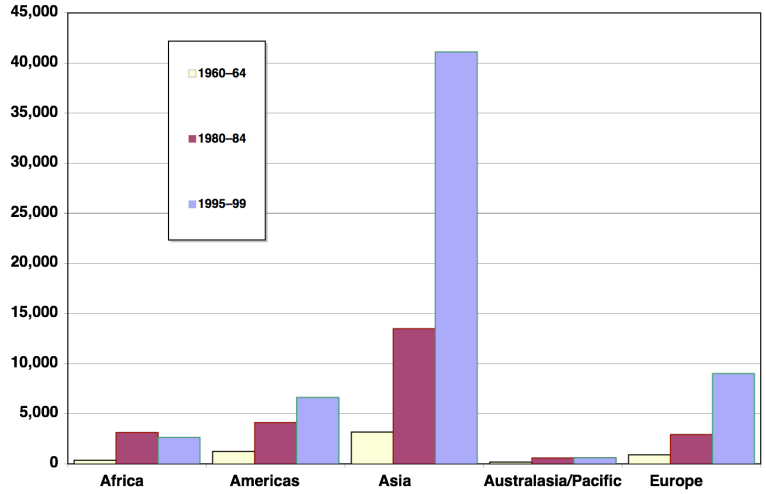
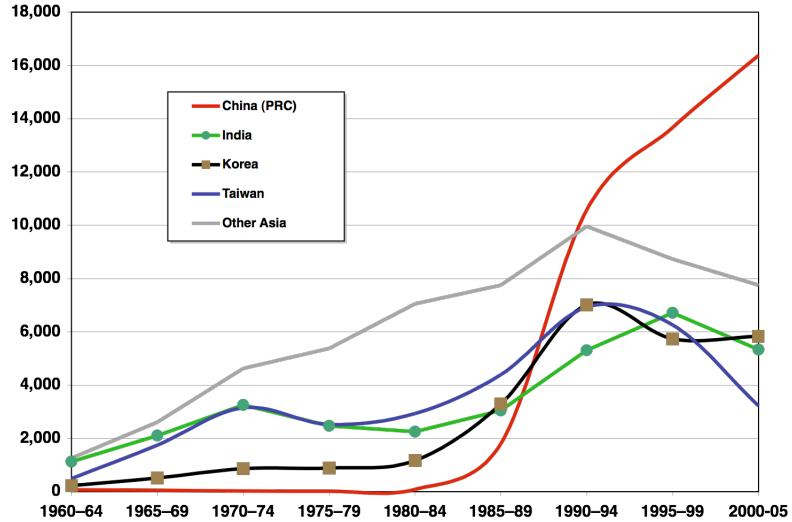


Figure 5.
Asian Origin of Foreign US Doctoral Recipients: 1960-2005



Source: National Science Foundation, *Science and Engineering Indicators 2008*

Note: Other Asia is an estimate for 2000-05.

A more recent study at the national level looked at the background and education of CEO's and chief technologists in engineering and technology companies in the US between 1995 and 2005. Among some 2,054 companies, some 25 percent had at least one key founder who was foreign-

born; in the semiconductor sector, just over 32 percent were foreign born – and most educated in the US.[18]

But this past success story also indicates vulnerabilities in the ability of the US, and other major national providers like the UK, to continue to be dominant.[19] At the graduate level, and extending into the labor market, the US has become so dependent on international talent, specifically from Asia, that a shift in the market could lead to either a large dip in the production of STEM field graduates, or perhaps a decline in the quality and ability of students enrolled. Citizens of China, India, South Korea, and Taiwan secured about 20 percent of all doctorates in the US in 2007 (see Figure 5).[20]

One sees a similar pattern of dependency on foreign talent in the UK. The number of non-resident foreign-born STEM students has increased dramatically there over the past decade or so, especially at the graduate level: Between 1994 and 2005, this demographic increased from being 29 percent to 43 percent of all graduate students in the sciences and engineering. In graduate engineering programs, foreign student enrollment more than doubled, from 9,300 (35 percent of all enrollments) to 21,400 (55 percent of all enrollments). As in the US, most students are from Asia, largely China, India, Pakistan, Taiwan, and South Korea.

China, the world's number-one supplier of international students, offers an important window into how developing economies are approaching human capital, with implications for the future of major providers of higher education such as the US. In the late 1980s, the Chinese government recognized the need to substantially increase the number of students with graduate degrees to staff a planned rapid expansion of higher education enrollment. At that time, Chinese universities had no tradition of scientific research and virtually no operating doctoral programs; in 1983 the most populous nation on earth granted only 18 doctoral degrees.[21]

The policy of funding students to study abroad was an open recognition of China's limited near-term capacity to educate future faculty and researchers in significant numbers, particularly in the STEM fields. Sending large numbers of talented graduate students abroad to research universities also was a strategy aligned with the gradual opening of Chinese society and its embrace of a quasi-capitalist economy. Over the past decade, the Chinese government has also asked foreign universities, based mostly in Australia and the UK, to build new programs and campuses within its borders.

Through these measures, China has borrowed Western academic expertise and prestige to help build its growing higher education system. Currently the country is continuing these strategies, but with important changes. China is now focusing on improving the quality and research culture of its own universities. The goal is to retain and educate more students domestically. Although many of its graduate programs are arguably still in the developmental stage, China already ranks as the third-largest producer of doctoral degrees. China is also intent on reducing brain drain by providing inducements for talented graduates and researchers who study abroad to return to China.[22]

Consequently, the US and other developed economies with mature higher education systems are experiencing the relatively new phenomenon of declining stay rates. Foreign professionals educated in the sciences and engineering who have long contributed to Western technological innovation are beginning to return to their home countries. According to a recent study by Michael Finn at the Oak Ridge Institute for Science and Education, the stay rate for graduates working in the US two years following graduation peaked at 71 percent in 2001-2003 and had declined to 66 percent by 2005.[23]

Additional evidence that stay rates may continue to decline comes from a Kauffmann Foundation–sponsored report based on an online survey of current international students and recent graduates titled "America's Loss Is the World's Gain." The report suggests that international students see the US economy as less vibrant than some emerging economies such as those of China and India in terms of career opportunities. It also notes that provisions in the

recent economic stimulus legislation passed by Congress make it more difficult for international students to obtain the coveted H-1B working visas from companies.[24]

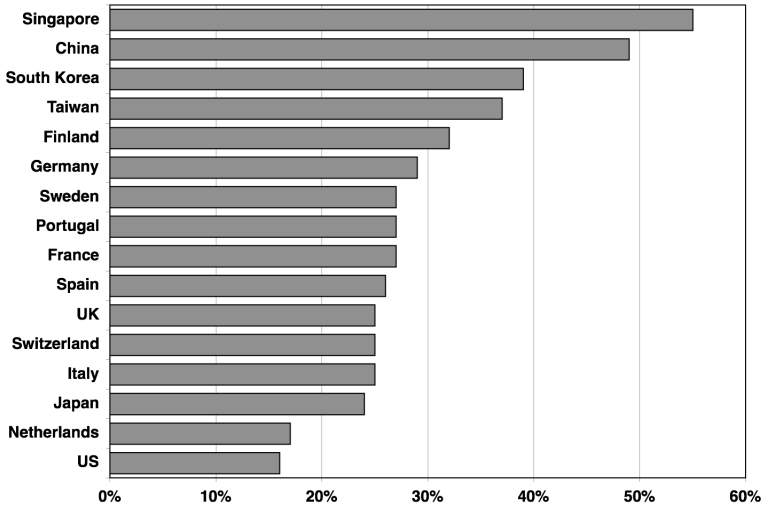
5. Problems with Domestic Supply

If one postulates that the US's ability to attract and retain international talent will diminish — that the stream of STEM students from nations such as China will decline as other national networks of universities mature — one national response might be a conscious effort to expand American student enrollment. Native students could probably indeed fill the void — but only in a less competitive environment for admission and financial support for these now–highly selective programs.

Even then, there would be real problems with this zero-sum, isolationist approach. Of most importance is that the US domestic pipeline has a number of gushing leaks. Over the last decade or so, when most developed economies were rapidly increasing their overall educational attainment rates, the rate in the US improved only marginally. We have particularly low high school graduation rates relative to other OECD nations, and we now rank 16th in the number of traditional-aged students who earn a college degree — behind Australia, Iceland, New Zealand, Finland, Denmark, Poland, the Netherlands, Italy, Norway, the UK, Ireland, Sweden, Israel, Hungary, and Japan.

There are problems with such comparative data, including differing length of time to degree, but the trends are clear. On average, the postsecondary participation rate for those aged 18 to 24 in the United States has fluctuated between approximately 35 and 38 percent over the last decade. In contrast, many OECD countries are approaching — and a few have exceeded — the benchmark of 50 percent participation among this younger age group. According to a recent OECD report, the US slipped from first to 14th among the nations with the highest postsecondary participation rates over the past decade or so.

Figure 6.
Percentage of S&E Degrees Among All First University Degree Recipients 20-24 Years Old: 2005
Source: National Science Foundation, *InfoBrief*, January 2009, NSF 09-3008



Indeed, and sadly, the US is one of the few OECD nations in which the older generation has achieved higher rates of education than the younger generation. Without a major effort by states and the federal government, and by higher education institutions, it is likely that this international ranking will go down further over the next decade.

All of this has a real impact on the native pool of students entering the sciences and engineering.

Only about 16 percent of all undergraduate degrees in the US are in those fields (Figure 6). Among economic competitors from Asia to Europe, the figure ranges from around 55 percent in Singapore to 28 percent in the UK and Italy. This translates into a relatively small supply of students eligible to matriculate into master's and doctoral degree programs in the STEM fields.

These trends mean that the supply of native students, particularly those in STEM fields at the undergraduate level, is limited, without some major effort by the US to both increase educational attainment, and in particular the number of science and engineering students at the undergraduate level.

6. Some More Caveats

It is important to again note the difficulties in interpreting international comparative data on higher education. How students are counted by national governments, or in various studies, provide some important qualifications.

As noted previously, the surge in international students in the EU relates to various higher education reforms that have encouraged much greater mobility within Europe. Hence, about half of all international students in European tertiary institutions are EU members.

At the same time, a closer look at the *Open Doors* data set also indicates a generous definition of foreign enrollment in the US, and suggests uneven progress across degree levels and institutional types. In short, the recorded growth in the number of foreign students in core degree programs is more modest than the overall rate of growth. Core undergraduate and graduate programs actually increased foreign student enrollments by more modest percentages, 2.2 percent and 4.8 percent respectively, compared with the 7 percent overall rate reported by *Open Doors*.

The more robust growth overall was due to significant increases in enrollments in non-degree intensive English programs (23.5 percent) and a huge increase in the numbers of students staying on for "optional practical training," or OPT (36.3 percent). The latter increase is partially due to an undercounting of these individuals in previous years as well as a change in immigration rules that allow foreign students in this program to stay longer in certain disciplines such as engineering, technology, science, and mathematics, according to Institute of International Education. Including OPT participants in the survey at all is open to debate as these individuals are no longer attending the institutions where they received their degree.

Overall, the larger picture offered by the OECD data provides a good indicator of shifts in the overall market, with the US rate of growth in enrolling foreign students lagging behind many other countries in Europe as well as Canada, Japan, Australia, and New Zealand at a time of continued growth in the overall market for foreign students worldwide.

The real concern should be about the competitiveness of the US higher education system in the global education market, especially in the key disciplines related to a high-tech, knowledge-based economy.

Admittedly, it is important not to read too much into these national surveys and to use the national averages as some kind of definitive statement about the competitiveness of US universities in attracting talent from abroad. The surveys do not contribute much to our understanding of whether or not American universities are attracting the most talented individuals and whether or not the prestige of our leading institutions remains a magnet for these highly sought-after individuals. They also do not provide much insight into what motivates students to choose to study in the US.

And while the data cited thus far are limited to the category of foreign citizens enrolled in some form of a college or university outside of their native land, in the US there are many enrolled students who are recent immigrants, or have immigrant parents. This is a form of internationalization that is occurring in nations with relatively liberal immigration policies, or that

are subject to the rising tide of illegal immigrants moving from underdeveloped to developed economies.

Since 2000, about 1 million legal immigrants enter the US each year, according to the US Census Bureau. Illegal immigration may be as high as 1.5 million persons per year joining the approximately 12 million to 20 million (depending on the estimate) who are already in the country.

There are strong regional differences in large nations like the US. In California, for example, nearly half the population is composed of recent immigrants, or those who have at least one parent who is an immigrant. At the University of California's campuses, some 54 percent of all undergraduates have at least one parent who is an immigrant; at the Berkeley campus, the figure is 64 percent. The City University of New York has a similarly high percentage of students with immigrant backgrounds.[25]

In other words, what constitutes internationalization in the modern context is becoming increasingly complex. But that should not detract from our discussion about clear patterns and trends related to the global talent pool.

7. Global Talent Markets

What will be the US's position in the global market for talent in the future? Some research paints a pessimistic picture. The National Academies' 2007 report *Rising Above the Gathering Storm*, for instance, forecast a significant future decline in the production of STEM doctoral students and professionals, absent active federal intervention. The report forcefully argued that the country needs more liberal immigration policies for foreign STEM students and more easily obtained H-1B visas for scientists and engineers who want to work in the US.[26]

Labor economist Robert Freeman has observed that a diminished comparative advantage for the US in high-tech fields will "create a long period of adjustment for US workers, of which the off-shoring of IT jobs to India, growth of high-tech production in China, and multinational R&D facilities in developing countries, are harbingers." The US will need to adjust, he notes, reflecting the observations of many others, by developing "new labor market and R&D policies that build on existing strengths" and that recognize scientific and technological advances in other countries.[27]

Others have offered a less alarming picture. Michael Teitelbaum at the Sloan Foundation argues that foreign production of STEM degrees cited in reports like *The Gathering Storm* is inflated and that the quality of those degrees is often not equivalent to that of American degrees.[28] A study by researchers at Duke indicates that, indeed, undergraduate level engineering degrees in the US versus China and India can be very different things. The national government in China is only now beginning to accurately report degree production, often lumping two year "short-cycle" degrees with bachelor programs with some semblance of similarity with US and EU degrees in the same field. Their data indicate that at the bachelors level, the difference in degree production between China and the US in Engineering, Computer Science, and Information technology may be no more than 223,800 in 2004-05 in favor of China – not the more than 500,000 reported in *The Gathering Storm* for engineering degrees alone.[29]

> ***Attracting talent in a global market and increasing the numbers of native students who earn degrees in critical areas, rather than being mutually exclusive goals, will be the hallmarks of the most competitive economies in the 21st century.***

At the same time, some economists even predict a global surplus of science and engineering talent as the world's universities step up production of graduate and professional degrees, creating severe oversupplies in developing economies. Indeed, this mismatch between supply and demand is present already in places like China and Taiwan, exacerbated by the economic slowdown.[30]

Yet any developed economy that assumes it does not need to generate more native talent but can rely on a surfeit of highly skilled global trekkers is making a counterintuitive gamble with

enormous consequences. Attracting talent in a global market and increasing the numbers of native students who earn degrees in critical areas, rather than being mutually exclusive goals, will be the hallmarks of the most competitive economies in the 21st century.

Labor economist Clair Brown and Greg Linden uses data from the U.S. semi-conductor industry on the salaries and career paths of engineers and the use of H-1B visas to employ foreign nationals to uncover the complexities of what they term *global brain circulation.* They find that the financial incentives are strong for students in developing countries to pursue a masters or doctoral degree in engineering in the U.S. while there are weak financial incentives for Americans to pursue engineering education.

The U.S. has been fortunate, because it has been a leader in graduate engineering education. This has helped to place the nation at the center of the global circulation of engineering talent, providing US industries and businesses with easy access to talented graduates. Brown and Linden also uncover career paths of engineers that put a premium on newly graduated talent with lower cost overheads with a contrasting decline in salary growth and decreasing job security for more experienced engineers. This provides clear disincentives for Americans to pursue engineering careers, especially at the graduate level.[31]

Faced with increased competition for engineering talent from abroad and continued administrative and political challenges to the H-1B visa program, U.S. semi-conductor firms are well advised to reform their career path, salary and retention policies to encourage more people to pursue engineering degrees. To that end, Brown and Linden recommend offering permanent residency to foreign graduates with a masters or doctoral degree in critical engineering fields because there is little evidence that the H-1B visa program has depressed wages or negatively affected the labor market.

8. Thinking Strategically, Acting Globally

How can the US use its universities and colleges to meet the need for entrepreneurial and creative talent in the sciences and engineering, as well as to educate future leaders who will be able to function in an increasingly smaller world? Any national policy for recruiting and enrolling international students should be embedded in a larger *globalization policy*. We suggest the following three general goals:

- ***Promote higher education as a critical US asset and export***
  Increasing the number of international students is a means to ensure the competitiveness of the US work force, expand the position of America's universities as global leaders, *and* assert higher education as a vital US export with growth potential.

- ***View globalization as a reciprocal relationship and build global networks***
  Enrolling international students should be part of a larger US strategy to increase cultural exchange and foreign aid; to expand the public mission of universities as global ventures rooted in national service; and to support the global flow of people, expertise, and knowledge.

- ***Build enrollment and program capacity***
  Along with attracting and retaining international talent, US policy should focus on increasing degree production rates in the domestic population and greater efficiencies in achieving successful outcomes. This will require support for an expansion of US public universities' and colleges' enrollment and program capacity on a scale thus far not recognized at the national or state level. Few, if any, states currently have a strategic approach to expanding their public systems in light of population increases; they need to do so, and include capacity for international students.

To successfully initiate these changes and to respond to this evolving and dynamic global political, and economic context, we will require stronger leadership from the federal government and a more productive and coherent collaboration among federal, state, and institutional actors.

We offer the following set of possible goals and strategies, many which have been forwarded previously by others, but not in the framework of a coherent national, state, and institutional effort.

National Strategic Goals and Policies: Recommendations

1. ***Elaborate a national policy on higher education*** *as a critical national resource in the global economy that must attract talented students and scholars from abroad and prepare Americans to be competent professionals and leaders in an international context.*

2. ***Develop national strategic goals*** *for international student enrollments at both the undergraduate and graduate levels and link them to broader policy objectives in areas such as foreign relations, national economic development, and educational attainment.*

3. ***Double international student enrollments*** *to 1.25 million by 2020 with emphasis on increasing the percentage of undergraduate students and on public sector institutions.*

4. ***Greater flexibility in visa policies*** *and other strategies to improve both recruitment and "stay rates" for foreign nationals, and that reassess national security needs.*

5. ***Increase financial resources*** *to subsidize and support foreign students via grants, scholarships, loans, and paid work.*

6. ***Marketing and recruiting*** *– the federal government can help create a more unified sense of America's diverse higher education system for foreign nationals, and improve the availability of information within a market that is often crowded with multiple, often profit-minded ventures.*

7. ***Diversify the national origin of international students*** *to anticipate new markets for talented students in the future.*

8. ***Encourage and support American university partnerships*** *and collaborations with counterpart institutions abroad via double and joint degree programs, consortia, and other forms of curricular cooperation.*

9. ***Encourage and support foreign language acquisition and study abroad*** *for American students, especially for periods of six months or more to nations and regions outside of Europe.*

President Obama recently set new and unprecedented national goals for the American postsecondary education system that, in some form, reflect a broader understanding of the progress of competitor nations and the effectiveness of policy goals set in the EU, for example. In his first speech before Congress in March 2009, the President set bold goals for higher education: He asked young Americans to commit to at least one year of post–high school training, whether through an apprenticeship, vocational training, or at a two- or four-year college. By 2020, he said, America needs to have the highest proportion of college graduates in the world.

The US should aim to double its overall enrollment of international students from 625,000 students in 2008 to 1.25 million in 2020. In particular, it should aim at a substantial increase in the number of first-degree students, who currently represent less than 2 percent of all undergraduate enrollments; a more globally competitive percentage would be about 10 percent nationally.

A 2006 CSHE research paper provided the first analysis of the stagnation in US degree attainment rates using OECD data, its causes, and noted that only through a strategic expansion of largely public higher education, and a federal and state partnership, could the nation hope to match the advances of other economic competitors.[32] More recently, a group representing the directors of various state higher education coordinating agencies (the State Higher Education Executive Officers, or SHEEOs) furthered this nascent effort to draw attention to the US's stagnant higher education degree attainment levels,

stating that the nation should seek an average increase of 3 million postsecondary degrees and certificates every year until 2025 if it hoped to meet domestic labor market needs and to stay economically competitive.[33]

The Gates Foundation, one of the richest foundations in the world, announced in late 2008 its goals for the US. The foundation stated that by 2025, the US should double the number of low-income students who graduate from college or some kind of post–high school program. Further, the foundation has stated a goal of having 80 percent of low-income and minority students leave high school prepared to go to college, compared to an estimate of about 22 percent today.[34] Last February, the Lumina Foundation announced a campaign to increase the percentage of Americans with a two-year or four-year college degree from a national average of approximately 39 percent to 60 percent by 2025.

We suggest that the current Obama administration expand on its own goals for educational attainment, and at the same time advocate similar objectives for enrolling international students as part of a larger federal strategy to reinvigorate an increasingly underfunded and, thus far, largely neglected national asset — the nation's public universities and colleges.

The domestic degree-production goals set by the Obama administration reflect in some form the advances made by other countries in the OECD. In light of the expanding and shifting market for international students, at the first and second degree levels, the US should at least match the pace of the EU sample group: *The US should aim to double its overall enrollment of international students from 625,000 in 2008 to 1.25 million in 2020.*

In particular, it should aim at a substantial increase in the number of first-degree students, who currently represent less than 2 percent of all undergraduate enrollments; a more globally competitive percentage would be about 10 percent nationally.

From these goals should flow a set of federal and state policies. We clearly need more flexible visa policies and other strategies to improve both recruitment and stay rates for foreign nationals. There must be a larger national effort to provide financial support for foreign students. Globally, only about 20 percent of students who study outside their home country have financial support from their government. More of our competitors in the global higher education market for talent are providing financial resources to subsidize and support foreign students, via grants and scholarships, loans, and allowing for paid work. This, in turn, will influence and probably lower the attractiveness of the US where tuition rates are, generally, already much higher.

One way to expand financial aid is to increase the number of scholarships for foreign students through the Fulbright and similar programs. Another is to create a loan program for these students — perhaps in selected fields. Foreign students in the US are not currently eligible for federally supported student loans.

The greatest capacity for the growth in the number of international students in quality programs lies in the public sector, and it is here that specific federal policies might be developed to work with states and accredited public colleges and universities. *Building the capacity for attracting and enrolling international students, at the first degree and graduate level, will require a federal, state, and institutional partnership that can help target where investment might have the highest payoff economically and in quality.*

At the same time, and like the strategy employed in the UK, the US should attempt to more fully diversify its sources of international students, with an eye toward where the current *and* next large market for international students will emerge.

At the federal level, a national marketing and recruitment strategy would better position US institutions in the face of the well-financed marketing schemes of other nations. This could include greater support for advising and recruiting centers located in American diplomatic missions abroad (EducationUSA advising centers). This State Department program serves as an important public relations and marketing tool that helps universities reach foreign students interested in

studying in the US. There is a tremendous opportunity afforded by the new Obama administration to pursue a larger strategic vision and an enhanced sense throughout the world that the US is a more friendly and active participant in world affairs. The President and his administration should include statements to world leaders that the US seeks to expand opportunities for international students.

Federal leadership should also include more targeted funding and encouragement for a broader institutional integration of an international dimension to study and research at higher education institutions. Strengthening recruitment of international students is enhanced by broader institutional efforts to build relationships, partnerships, and networks abroad at the institutional level. Creating an international context for learning is among the most significant challenges facing our colleges and universities in the 21st century.

Finally, foreign language and cultural knowledge acquisition is also fundamental to building effective and competent graduates in a global context. Bringing more international students into our universities does not obviate the necessity of exposing American students to the rigors and complexities of functioning in the global economy. Foreign language study, cultural studies, and experience living abroad will increasingly become prerequisites for senior leaders in all sectors.[35]

State-Level Strategic Goals and Policies: Recommendations

1. ***States need to move from a logic of public higher education as strictly a "local" asset to a logic of it being a national and global asset*** by more actively recruiting, enrolling, and supporting international students - the first states to fully understand this, and to follow up with concrete policies and funding, will reap large benefits.

2. ***States need to think creatively about increasing enrollment capacity*** *to both meet goals of broadening access to higher education for state residents and to significantly grow the number of international students — particularly in areas such as STEM fields that meet state and national labor needs.*

3. ***States need to increase financial support to expand resources for international students****, via grants, loans, and providing subsidized opportunities for part-time work on and off campus.*

4. *In collaboration with targeted colleges and universities,* ***states should undertake marketing efforts to increase the visibility of higher education institutions abroad*** *and develop stronger relationships and networks outside the US.*[36]

Historically, state governments have viewed their higher education systems as being developed and funded to serve the educational and economic needs of their respective states. With limited public funds, and continued population growth in many states, most have either set formal restrictions on the percentage of international students at the undergraduate level among their pubic colleges and universities, or have had general agreements or understandings to that end with these institutions.

States need to more fully comprehend that their collection of public and private universities and colleges are national and global assets that can, by more actively recruiting, enrolling, and supporting international students, make states more economically competitive.

The general ethos is that public higher education is strictly a "local" asset, built largely to serve state residents; and further, that any significant number of international students within public higher education displaces domestic students, at both the undergraduate and graduate levels. In the past, the growth of international students at the graduate and professional level has been a source of tension and debate between higher education leaders and lawmakers.

As noted in our list of recommendations, states need to more fully comprehend that their collection of public and private universities and colleges are national and global assets that can,

by more actively recruiting, enrolling, and supporting international students, make states and the nation more economically competitive. The first governor to realize this and place resources and political support for increasing the global visibility and quality of key components of their public higher education system will realize major benefits for their state.

Some states have, out of economic necessity, come to depend on out-of-state students who pay larger fees than in-state students. Over 22 states have also passed resolutions stating that international students are an important source of cultural exchange.[37] But most, if not all, are generic statements of support with no real policy implications, few if any allocated resources, and no state has a broadly conceived strategy on recruiting out-of-state students, let alone international students.

Reflecting state government priorities to educate native students, public universities have set lower minimum admissions standards for in-state than out-of-state and international student applicants; in contrast, private universities generally treat both groups equally. But what benefits can a state gain from having more out-of-state or international students beside added fee revenue?

A study by Jeffrey Groen and Michelle White in the Journal of Public Economics found other financial benefit. Those who attend public universities from outside the state are just as likely as in-state students to stay in the state. Out-of state students, like international students, tend to have higher initial qualifications and also graduation rates. They note that, "high ability students tend to be at least as strongly influenced in their adult location choices by where they attend university than are middle and low ability students. Since high ability students also earn more, this suggests that states gain financially when their universities attract high ability students, regardless of whether the students are from in-state or out-of-state or the universities are public or private." [38] The same effects on local economies are found in international students – as long as they have the opportunity to stay in the US.

To enable state universities as well as private institutions to compete in a global education market and to increase their potential to contribute to local and regional economic development, state legislatures, governors, and state-level educational policy leaders must adopt a different view and understanding of the role of higher education in the 21st century.

Even in the current scenario of decreasing financial resources, states can target some institutions as key access portals into the global economy and devote these to educating leaders with competencies to operate in a global context.

Institutional-Level Strategic Goals and Policies: Recommendations

1. ***Develop and embrace an institutional strategy for international engagement*** *that increases the intensity of international activities, makes them more central to institutional missions and culture, and creates more opportunities to learn in international contexts.*

2. ***Identify and recruit a core group of faculty leaders, department chairs, and deans*** *with international experience to help lead change efforts and to assist with the design and implementation of strategies, activities, and other new initiatives.*

3. ***Recruit specialists in international program design and management*** *with extensive experience abroad, language skills, and knowledge of higher education outside the US to provide advice and support to campus leadership.*[39]

4. ***Establish strong institutional relationships and partnerships with a limited number of strategically relevant universities, governments, and private groups*** *outside the US as a base for building a global network of collaborators that provide access, information, and sources for talented students and faculty.*

5. ***Create extensive alumni networks outside the US*** *to support international activities and create bonds that help institutional and individual success.*

6. ***Establish a competitive marketing effort*** *that is culturally appropriate and targeted to particular countries and communities of high priority.*

7. ***Create a communications and technology platform*** *that enables teaching, learning, and research collaboration on a global scale.*

As noted above, the market for international students is only one dimension of the larger problem of adapting the American university to the impact of globalization and the global economy. The recruitment of foreign students needs to be integrated into a broader, more general effort to increase the international dimension of all university activities and functions. The linking of foreign student recruitment to other initiatives such as building an international alumni network or the creation of research or teaching partnerships with institutions in other regions and countries strengthens the potential for obtaining educational benefits that support the academic core as well as the bottom line.

In short, higher education institutions in the U.S. need to think more strategically about how each piece of their international and global efforts fits together as an integrated strategy. Most have not done so in any coherent manner. State and federal governments can do much more to encourage this kind of reform by providing organizational support and incentives, both monetary and symbolic, that give greater urgency to overcoming historically based tendencies toward isolationism that are ever-present in American higher education. This broader reform agenda will undoubtedly contribute to the long-term success of recruiting and retaining the best international students from the global talent pool while at the same time creating a more internationally focused university.

The entrepreneurial foreign adventures of US universities, public and private, non-profit and for-profit, focused on expanding their numbers of international students, both here in the US or in campuses or joint degree programs abroad, are now ubiquitous — to what effect, and what cost and benefit, no one really knows. Given the amount of attention and resources going into these new ventures, these are prime targets for further research and assessment.

Higher education institutions in the US need to think more strategically about how each piece of their international and global efforts fits together as an integrated strategy. Most have not done so in any coherent manner.

The American Council on Education's (ACE) Center for International Initiatives has undertaken research and published a number of papers and reports on the state of internationalization efforts at US universities and colleges. A 2003 report *Mapping Internationalization on U.S. Campuses* surveyed institutions regarding the international curriculum and internationally related activities at the undergraduate level. ACE reported that most institutions surveyed demonstrated a low level of commitment to internationalization within their campus mission statements and strategic plans.

An updated survey in 2008 reported similar results. The lead author, Madeleine F. Green, commented, "Overall, internationalization doesn't permeate the fabric of most institutions. It is not sufficiently deep, nor as widespread as it should be to prepare students to meet the challenges they will face once they graduate."[40]

ACE has continued to encourage provosts and presidents to think strategically and more deeply about how to integrate a richer and more serious effort to engage with the world outside the US and recognize the changing context of higher education as it is affected by globalization.[41] Although the recruitment of foreign students was not the focus of ACE's research, this report supports the view that US institutions often lack a well thought-out strategy for international engagement.

9. Time for a Reboot

It is increasingly evident that human capital constitutes the single largest influence on the wealth of nations — a more important variable than, for instance, natural resources or manufacturing infrastructure. The previous paradigm, one that drove national and regional policymaking, sought a form of protectionism of internal markets, placing caps on the number of foreign students. In the US, state systems of higher education, the primary vehicles for creating mass higher education, and policymakers still adhere to this conceptual beginning. Much like the current effort to reformulate America's foreign policy, it is time to re-imagine a more proactive set of goals and policies.

None of the recommendations noted in this study are revolutionary; as noted, in one form or another many have been forwarded by individuals and groups concerned and engaged with expanding the international activities of their institutions, or in attempts to influence federal policy. But most efforts at the federal, state, and institutional level have been piecemeal, usually without the interest or support of powerful lawmakers and, perhaps most importantly, a presidential administration or a farsighted governor.

In the midst of the current economic crisis, it is perhaps hard to generate enthusiasm for institutional strategies related to globalization. But this is an opportune time to do so, in part because the Obama administration is engaged in a much-needed rethinking of America's role in the world. Higher education is key to America's capacity to take its place once again as an active and respected global leader.

ENDNOTES

[1] Marlene M. Johnson, "Toward a Foreign-Student Strategy," *Chronicle of Higher Education*, July 28, 2006.
[2] Open Doors Report 2008: http://opendoors.iienetwork.org/?p=131590,
[3] The decreasing value of a currency can also be an asset when it concerns recruiting international students, as in the case of New Zealand's and Australia's increased enrollments this past year. See: http://chronicle.com/article/Aided-by-Exchange-Rate-New/42779, and http://chronicle.com/article/Australia-Sees-Big-Jump-in/42862?utm_source=at&utm_medium=en
[4] Aisha Labi, "Prospect of Drawing Foreign Students Looks Better for US than Britain," *Chronicle of Higher Education*, December 8, 2008.
[5] Recent reports suggest that the Australian government is attempting to restrain the number of permanent work visas issues to foreign students and is cracking down on fraud related to admission of international students who are not qualified or are using student visas to enter the country to eventually gain permanent residency. See for example, Maslen, Geoff, "Australia: Has the export bubble burst?", *University World News*, July 19, 2009, http://www.universityworldnews.com/article.php?story=20090717092635418
[6] Findings from the 2009 CGS International Admissions Survey, Phase II: Final Applications and Initial Offers of Admission, Council of Graduate Schools, Washington, D.C., 2009: http://www.cgsnet.org/portals/0/pdf/R_IntlAdm09_II.pdf
[7] Brendan O'Malley, "OECD 1: US Share of Foreign Students Drops, *University World News*, October 21, 2007.
[8] Simon Marginson, "Is Australia Overdependent on International Students?" *International Higher Education,* No. 54, Winter 2009.
[9] Data is from the National Association of International Educators "Economic Impact Statements: 2007-08, which are generated by Jason Baumgartner at Indiana University – Bloomington's Office of International Services. NAIE states that the total US impact of HE of $15.54 billion is a "conservative" figure. Their report does not rely on a "multiplier effect." Although this might provide a more accurate estimate of actual economic impact, there is no consensus on the appropriate size of such a multiplier. Many international graduate students gain institutional derived grants and scholarships, particularly in the sciences, and an estimate is made to determine the net economic "export" income generated. The methodology of their study is provided in the appendix of each yearly report:
http://www.nafsa.org/public_policy.sec/international_education_1/eis_2008/
For a discussion of the challenges of calculating the economic impact of international students, see the entry "Measuring the Impact of Export Education" in the blog *Global Higher Ed* from February 7, 2009, http://globalhighered.wordpress.com/2009/02/07/measuring-the-economic-impact-of-export-education-insights-from-new-zealand/

[10] In recent years, trade negotiations organized by the World Trade Organization have included proposals to include educational services among those services that would be included in future trade agreements, thus limiting the capacity of national governments to regulate education in ways that might limit open competition with foreign providers in the local "education market."

[11] The authors would like to thank Professor Clair Brown of Berkeley's Economics department for bringing to our attention the challenges of accurately calculating the economic impact of international students and the need to be cautious in using the export argument in support of increasing international student enrolments.

[12] Using data gathered by the National Association of International Educators on the economic impact of international students, the visa policy changes after 9/11 contributed to not only a significant declining in their numbers. It also led to a loss of at some $5 billion to the US economy that may or may not have added to the nation's security. The nearly $5 billion loss in export income is the calculated using the data provided by Jason Baumgartner at Indiana University – Bloomington's Office of International Services

[13] As a point of reference, in 2006 about 25 percent of undergraduates at public and private four-year college or universities in the US were from out-of-state, according to the U.S. Department of Education, with big differences between some of the states. Within public universities, the figure is closer to 16 percent. National Center for Educational Statistics, *The Condition of Education: 2008,* Indicator 10: Mobility of Students, US Department of Education, 2008: http://nces.ed.gov/programs/coe/2008/section1/indicator10.asp

[14] National Science Board (NSB) 2008, *Science and Engineering Indicators 2008.*

[15] Survey of Earned Doctorates 2007: http://www.norc.org/NR/rdonlyres/B40E56EC-9A4F-4892-B871-E330BB689CD9/0/SEDFactSheet.pdf; Lori Thurgood, Mary J. Golladay, and Susan T. Hill, *US Doctorates in the 20th Century,* National Science Foundation, June 2006: http://www.scribd.com/doc/1006930/National-Science-Foundation-nsf06319

[16] Elizabeth Corcoran, "Silicon Valley's Immigration Problem," Forbes.com, March 5, 2007; Research Brief, "Silicon Valley's Skilled Immigrants: Generating Jobs and Wealth for California," Public Policy Institute of California, #21, June 1999: http://www.ppic.org/content/pubs/rb/RB_699ASRB.pdf

[18] Vivek Wadhwa, Gary Gereffi, Ben Rissing, and Ryan Ong, "Where the Engineers Are," *Issues in Science and Technology,* Spring 2007.

[19] National Science Foundation, 2008 S&E Indicators – Chapter 2.

[20] NSF/NIH/USED/NEH/USDA/NASA, 2007 Survey of Earned Doctorates.

[21] Ma Wanhua The Trajectory of Chinese Doctoral Education and Scientific Research, Research and Occaional Paper Series, Center for Studies in Higher Education – UC Berkeley CSHE.12.07 (August 2007): http://cshe.berkeley.edu/publications/publications.php?id=272

[22] A recent report indicates that China's Ministry of Education hopes to recruit up to 2,000 faculty and scholars from abroad to help the top 100 Chinese universities develop their research capacity. See "China: Ministry Recruits 2000 Foreign Scholars" by John Richard Schrock, *University World News,* May 31, 2009, http://www.universityworldnews.com/article.php?story=20090528175524756

[23] Michael G. Finn, "Stay Rates of Foreign Doctorate Recipients from U.S. Universities, 2005", Oak Ridge Institute for Science and Education, Oak Ridge, TN, 2008: http://orise.orau.gov/sep/files/stayrate07.pdf

[24] Vivek Wadhwa, AnnaLee Saxenian, Richard Freeman, Gary Gereffi, Alex Salkever; "America's Loss is the World's Gain: America's New Immigrant Entrepreneurs," Part IV Kauffmann Foundation, March 2009: http://www.kauffman.org/newsroom/united-states-losing-immigrants-who-spur-innovation-and-economic-growth.aspx

[25] John Aubrey Douglass, Heinke Roebken, and Gregg Thomson (2007). "The Immigrant University: Assessing the Dynamics of Race, Major and Socioeconomic Characteristics at the University of California," Center for Studies in Higher Education, Research and Occasional Paper Series, CSHE.19.07: http://cshe.berkeley.edu/publications/publications.php?id=291

[26] Committee on Science, Engineering, and Public Policy, *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future*, New York: National Academies Press, 2006.

[27] Michael Freeman, "Does Globalization of the Scientific/Engineering Workforce Threaten US Economic Leadership?": http://www.nafsa.org/press_releases.sec/press_releases.pg/chronarticle06

[28] Michael Teitelbaum, "Do We Need More Scientists?", *The Public Interest*, No. 153, 2003.

[29] Wadhwa et al, "Where the Engineers Are," *Issues in Science and Technology,* Spring 2007.

[30] For some differing views on the importance of the H-1B visa program, see the following *New York Times* article:
http://roomfordebate.blogs.nytimes.com/2009/04/08/do-we-need-foreign-technology-workers/?scp=1&sq=H-1b&st=cse

[31] Clair Brown and Greg Linden, *Chips and Change: How Crisis Reshapes the Semiconductor Industry* (MIT Press 2009), pp. 108-135. …….

[32] John Aubrey Douglass, "The Waning of America's Higher Education Advantage: International Competitors Are No Longer Number Two and Have Big Plans in the Global Economy," CSHE Research and Occasional Papers Series, CSHE.9.06. (June 2006), see: http://cshe.berkeley.edu/publications/publications.php?id=226

[33] State Higher Education Executive Officers, "The College Degree Gap: One Million More Degrees Annually, 2009-2025," SHEEO, Boulder Colorado, 2008.

[34] Lumina Foundation, *A Stronger Nation Through Higher Education: How and Why Americans Must Meet a 'Big Goal' for College Attainment*, February 2009; see also Linda Shaw, "Gates Foundation Turns Attention to Higher Education," *Seattle Times,* Nov. 12, 2008.

[35] For another perspective on possible federal initiatives in this area, see the joint statement of the Alliance for International Educational and Cultural Exchange and NAFSA, "An International Education Policy For U.S. Leadership, Competitiveness, and Security":
http://www.nafsa.org/public_policy.sec/united_states_international/toward_an_international/

[36] For some examples of states that have tried to coordinate joint marketing efforts see "States as Study Destinations" in the online news service *Inside Higher Ed,* June 22, 2009:
http://www.insidehighered.com/news/2009/06/22/consortia

[37] See National Association of International Educators' listing of state initiatives to support international education in its various forms, http://www.nafsa.org/public_policy.sec/international_education_23

[38] Groen, Jeffrey A. and Michelle J. White. "In-State Versus Out-of-State Students: The Divergence Of Interest Between Public Universities And State Governments," Journal of Public Economics, 2004, vol 88 (9-10, Aug), 1793-1814.

[39] Although it is natural for institutions to believe they have all the requisite expertise within the faculty and larger university community, it is important to recognize that specialized skills and experience related to international initiatives are a relatively scarce resource on many U.S. campuses. Whether it is expertise in international contract law, international operations, or foreign language and cultural contexts, having individuals with professional experience in launching and managing educational ventures abroad or curricular reform on campus can be critical to success. Fortunately there is an increased body of experience and knowledge that has emerged over time that has helped create a cadre of individuals equipped to assist institutions develop and improve their international initiatives. Whether it is on a temporary or more permenant basis, institutions should seek obtain this expertise as they begin to increase efforts in this domain.

[40] "Many institutions do not see internationalization as integral to their identity or strategy. Less than 40 percent of institutions made specific reference to international or global education in their mission statements, although that's up from 28 percent in 2001.":
http://www.acenet.edu/Content/NavigationMenu/ProgramsServices/cii/pubs/ace/Mapping_2008.htm

[41] See, for example: "Guide to Internationalization for Chief Academic Officers, 2008; "International Partnerships: Guidelines for Colleges and Universities" (2008):
http://www.acenet.edu/Content/NavigationMenu/ProgramsServices/cii/pubs/ace/index.htm