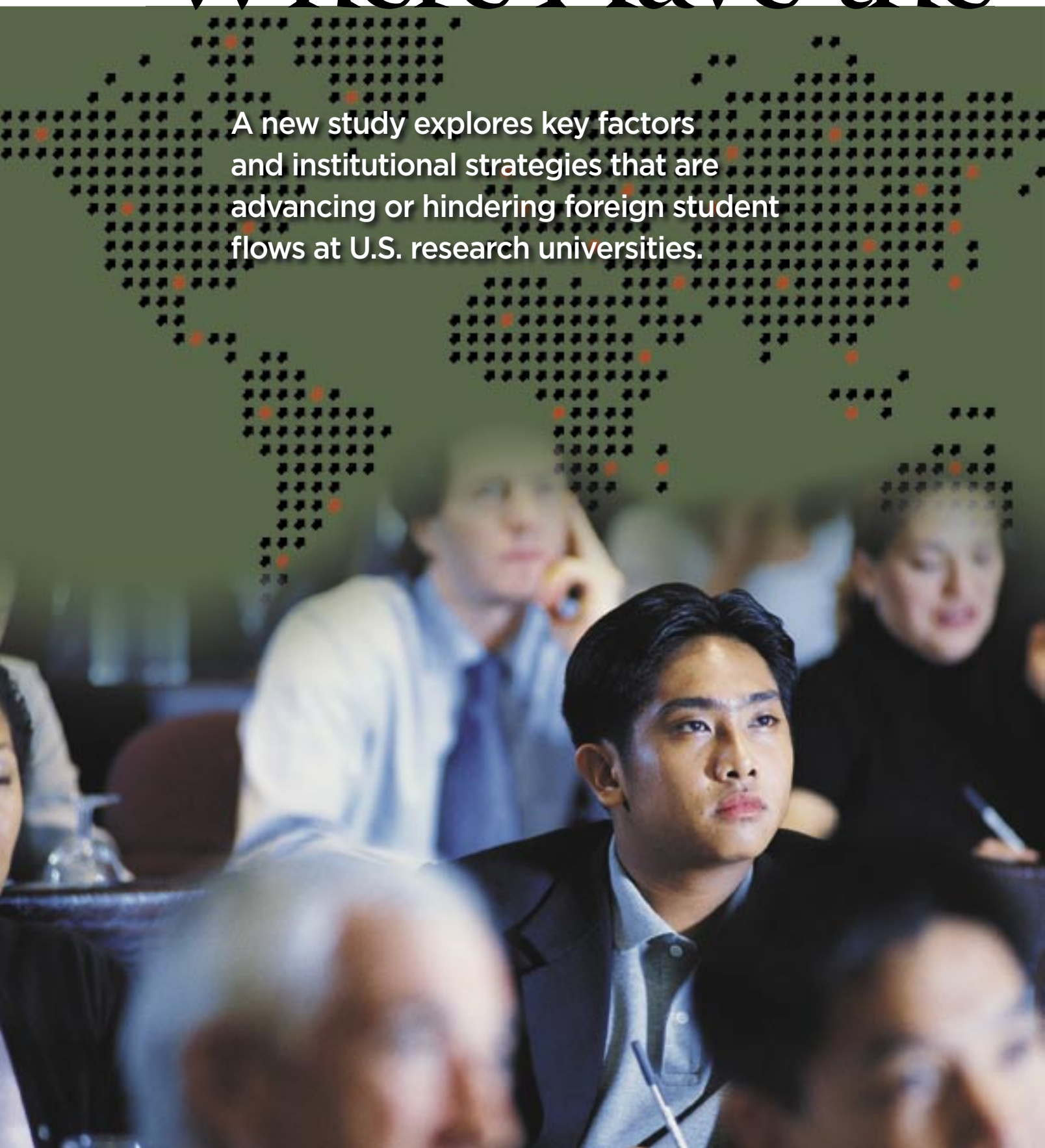
Where Have the



A new study explores key factors and institutional strategies that are advancing or hindering foreign student flows at U.S. research universities.

INTERNATIONAL STUDENTS Gone?

By Olga Bain and
William K. Cummings

SEPTEMBER 11, 2001, may prove to be a watershed in the international perception of U.S. higher education. Up to that year, the numbers of foreign students and scholars seeking to study in the United States steadily increased. Since then, interest in the United States has slackened and could drop precipitously; in 2003–04 there was a 2.4 percent decline in foreign student enrollments (IIE 2004) and it is likely there will be a further drop in 2004–05.[1] A short-term concern is to improve the visa process, enhance the sense that the United States is safe, and more generally to restore the favorable image of U.S. higher education. But there are also several longer term considerations including the need to sustain the nation's edge in academic research, an enterprise that is heavily dependent on graduate research assistants of foreign origin, the concern in the era of financial austerity to recruit growing numbers of foreign students who pay full tuition, and the recognition that a foreign student presence on U.S. campuses helps U.S. students to broaden their horizons and prepare for an interdependent world. In view of the increasing salience of the foreign student component in U.S. higher education, it is important to advance understanding of the factors that enable and hinder U.S. institutions of higher education (IHEs) to attract foreign students. This study, focusing on the research university stratum, is a first step.[2]

THE CONTEXT

While this study focuses on the behavior of individual U.S. IHEs, it should be recognized that this behavior is part of a much larger web of interaction involving, on the one hand, the motivations and resources of the highly diverse population of prospective foreign students around the world and, on the other hand, the initiatives of diverse national, state, and institutional actors that seek to attract foreign students to their respective locations. (*For details on the survey methods, see p.24–25.*)

COMSTOCK/ISTOCK/BONOTOM STUDIO

Growing Numbers Worldwide

During the past several decades the number of young people taking up study in foreign countries has steadily increased. While foreign study originally was thought of primarily as an act of individual initiative, it is increasingly apparent that national and institutional factors are influencing the decisions of young people. The language of "the emerging global market for foreign study" has become increasingly common. The purpose to evaluate the extent to which cross-national student flows represent market flows similar to the freely circulating capital and goods and increased openness in labor markets goes beyond the scope of this study. Several trends in cross-broader student flows deserve note. These trends relate to the scale, changing directions, qualitative shifts in student mobility, new infrastructure that ease such mobility, the dominant rhetoric at the individual student, institutional, and national and supranational levels.

In terms of the scale, the sheer numbers of students seeking enrollment in foreign institutions of higher education has been

An additional factor at the national level is the trend in the number of indigenous young people eligible for college study; in several of the OECD countries these numbers have been leveling or even declining in recent years.

constantly on the rise (IIE 1970–2003; Cummings 1991). The United States maintains its leadership in receiving by far the largest number of foreign students in the world. As of 2002, the United States hosted the most foreign students in absolute terms with 28 percent of the total, followed by the United Kingdom and Germany (14 percent and 12 percent, respectively), France and Australia (8 percent and 7 percent, respectively) (OECD 2002). These five host countries accounted for 69 percent of all foreign students studying abroad. In 2003, Australia moved to the third place while Germany and the United Kingdom tied for the second (OECD 2004). National governments are increasingly concerned about their competitive share in the internationally mobile student market.

New Trends and Technologies

A qualitative shift in the flow of international students was evident by the early 1990s: Whereas the direction of student flow once followed colonial and post-colonial linkages, it has become increasingly liberated from these traditional channels (Scott 1998). Now the great majority of foreign students finance their studies themselves as an investment in their future careers. In the 2002–03 academic year 70 percent of undergraduate international students paid full tuition and received no financial aid (IIE 2003). There has been also a shift in the fields of study preferred by foreign students from the hard sciences to new more applied subjects; for example, in the United States in 2001–02 the most popular subjects were business and management (19.7 percent of all the international students in the United States) followed by engineering (15.1 percent), and math and computer sciences (13.2 percent) (calculated from IIE 2002).

New technologies are bringing marketing and admission processes closer to the homes of potential foreign enrollees. The spread of testing agencies makes it easier for foreign students to prepare applications and for receiving institutions to evaluate these applications.

Economic Considerations and Global Markets

The prevailing economic rationales for internationalization in higher education have furthered the spread of the market concept in dealing with international students and international education. Today many national governments stress the economic gain of educational internationalization such as direct revenues from international students[3] and increased economic competitiveness through recruiting the best and the brightest (Yelland 2000; de Witt 2002). Institutions look to foreign enrollments through the lens of meeting their revenue targets under the pressures of the "enrollment economy" of the higher educational industry, and policymakers often refer to foreign students as capital (Rhee and Danowitz Sagaria 2004). Individual students make their educational choices as part of their investment in future careers (Cummings 1993).

Finally, discussions of higher education as a commodity that might need to be regulated to ensure "fair" competition by such bodies as the World Trade Organization are based on the assumption that globalization of the student market is imminent (Knight 2002).

At the national level, there are also a number of important considerations deserving attention. First, most nations see the sponsorship of a certain level of foreign study as a means of spreading their values to the elites of specific foreign settings. Additionally, most nations now acknowledge the economic revenues obtained from foreign students. Another national consideration is the need to recruit foreign students to assist in national programs of scientific and technological research. While nations recognize these positive benefits, only a handful of nations have actually devised national policies focused on increasing their share of the foreign student market. The United Kingdom and Australia are most notable (*The Chronicle of Higher Education*, October 8, 2004, A38), and in both cases they have achieved in recent years average annual growth rates in the receipt of foreign students in excess of 20 percent. British and Australian success has heightened the sense that it is possible to compete for foreign students, and that the United States may be losing its competitive advantage in the face of such combined governmental and institutional pushes by other competitors (NAFSA 2003). This concern about losing the "competitive edge" is exacerbated by the acknowledgement that U.S. universities and colleges lack national backing for foreign student policy in contrast to other countries, according to the NAFSA Strategic Task Force on International Student Access (NAFSA 2003). An additional factor at the national level is the trend in the number of indigenous young people eligible for college study; in several of the OECD countries these numbers have been leveling or even declining in recent years, leading to frantic efforts to find new sources of student enrollments so as to insure the survival of established institutions (OECD 2002).

With the qualitative changes in higher education that accompany expanded access and that result in "massification," the impact

of external constituents, or "attentive audiences" in the words of the first conceptualizer of mass higher education Martin Trow (Trow 1973), is increasingly important. In the U.S. context, state legislatures and higher education commissions constitute an important stratum of relevant audiences, especially for public institutions. Given the prominence of the domestic issues of providing access to the undergraduate population in the United States as well as the increasing accountability imposed by state legislatures, the task of balancing a variety of inside and outside demands falls heavily on the shoulders of individual IHEs.

HIGHLIGHTING TRADE-OFFS

Given this multi-layered context, what challenges do U.S. IHEs encounter and how do they approach the issue of foreign student composition as they face these challenges? Most institutions have a basic strategy, which may or may not give prominence to foreign students, and they propose marginal changes relative to this basic strategy. Under adverse circumstances, such as the recent drop of foreign applicants from typically expected locations (such as China and India) and from the Muslim world, individual IHEs find themselves vulnerable to the possibility of underachieving goals in terms of foreign student admissions, which may then result in overall under-enrollment. Others may lower admissions standards[4] or replace seats intended for foreign students with increased allocations for domestic students (*The Chronicle of Higher Education,* October 8, 2004, A37–A43). It is trade-offs of this kind that we hope to highlight.

NUMBERS OF FOREIGN STUDENTS

An examination of the top and bottom 10 institutions in terms of the number of foreign student enrollments in 1994, 2001, and 2003 reveals four notable trends (*see Table 1*). First, virtually all universities had a substantial number in 1994, with the large private universities particularly standing out—New York University, Harvard, Pennsylvania, and George Washington University. But several of the large public universities also had substantial numbers of foreign students—Wisconsin, Ohio State, and the University of Texas at Austin. For 1994, Catholic University of America in Washington, D.C., had the smallest total of 389 (which decreased to 364 in 2001).

TABLE 1—Changes in Number of International Students 1994-2003
(top and bottom AAU institutions in terms of 2001 to 2003 change)

Institution	Total 1994	Total 2001	Total 2003	Ratio 2001/ 1994	Ratio 2003/ 2001
University of California, Los Angeles	1668	2794	4320	1.68	1.55
University of California, San Diego	1059	1675	2054	1.58	1.23
Northwestern University	1501	1765	2102	1.18	1.19
Washington University	982	1325	1508	1.35	1.14
University of Iowa	1739	2027	2306	1.17	1.14
University of Chicago	1548	2173	2470	1.40	1.14
Stanford University	2587	3237	3664	1.25	1.13
Tulane University	806	929	1043	1.15	1.12
Indiana University at Bloomington	2287	3325	3715	1.45	1.12
University of Southern California	4259	5950	6647	1.40	1.12
Middle 38 institutions					
New York University	3832	5504	5070	1.44	0.92
George Washington University	2591	2072	1902	0.80	0.92
University of Wisconsin-Madison	3964	3744	3435	0.94	0.92
University of Oregon-Main Campus	1621	1766	1610	1.09	0.91
Yale University	1340	1967	1765	1.47	0.90
University of Rochester	1217	1326	1156	1.09	0.87
Vanderbilt University	748	1052	909	1.41	0.86
Cornell University	2567	3181	2724	1.24	0.86
Johns Hopkins University	759	1092	933	1.44	0.85
University of Florida	2053	3884	3157	1.89	0.81
Total Foreign Students in the Group	105,563	137,212	141,137	1.33	1.03

Second, most universities increased their numbers of foreign students during the 1994 to 2001 period. The largest percentage increase of 113 percent took place at the University of Virginia. Only a handful decreased the total number of foreign institutions between 1994 and 2001; most notable were the University of Missouri and George Washington University. Overall, the main contrast is between maintenance of 1994 levels versus a substantial increase in total numbers.

Third, there was little change between 2001 and 2003 in the total number of foreign students at the AAU universities. Less than half increased their total number. UCLA stands out with the largest increase, an amazing 55 percent increase, reflective of the increasing financial autonomy of universities in the California system. UC-San Diego is second. Several universities had significant drops—notably the University of Florida, Cornell, Yale, and the University of Wisconsin.

And fourth, several institutional characteristics were expected to be associated with the number of foreign students on a campus—overall size of student body, relative international emphasis, graduate emphasis, tuition advantage, and ease of entry. For 1994, 2001, and 2003 the correlation of total number of foreign students with total number of all students is the strongest correlate followed by internationalism. Additionally, there are strong correlations of total number of foreign students with the indicators of weaker admission standards and lower tuition. Remarkable is the stability of the correlations through the three periods.[5] The several indicators were combined in multiple regression equations for the three periods. For all three equations, the most prominent predictors of total number of foreign students are total size of student body and whether the institution is public versus private. Additionally, there are modest negative relations with preva-

TABLE 2—Changes in Percent of International Students 1994-2003
(top and bottom AAU institutions in terms of 2001 to 2003 ratio)

Institution	Percent 1994	Percent 2001	Percent 2003	Ratio 2001/ 1994	Ratio 2003/ 2001
University of California, Los Angeles	5%	8%	12%	1.71	1.50
Northwestern University	10%	12%	14%	1.17	1.18
Stanford University	19%	23%	26%	1.24	1.13
Washington University	8%	12%	13%	1.37	1.13
University of Iowa	6%	7%	8%	1.17	1.10
University of Michigan-Ann Arbor	8%	11%	12%	1.46	1.10
University of California, San Diego	6%	9%	10%	1.50	1.10
University of California, Santa Barbara	4%	5%	5%	1.29	1.09
University of Southern California	16%	21%	23%	1.30	1.09
University of Illinois Urbana-Chicago	9%	12%	13%	1.37	1.08
Middle 38 institutions					
New York University	11%	15%	14%	1.38	0.92
Iowa State U. of Science and Technology	10%	10%	8%	0.97	0.86
University of Rochester	12%	17%	15%	1.39	0.86
University of California, Irvine	7%	9%	7%	1.21	0.85
Cornell University	14%	17%	14%	1.19	0.84
Vanderbilt University	8%	11%	9%	1.38	0.84
George Washington University	16%	11%	9%	0.69	0.84
Syracuse University	11%	19%	15%	1.73	0.83
University of Oregon- Main Campus	10%	11%	9%	1.07	0.83
University of Florida	6%	9%	7%	1.51	0.76
University of Wisconsin-Madison	10%	12%	9%	1.24	0.71
Average %/ Ratio of Change	10%	12.5%	12.2%	1.30	0.99

lence of crime in the university environment and high admissions standards. While the index of institutional internationalism had a strong zero-order correlation with total number of foreign students, this indicator was also highly correlated with total number of students and with being a public institution, thus it had only a small independent effect on total number of foreign students. The addition of percent minority students had no notable influence.[6]

PERCENT OF FOREIGN STUDENTS

Looking at enrollments in terms of a component of the total student body, five major findings are revealed (see Tables 2 and 3), with the latter three emerging from specific indicators, such as environmental factors (crime rates of certain regions and at different types of institutions), type of institution (private/public/large/small), selectiveness of institutions, student-faculty ratios, and so on.

First, the average percent in 1994 was 10 percent rising to 12 percent in 2001. Private universities tended to have higher percentages, with California Institute of Technology being the leader. Nearly all institutions increased their percent of foreign students by the end of this seven-year period or at least remained stable. The University of Virginia and Duke University had the largest increases. George Washington University had the largest decrease followed by the University of Missouri and the University at Buffalo, State University of New York.

Second, for the shorter period of 2001 to 2003, less than half showed gains and in most cases these were small gains. UCLA is the major exception with a 50 percent gain. Several showed significant loses.

Third, it was hypothesized that more selective and private institutions in favorable (low crime) settings might have larger proportions of foreign students. These expectations were supported. Additionally, institutions with relatively large graduate schools and those with high tuition had relatively larger proportions of foreign students.[7] For 1994, 2001, and 2003 an eastern location was correlated with a high proportion; for 2003 a West Coast location also began to have a substantial correlation with proportion of foreign students. Again, remarkable is the consistency over the three periods. For the latter two periods, we were able to compute a measure of the relative percent of minority students in the domestic student body, and this had a moderate positive correlation with the acceptance of international students.

Fourth, when these several indicators were included in multiple regressions for the three periods, the dominant predictor of the foreign student percent turned out to be private university with degree of selectiveness and low student-faculty ratios also prominent. Interestingly, while the zero-order correlations of higher tuition and having an eastern location were positive for both time periods, the signs for the respective partial regression coefficients were reversed (suggesting that other features of eastern institutions such as quality, safety, and private sponsorship were more influential).

Fifth, comparing the findings for total number of foreign students and for percentage of foreign students, whether an institution is public, large and unselective seems to have the strongest relation to the total number of foreign students whereas whether a university is private and selective has a stronger relation to the percentage of students who are foreign.

DIRECTIONS OF CHANGE DURING THE GROWTH PERIOD

While the analysis suggests much consistency over time, nevertheless many institutions appear to have shifted their relative position between 1994 and 2001. As suggested in Tables 1 and 2, some increased the number of their foreign students, some increased the percent, some increased both, and a few even decreased both. Given those points, we considered what characteristics are associated with changes in the relative presence of foreign students. Along with the characteristics already identified in the early sections, we created indicators of change for several of these characteristics (i.e. to what

extent did the student-faculty ratio shift). Table 3 reports the relation of changes in these measures to both change in the number of international students and change in the percent of international students.

The correlation coefficients are presented as a background for examining the regression equations for the two foreign student change indicators. Turning to the two regression equations, there are many similarities. Where an institution was in 1994, especially in terms of percent of foreign students, has considerable bearing both on the increase in percent of foreign students (negative) and increase in number of foreign students (negative). An eastern or western location (contrasted with a Mountain State or Midwest location) is positively associated with increases in both respects. Increases in tuition are negatively associated with increases both in number and percent of foreign students. Changes in institutional quality have no relation to changes in foreign student prominence—possibly because the institutions under consideration are all of relatively high quality. The major difference in the two equations is that institutions that increased their total enrollments are more likely to have increased the total number of foreign students but are less likely to have increased the percent of foreign students.

It is possible to think of these two foreign student change indicators as interrelated both statistically (r = 0.731) and strategically. As suggested in Table 3, one route to increasing the number of foreign students is to carry out an increase in direct proportion to the overall increase in the student body. But a more common approach is to implement a change in the percent of foreign students as leverage for increasing the total number of foreign students.

TABLE 3—Correlates of Change in Number of Foreign Students and Change in Foreign Student Percent of Total Enrollments from 1994 to 2001

	% Change in Total # of Foreign Student from 1994 to 2001		% Change in Foreign Student % of all Students from 1994 to 2001	
	Pearson zero–order correlation coefficient (r)	Partial Regression coefficient (beta)	Pearson zero–order correlation coefficient (r)	Partial Regression coefficient (beta)
# Foreign Students in 1994	–.199	–.051	–.282	–.047
Foreign Student % of all Students in 1994	–.198	–.519*	–.382	–.490*
Change in Crime	.175	.319*	.203	.336*
Public Institution	.095	–.200	.049	–.187
Internationalism Score	.083	.053	.083	.023
Located in East	.147	.261*	.139	.334*
Located in West	.146	.283*	.087	.301*
Change in Total # of Students	.363	.438*	–.340	–.280*
Change in Student/Faculty Ratio	.136	.139	.059	.119
Change in % Faculty Full–time	.098	.044	.096	.068
Change in Average SAT Scores	–.059	–.031	–.069	–.010
Change in % Applicants Admitted	–.030	–.117	–.034	–.071
Change in Tuition	–.150	–.245*	–.010	–.218
Change in Total # of Foreign Students	x	x	.731	x
Change in Foreign Student %	.731	x	x	x
		R2 = .462/ Adj. R2 =.303		R2 = .445/ Adj. R2=.281

TABLE 4—Distinctive Institutional Strategies and Implications for Foreign Student (FS) Composition

	Improve Quality	Maintain Quality
Increase Scale	**Institutional Growth**	**Institutional Survival**
	► Moderate Tuition Increase	► Stable Tuition
	► Moderate Increase in Selectivity	► Maintain or Slightly Lower Selectivity
	► Increase number of FS	► Increase number of FS
	► Increase quality of FS	► Maintain proportion of FS
	► ncrease proportion of FS	► Mainain quality of FS
Maintain Scale	**Institutional Growth**	**Institutional Survival**
	► Raise Tuition	► Moderate Tuition Increase
	► Become More Selective	► Maintain Level of Selectivity
	► Increase quality of FS	► Maintain number of FS
	► Maintain number of FS	► Maintain quality of FS
	► Maintain proportion of FS	► Maintain proportion of FS

INSTITUTIONAL STRATEGIES

While each institution faces unique constraints and opportunities—some have stable funding whereas others are faced with hard times and thus under considerable pressure to expand self-generated revenues—there are four general institutional strategies that emerge, each with distinctive implications for foreign student presence (*see Table 4*). Of those experiencing financial pressure, most are already sizeable, most already have large student bodies so they have limited possibilities for further expansion. Of those that elect to increase size, some may seek to hold tuition more or less level so as minimize the likelihood that their traditional clientele will turn elsewhere whereas others may increase tuition in the hope of attracting new clientele. Our analysis suggests that foreign students are sensitive to price increases and thus may be turned away by a strategy for expansion accompanied by a significant tuition increase.

Institutions are also driven by different visions. Some are satisfied with where they are, some wish to upgrade quality while retaining scale, some wish to upgrade both scale and quality. Of course, the institutions in this study are all relatively high-quality

institutions, so among these institutions these quality shifts tend to be modest and hence have little impact on the likelihood of attracting foreign students. However, for those stressing quality upgrade, insofar as they think more foreign students will contribute to quality change and advertise this belief, they have a reasonable prospect of increasing the foreign student presence on their campus.

AFTER 2001

Arguably, 2001 marked a turning point in the flow of foreign students to the United States. The United States is increasingly perceived as a dangerous place that is less than hospitable to foreign students, especially those from the Middle East. One indication is the considerable difficulty foreign students experience when seeking visas. Thus unless there are dramatic improvements both in the process of welcoming students and in the international perception of U.S. opportunities, there is a strong possibility that the number of foreign students coming to the United States will slow down in the future. The data for the 2001–03 period indicates an overall slowdown, but that slowdown was less evident at the universities that are the focus of this study than in other sectors of U.S. higher education. Indeed, one quarter of the universities experienced some growth in foreign students and most of the universities at least held their own. The universities in the University of California system all experienced substantial growth in the numbers of foreign students on their campuses, perhaps reflecting the new freedom these institutions have in admissions and tuition policies. Also influencing the West Coast market may be the perception by Asian students (who make up a very large

SURVEY METHODS

The foreign student enrollment trends survey that we conducted includes specific parameters designed to make the survey insightful and to avoid becoming overrun with unwieldy data. The following explains why specific dates where covered, which U.S. IHEs were polled, which indicators were used, and how the data were analyzed.

TEMPORAL COVERAGE

U.S. higher education experienced steady growth until the early 1990s when the size of the college-aged population began to level off. From that point, states began to take a critical look at their support for higher education, and a number of states began a gradual program of cutting back on state support that continues down to the present. Even so, through much of the 1990s the numbers of foreign students deciding to study in the United States experienced steady growth. For these reasons, a date in the early 1990s provides an appropriate baseline. We have selected 1994–95.

The major shock of the September 11, 2001 terrorist attacks on the World Trade Center and the Pentagon had a severe impact. From that date hence, foreign students have become increasingly wary of selecting the United States (or at least those from certain locations) as a place of overseas study. Thus, 2001 is a second nodal point. Finally, this study includes data for the most recently reported U.S. international student survey of 2003–04, the first year since 1955 that showed a significant decrease in the number of foreign students in the United States.

POPULATION

Given data limitations, this study focuses only on those universities that are members of the American Association of Universities (plus George Washington University) that are located in the United States (total of 59).[1] This limitation seems acceptable as approximately 31 percent of all foreign students in the United States enroll at these institutions. However, as some of the more aggressive institutions are not in this group, for future research it will be desirable to expand coverage.

Given the commitment of AAU institutions to internationalism, they are a useful subgroup of U.S. IHE for understanding the diverse function of foreign students in institutional student composition strategies. The major limitation of this subgroup is that the AAU institutions are somewhat homogeneous in terms of key variables: They tend to be large institutions with substantial numbers of foreign students and, by virtue of their prestige, they tend to be somewhat buffered from the threat of austerity recently experienced by many U.S. IHEs. Nevertheless there is variability in this group that is suggestive of the institutional strategies of IHEs in other sectors of the U.S. higher educational system.

INDICATORS FOR MAIN CONCEPTS

Concerning the universities included in the study, data for the following concepts was obtained primarily from the Institute of International Education (IIE) and the College Board.

- Foreign student numerical prominence in 1994, 2001, and 2003.* The source is the IIE's *Open Doors*. Note the number of foreign students is the sum of both undergraduate and graduate students as IIE does not release a more detailed breakdown.[2]
- Foreign student proportional prominence in 1994, 2001, and 2003.* Total of foreign students divided by total of all students, both undergraduate and graduate as reported by the College Board.
- Foreign student growth. Foreign student enrollments in 2001–02 from *Open Doors* divided by enrollments in 1994–05. (Growth with 1998 as the baseline was also examined, but the findings are essentially the same as those reported below). Similarly 2003–04 divided by 2001–02.
- Increase in foreign student proportional prominence. 2001 proportion divided by 1994 proportion. Similarly 2003–04 divided by 2001–02.
- Eastern and western setting: Dummy variables for eastern seaboard states and for West Coast states.
- Crime rate. Indicators of safety in immediate zip code of each institution* (U.S.

ents that the West Coast is safe, at least relative to the dangerous East Coast.

share of the U.S. foreign student market) that the West Coast is safe, at least relative to the dangerous East Coast. Additionally, it would appear that tuition has come to play a greater role in foreign student choice during the past several years. To the extent that is so, it will pose difficulties for those universities favoring an institutional upgrade strategy that depends on substantial foreign student participation. It will be important to follow trends over the coming years.

What's Next?

What is ahead: Major changes or stability? For the 1994 to 2001 period, there are substantial increases in foreign student presence—related to decisions of institutions to increase the proportion of foreign students, their total number, and to contain tuition. Certain private universities were most outstanding in increasing the percent of foreign students while both public and private universities were outstanding in terms of increasing the numbers. Institutions that had a relatively low percent of foreign students in 1994 were most likely to implement increases. This suggests the norm is up in terms of the desired level of prominence of foreign students on campuses.

Institutions face different constraints and have different visions. Some seek to improve quality while others are pressured to increase quantity, and these fundamental decisions have an important bearing on the relative presence of foreign students. The focus in this study was on a relatively homogenous group of top universities. As the inquiry broadens to include a greater diversity of IHEs, it is expected that the differences in institutional strategy will become more evident and have even stronger relations to foreign student presence. **IE**

Department of Justice) with two-year lag time from when foreign students arrive (i.e. 1992 for 1994 baseline year, and 1999 for 2001 period). U.S. Government. *City and County Data Book*.

- Public institution. Dummy variable with public as 1, private as 0.
- International emphasis in 2000: Score on internationalism index* as reported by Hser 2003.
- Total enrollment of student body for 1994, 2001, and 2003.* College Board.
- Percent of graduate students in 1994, 2001, and 2003. Graduate student enrollment divided by total enrollments. College Board.
- Percent of minority students 2001 and 2003. Total percent of African-American, Asian, and Native American in undergraduate student body. College Board (data not available for 1994).
- Median SAT scores of entering class 1994, 2001, and 2003.* College Board.
- Percent of entering student body with GPA higher than 3.0 in 1994, 2001, and 2003.* College Board.
- Percent of applicants admitted to freshman class 1994, 2001, and 2003.* College Board.
- Percent of faculty full-time 1994, 2001, and 2003.* College Board.
- Student-teacher ratio 1994, 2001, and 2003.* Computed from College Board.
- Tuition.* Out-of-state tuition in 1994 for public institutions and full tuition of 1994 for private institutions. Same for 2001 and 2003.
- Student-faculty ratio for 1994, 2001, and 2003. College Board.
- Percent of faculty that are full time for 1994, 2001, and 2003. College Board.

*Note: For all variables with *, data are available for the three time periods so the 2001 value is divided by the 1994 value and the 2003 value is divided by the 2001 value.*

DATA ANALYSIS

For most indicators, it was possible to collect data from all of the included institutions. At the university level, a particular concern is for the data on all indicators to cover the same set of affiliated schools (e.g. the same sets of campuses and the same sets of graduate programs). In the case of Rutgers and Columbia University, there were obvious inconsistencies and thus these two institutions were not included in the analysis. For all of the remaining institutions, the data appeared consistent and was largely complete.

The first step in multivariate analysis, focusing on bivariate relations of all the indicators, utilized Pearson product-moment zero-order correlations computed in the pair-wise manner. To determine among a group of inter-correlated independent variables which ones made the greatest contribution to relative prominence for each of the time periods, multiple regression equations were computed with the means of particular variables being substituted where particular cases had missing values (an option under SPSS). As our interest in this study was simply in determining for a particular equation the relative contribution of constituent independent variables, only the partial regression coefficients are reported.[3]

Endnotes

1. For this study, data was incomplete for Columbia University and Rutgers-New Brunswick so these institutions were dropped from the analysis. George Washington University was added.
2. However, many individual institutions do report to the College Board the proportion of all undergraduate students who are foreign students; for 1994, the correlation of this proportion with our indicator of foreign student proportional prominence was 0.822; for 2001, it was 0.764. Thus, while the analysis below focuses on the overall numbers and proportions of foreign students, these high correlations suggest that the findings are suggestive of patterns for the respective subgroups of undergraduate and graduate students.
3. As this study includes all of the member institutions in the AAU, the statistics reported are for the full population of target universities, rather than for a sample. Hence, the major consideration in evaluating statistics is the magnitude of the strength of relationships as contrasted to measures of significance. Measures of significance are intended to assist in judgments about inferring from samples to populations; this study focuses on a population. Nevertheless, at appropriate places, results on tests of significance will be reported.

OLGA BAIN is assistant professorial lecturer at George Washington University; she specializes in comparative higher education with a regional focus on Eastern Europe. **WILLIAM K. CUMMINGS** is professor of international education and international affairs at George Washington University; he specializes in education for international development with a regional focus on Asia and Africa.

Endnotes

1. In 2003–04 the 5 percent decline in foreign student enrollment was partially offset by the 2.5 percent increase in total foreign student graduate enrollment (IIE 2004). When looking at first-time international graduate enrollment, however, Council of Graduate Schools (CGS) reported a 6 percent decline from 2003 to 2004. The CGS survey indicated that for the past three years the first-time international graduate enrollment in the United States decreased between 6 and 10 percent after a decade of steady growth (CGS Press Release, Nov.4, 2004).

2. The authors are currently looking at other sectors of the U.S. higher educational system with the intent of examining similarities and differences across sectors.

3. NAFSA estimates that foreign students and their dependents contributed, through tuition and living expenses, more than $12.85 billion to the U.S. economy during the academic year 2002–03 (http://www.nafsa.org/content/PublicPolicy/DataonInternationalEducation/econBenefits.htm). According to the U.S. Department of Commerce, foreign student education and international training represents the fifth largest export industry in the country (IIE 2001).

4. An interesting observation in this regard is articulated in the 2003–04 CGS survey of 126 graduate schools in the United States: schools with the lowest numbers of international graduate students decreased their offers to admissions roughly proportionately to the decline in applications (14 percent and 13 percent, respectively), while graduate schools with higher numbers of international graduate students had large decreases in applications (24 percent) but relatively small declines in admits (8 percent) (Brown 2004).

5. Correlations also were computed for 1998 and the pattern was repeated.

6. Location in western states had a negligible correlation and hence was not included in this phase of the analysis.

7. Location in western states had a negligible correlation and hence was not included in this phase of the analysis.

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