Chapter 5

Universities as Firms: The Case of U.S. Overseas Programs[*]

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Abstract

We observe two waves of overseas programs offered by U.S. universities: A supply driven wave in the late 1980s to the mid 1990s, and a current wave beginning in the early 2000s, with distinctly different players. We compile a comprehensive dataset on overseas degree programs and the host country characteristics. The data reveal that universities behave much like multinational corporations when they make investments overseas. Finance plays an important role. Tuition-dependent universities are more likely to offer overseas programs. Real GDP per capita and tertiary school age populations are two key determinants of the location choice. Asia and the Middle East are popular destinations for U.S. overseas programs, driven by market size and oil money, respectively. U.S. universities offer lower tuition discounts in countries with higher real GDP per capita. Undergraduate degree programs are discounted more than master degree programs because of greater local competition. When universities reduce costs through partnerships with local universities or through financial support from local governments, the savings are not passed on to local students in the form of lower tuition. These results point to economics, not altruism, as the key driver of U.S. overseas programs.

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Comments and suggestions are welcome.

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I. Introduction

U.S. universities are the leading providers of higher education in the world. According to Newsweek global university ranking, 15 of the top 20 universities worldwide are American universities.[1] More than 580,000 foreign undergraduate and graduate students are currently studying in the U.S. They spend around 15 billion dollars yearly, propelling the education industry into the 5th largest exporting service sector in the U.S. (Institute of International Education, 2007). U.S. universities are also active in a wide range of international activities, from setting up cross-country research labs to offering degree programs in foreign countries.

This paper employs the standard economic analysis to study overseas degree programs offered by U.S. universities. If U.S. universities ever behave like firms, they are more likely to do so overseas, where they are not bound by the same set of obligations to domestic stakeholders as they are in the U.S. We analyze how university characteristics (i.e., supply side) and host country environment (i.e., demand side) affect the likelihood of a university offering overseas programs, how it chooses location, and how it determines program pricing/tuition. We examine these issues using hand-collected data on U.S. overseas programs from multiple sources.

These analyses help address whether university motives for foreign direct investment (FDI) are different from those of multinational corporations (MNCs). While there are numerous studies about MNCs' FDI, to the best of our knowledge, there is no economics-based, scientific study of foreign investment by U.S. universities. This study also provides a unique data set that provides a comprehensive picture on the nature and type of overseas degree programs offered by U.S. universities.

Although there are important differences between nonprofit universities and profit-seeking corporations, we assume universities, like firms, are subject to financial constraints and give high priority to increasing the present value of the revenue-cost difference. In such a framework, universities with different endowments of intellectual capital will self-select into two broad types: reputable institutions with selective admission standards and active research programs, or moderately ranked universities with relaxed admission standards and more tuition dependency. Given these two types of universities, which is more likely to have overseas programs? The answer

[1] Available at http://en.wikipedia.org/wiki/Top_100_Global_Universities

is not immediately obvious. While the moderately ranked universities may be more willing suppliers, local demand would be greater for programs offered by the elite type. However, elite schools may be less willing to venture abroad because of their concerns for quality control, dilution of their brand names, and diversion of home campus resources.

We start the paper with an overview of the costs and benefits affecting the supply for and demand of U.S. university overseas programs. This overview is based on our reading of articles published in the Chronicle of Higher Education. When we examine the historical archive of the Chronicle, we observe two major waves of U.S. overseas programs. The first wave occurred during the late 1980s to the mid 1990s, mainly led by moderately ranked universities with less stringent admission standards. After almost a decade of relative inactivity, a new surge of overseas programs appears, with active participation by highly reputable research universities.

During the first wave, most overseas programs were apt to be supply driven and failed due to the lack of demand in the host countries. For instance, more than 30 U.S. universities established branch campuses in Japan during its economic boom in the late 1980s. These universities had low name recognition and almost all of these overseas programs were closed by the mid-90s due to low enrollment. In contrast, the current wave appears to be more demand driven, and the main suppliers of overseas programs are large research universities. Our data also reveal that schools with a greater percentage of foreign students on their home campuses are more likely to offer overseas programs. It appears that the best schools are making efforts to globalize their institutions and to provide higher education opportunities overseas.

Finance also plays a decisive role in offering overseas programs. Schools with greater tuition-dependency are more likely to offer overseas programs. The important role economics plays in these programs is also apparent in the location choices U.S. universities make. Our regression analyses indicate that two key determinants of the location choice are real GDP per capita and tertiary school age population. U.S. universities target countries with large potential markets where the local population has the economic means to pay for their services. They also follow U.S. multinational corporations' FDI flows and invest in business friendly countries with loose regulations.

Asia and the Middle East are the most popular destinations for overseas programs, but for different reasons. Asia provides a large market with strong local demand for U.S. style education. Middle Eastern countries often use their oil money to grant substantial financial aid to sponsoring

universities. In Africa, a continent desperately in need of improvement in both quantity and quality of higher education, very few U.S. overseas programs are reported in the Chronicle. If altruism were an important motive for the recent surge in U.S. overseas programs, we should have observed more media coverage of attempts to establish overseas programs there.[2]

Our analysis of tuition charges reveals that U.S. universities adjust their pricing to local conditions. They discount tuition less in countries with higher real GDP per capita. Undergraduate degree programs are discounted more than master degree programs because of greater local competition in the market for undergraduate degree programs. When universities reduce costs by forging local university partnerships and/or by obtaining financial support from local governments, they do not pass on the savings to local students in the form of lower tuition.

These results imply that the key drivers of U.S. universities' overseas programs are economics, not altruism. Universities seem to behave much like multinational corporations, at least when they make investments overseas.

II. Universities as Firms

Universities differ from for-profit corporations in various ways. Universities provide both private and public goods. Their two main products are knowledge creation and knowledge dissemination through research and teaching. Research results are freely available to most members of society and help stimulate economic growth. Knowledge dissemination increases human capital, and the benefits can be direct to those who receive higher education, or indirect to those who benefit from the economic growth attributable to the development and accumulation of human capital through higher education. The need for higher education has become more acute in the age of globalization, as knowledge-based workforces have become an essential ingredient in acquiring and maintaining a competitive edge.

Governance of universities is more complicated than governance of corporations. Most U.S. universities are organized as nonprofit entities.[3] Nonprofit universities receive more funding and gifts from public and private sectors. The Digest of Education Statistics (2007) reports that during the 2004-2005 academic year, total tuition revenue represented only 16.4% of total revenue for all

[2] It could well be that there are insufficient high school graduates who can handle course work offered by American universities, discouraging even the altruistic type.

[3] See Goldin and Katz (1999) for a review of the history of universities. Nonprofit organizations are preferred to for-profit organizations when consumers are uncertain about quality due to asymmetric information (Easley and O'Hara, 1983).

public degree-granting institutions and 29.5% for all private nonprofit degree-granting institutions in the U.S.

Unlike private enterprises with residual claim holders (stockholders), nonprofit universities have multiple stakeholders without a clearly defined pecking order, which leads to multiple objectives without well-defined priorities. Coleman (1973) compares universities to shells that encompass a variety of activities, including teaching, research activities supported by government and private organizations, and external consulting. These activities often create conflicts of commitment, leading to compromises in teaching and research effectiveness, although spillover effects (e.g., research and consulting experience benefiting the quality and effectiveness of teaching) may lessen the costs. Financial constraints inevitably impose compromises in faculty resource allocation. Thus, universities may have incentives to maximize their financial resources to reduce the need for compromising the quality in teaching and research activities.

Within a framework of multiple stakeholders and objectives, the choice of channels through which a university generates its revenues is endogenous. Consider a university that generates revenues from tuition, private gifts and endowments, and state subsidies to support research and teaching. The university may want to maximize the present value of the revenue-cost difference, not necessarily because it is profit maximizing, but because it wants to ensure its long term financial viability. The payoffs from knowledge creation and dissemination take a long time to be realized and are highly uncertain, yet they generate positive externalities to society. In turn, society supports these activities through gifts and endowments from the private sector and/or subsidies from local and federal governments. These supports are available only to nonprofit universities, because society expects for-profit universities to support their own profit generating activities.

If a university has a high level of intellectual capital from its past research accomplishments, academic traditions, and highly selective admission standards that have led to good reputation and a large number of prominent and loyal alumni, the revenue-cost difference will be higher if the school maintains its high reputation in both research and teaching than if it suddenly turns into a tuition-maximizing entity by compromising its standards on research and teaching. Thus, such schools will attempt to maintain their elite status and their activities appear less financially driven.

In contrast, a new university, equipped with low intellectual capital, may have little chance to receive private gifts and endowments to support high quality teaching and research. Unless it can obtain unusually large public subsidies from local governments or private gifts, which is not very

likely given its unproven track record, the revenue-cost difference will be higher if it forgoes costly research activities and maximizes tuition revenue by relaxing admission standards. Such universities may not survive if they follow elite universities' strategies of selective admission standards and pursuit of costly research activities.

Thus, we hypothesize that universities will self-select into either highly reputable institutions with high-quality teaching and research or largely tuition-dependent institutions that appear financially driven. We predict that these two types will follow different strategies in both knowledge creation and dissemination activities. Whereas the former will devote considerable resources to research and to maintain selective admission standards, the latter will maximize tuition revenues with relaxed admission standards.

An interesting question is which type is more likely to provide overseas degree programs for foreign nationals. The answer may not be clearly evident. The tuition-dependent type will view overseas programs as opportunities to increase tuition revenues and to distinguish themselves from rival schools in terms of international presence; thus, they will more actively pursue them. That is, the tuition dependent types are more willing suppliers of overseas programs. However, a successful, financially viable program requires the presence of demand for its services in the local economy. It is not clear how receptive the local market will be to a program offered by a U.S. university with moderate reputation. The more reputable type may be in greater demand, but may be less willing to supply overseas programs because of their concerns for quality control from a distance. They also have much to lose by putting their reputation at stake. However, if and when they do offer overseas programs, their ability to attract students is greater because of their global reputation. In the empirical section, we analyze the interplay of these supply and demand considerations by examining the characteristics of universities offering overseas programs and of countries hosting the programs.

In the remainder of this section, we provide an overview of the costs and benefits affecting the supply of- and demand for U.S. overseas programs.

II.A. Supply

II.A.1. Financial Benefits

The singular most obvious financial benefit of offering overseas programs is tuition revenue. Operating overseas programs, if successful, can also broaden a university's name recognition globally and attract foreign donors. Universities with moderate reputation may have little to lose

reputationally if their overseas programs are of low quality. Because they are more tuition dependent, their programs will be less selective, and each additional student enrolled will contribute to the revenue with relatively little increase in marginal costs.

Highly esteemed U.S. universities, by contrast, may be less willing to provide overseas programs because of their concerns for quality control, possible dilution of their brand names, and diversion of faculty resources from research. However, when foreign governments seek to expand higher education opportunities for their citizens through overseas programs, they are more likely to allow/invite highly ranked universities and may even entice them with financial subsidies. Consequently, successful programs are more likely to be in the disciplines in which these universities already enjoy comparative strengths.

II.A.2. Financial Costs

Universities need physical assets (e.g., classrooms and equipment) and human capital (e.g., faculty and staff) to establish overseas programs. However, compared to manufacturing firms, universities require fewer physical assets when they make foreign investments. Although this may help keep fixed costs relatively low, variable costs tend to be higher than domestic programs because faculty often garner extra compensation for teaching in overseas programs. For example, Carnegie Mellon University gives their U.S.-based faculty teaching on Qatar campus a 25% increase in salary and provides them with amenities.[4] The Global MBA Program at the University of Michigan pays its faculty an additional 18.75% of their base salary plus an overseas trip inconvenience fee of 2.5% to teach a ten-day, 2.25 credit hour course in Asia.

To cover higher costs, universities may have to pass on the additional costs in the form of a tuition surcharge, which lowers demand and keeps class sizes small. An alternative strategy is to hire local faculty and/or offer joint programs with local universities, which tends to lower the quality and prestige of the program. Some top ranked universities also may be able to convince local governments to provide financial support to cover costly overseas degree programs.

II.A.3. Non-pecuniary Benefits and Costs

An important benefit of offering overseas programs is broadening international perspectives of American faculty and students. U.S. faculty members benefit from face-to-face interactions with foreign students and researchers. They gain valuable international experience from staying abroad, which helps expand their scope of both teaching and research. But these benefits are not

[4] The Chronicle of Higher Education (February 2006): American's Hot New Export: Higher Education.

without costs. Faculty have to be away from home, spend less time on research, and teach in unfamiliar foreign surroundings, all of which make it difficult to secure a sufficient number of U.S. faculty on long term basis.

Overseas programs can also encourage American students to study abroad by making it easier. Courses are usually taught in English and students can transfer credits back to their home campuses. Such international presence gives home campus students more location choices to enrich their cultural experience, which may in turn make a university more attractive to potential applicants.

II.B. Demand

II.B.1. Alternative Choices

In developing countries, the university attendance rate of college-age students is below 15% compared to around 40% to 50% in developed countries.[5] To the extent that insufficient supply of higher education opportunities contributes to the low college attendance rate in developing countries, overseas programs provide a valuable service in satisfying the unmet demand. However, students in foreign countries have alternative educational choices. These include attending a local university and going abroad for their degrees.

Local Colleges

Students' college choices are highly sensitive to university rankings, as there is a universal belief that a degree from a higher ranked university will enable a graduate to find a better job with a higher salary (Brewer, Eide, and Ehrenberg, 1999; Black and Smith, 2006). Whether students perceive undergraduate overseas programs to be of higher quality than programs offered by their local colleges depends upon the reputation of the provider. If the provider is a top ranked American university, students are more likely to consider the program as better than domestic programs and will be attracted to it. However, most undergraduate overseas programs are offered by moderately ranked U.S. universities. These programs are not necessarily viewed as superior to domestic colleges and tend to be in low demand among top high school graduates. Moreover, many overseas programs hire local faculty members to teach, which may affect program quality.

Overseas programs usually offer courses in a limited number of disciplines, typically focusing on areas such as computer science and business, whereas local colleges offer a greater variety of courses in a wider range of disciplines. Because of their narrower offerings, overseas programs

[5] The Chronicle of Higher Education (May, 2007): The global campus, American colleges connect with the broader world.

may be deemed lacking true college experience, deterring many qualified students from enrolling. Furthermore, students may be concerned with the continuity of overseas programs. The uncertainty over whether an overseas program will continue to exist may pose a risk on the value of the degree, although the adverse effects may be largely mitigated by the longevity of the degree granting institution in the United States.

Studying in the U.S.

International students are attracted to U.S. campuses because of the perceived superior higher education system, which they believe will help achieve their career objectives. Studying in the U.S. also provides an interim means for those who want to immigrate to the U.S. It also gives students an opportunity to improve their English language skills, a highly valued commodity in the global market. To some students, experiencing American culture through their campus lives is almost as important as their college degrees. Those who highly value these non-degree experiences or those who attend American universities with the intent to stay permanently will not be attracted to overseas programs. Furthermore, degrees earned through overseas programs may be perceived as less prestigious and providing less access to the full university alumni network than those granted in the U.S., even when the degrees are identical.

However, attending a university in the U.S. requires higher direct and opportunity costs. Students have to spend several years away from their family and friends, incurring high traveling and living expenses. They also may have to risk their career opportunities with their current employers. Overseas programs offer a less expensive alternative to studying abroad, targeting students who want foreign degrees without leaving their homeland. Individuals unwilling to incur the higher expenses, unable to obtain visas to study in the U.S., and/or unwilling to leave their current jobs because of high opportunity costs (e.g., managers interested in executive MBA programs) are the primary targets of the overseas programs. Most of these overseas programs also offer the opportunity to experience American campus before graduation.

II.B.2. Host Country Environment

Overseas programs are more likely to be offered in countries where government policies are friendly in terms of regulation and/or financial support.[6] For example, many U.S. universities have recently established overseas programs in the Education City of Qatar and Knowledge Valley of United Arab Emirates (UAE) because of favorable government policies and generous financial

[6] See Green (2007) for a description of government policies regulating foreign providers of higher education.

support. Some Asian countries, such as Hong Kong, Singapore, and South Korea, are actively encouraging overseas programs by foreign universities in their effort to become regional education hubs.

III. Anecdotal Evidence

Because there is a dearth of scientific evidence on U.S. universities' overseas programs, our initial step is to read articles published in the Chronicle of Higher Education International Section about the overseas activities of U.S. universities. Overseas activities vary in terms of financial and reputational commitments. Student exchange programs and international research collaboration require the least commitment, while overseas degree programs, especially those with branch campuses and without foreign partners, require the most commitment. Universities with overseas programs often send their U.S. faculty to teach abroad and award degrees, which put their reputation at stake. Some of these programs are financially supported by foreign governments and partners, but many of them must be financially self-sufficient to avoid draining resources from home campuses. In this regard, these programs have to be run at least partially like business models.

When we examine the historical archive of the Chronicle, an interesting pattern emerges. Most of the Chronicle articles on overseas activities are published between the late 1980s and early 1990s, and more recently, begin in the early 2000s. The earlier articles are simple. They either announce initiation of new programs or report program failures and campus closures. Articles are short and the contents lack details. After almost a decade of sporadic coverage and relative silence about overseas activities, there is a resurgence of articles beginning in 2000, with rather extensive coverage of overseas programs initiated mostly by top ranked U.S. universities. These recent articles provide more details about the overseas programs, including how the deals are structured with foreign governments.

Why have elite U.S. universities suddenly started to offer overseas programs? Is this a second wave of overseas programs with different players? Or is the new spate of articles simply a resurgence of the first wave? To analyze these questions, we use the Integrated Postsecondary Education Data System (IPEDS) at the National Center for Education Statistics (NCES) and download the overseas enrollment data from IPEDS enrollment surveys conducted in 1986, 1987, 1994, 1995, 1996 and 1998. In these surveys, universities are asked to report their student

enrollment numbers on branch campuses in foreign countries. In 1986, 110 schools report overseas enrollment and by 1998 the number of schools reporting overseas enrollment shrinks to 61. The total overseas enrollment[7] on all branch campuses in 1986 is 21,090 students, peaks in 1995 at 48,043 students, and gradually decreases to 23,534 students in 1998. The majority of these overseas programs are started by lesser-known American universities and colleges without doctoral programs. Less than 5% of the programs during this time period are sponsored by top research universities with doctoral programs. IPEDS stopped overseas enrollment surveys after 1998, presumably due to a significant decrease in the number of overseas programs and a concomitant decline in media interest.

Although it is difficult to make a causal interpretation, an important phenomenon preceding the decline in the first wave of U.S. overseas programs is the spectacular failure of American overseas programs in Japan. During the Japanese economic boom in the late 1980s, more than 30 U.S. universities established branch campuses there, hoping their western-style education programs would attract sufficient Japanese students. However, most programs are closed by the mid 1990s due to low student enrollment. Temple University Japan is one of the rare survivors after 16 years of operation. It currently has about 3,000 students enrolled (IIE, 2007); however, at least until 2000, the branch campus reportedly lost $50 million a year.[8]

Most U.S. universities involved in these Japanese overseas programs had low name recognition and, as a result, they were not able to attract students who could get into the upper tier Japanese universities. Location was another contributing factor. A number of U.S. universities set up their programs in small towns lured by financial support from local governments, hoping to use the presence of U.S. overseas programs to stem the flight of their young people to larger metropolitan areas. However, these locations only made the programs less attractive to those who preferred to attend college in large cities. Language was also a problem. Even with English preparatory courses, Japanese students struggled to achieve sufficient English proficiency to enroll in degree programs. To make matters worse, many U.S. universities got into financial disputes with local partners, who often sacrificed academic integrity in exchange for tuition money. Some even committed outright financial fraud.[9] These problems contributed to the difficulty of running U.S. overseas programs, leading to eventual closure of most of the programs.

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[7] Total enrollment includes full-time and part-time students enrolled at the undergraduate, graduate, and professional degree levels.
[8] The Chronicle of Higher Education (June, 2000): Culture and unrealistic expectations challenge American campuses in Japan.
[9] The Chronicle of Higher Education (June, 2000): Culture and unrealistic expectations challenge American campuses in Japan.

During the recent resurgence in overseas programs by U.S. universities, however, the leading players are different. They tend to be well established, highly ranked research universities with doctoral programs. They also appear to be following the recent globalization trend, somewhat analogous to U.S. multinationals' FDI outflows.

There is a perception that U.S. universities are not as involved in FDI as MNCs, which derive about 30% of their total sales revenue from foreign affiliates. Because the education industry is operating in the knowledge based service sector, the appropriate comparisons are industries such as information and banking, which have less FDI.

Table I shows that contributions made by majority-owned foreign affiliates to U.S. firms' total sales revenue during 1999 through 2004 increased for most industries, including information and financial services. It also shows that for these knowledge based industries, the proportion of contributions made by foreign affiliates averages only about 15% of their total sales revenue.

Although we do not have sufficient tuition revenue data to make a general comparison, the case of University of Chicago Booth School of Business is illustrative. Chicago offers overseas Executive MBA programs in London and Singapore. According to its website, tuition revenue from the overseas programs represents about 14% of its total tuition revenue in 2006.[10] This percentage of revenue generated from foreign operations is quite comparable to that of the other knowledge based industries.

Of late, overseas programs getting the most press coverage are those set up by upper tier U.S. research universities in the Middle East (mainly Qatar and UAE). The Education City in Qatar, founded by the Qatar Foundation, spends $2 billion a year to host the branch campuses of Cornell University, Carnegie Mellon University, and others.[11] These universities offer undergraduate programs in their respectively renowned disciplines, and the Qatar Foundation pays for all the costs of these programs. For example, the Qatar Foundation offered Cornell's medical school $750 million to provide medical programs in the Education City.[12]

Money seems to be an important determinant in decisions to offer these overseas programs. According to one Chronicle article, the University of North Carolina declined to set up an overseas program in the Middle East region because the university was offered only $10 million, falling

[10] Our calculation is based on tuition data information obtained from the University of Chicago Booth School of Business website at http://www.chicagogsb.edu/. Because the overseas tuition includes costs of books, materials, and other fees, the 14% may be a slight overestimation of the actual contribution made by the school's overseas programs.
[11] The Chronicle of Higher Education (March, 2008): Qatar succeeded by offering foreign institutions money.
[12] The Chronicle of Higher Education (April, 2001): Cornell's medical school will open degree granting branch in Qatar.

short of the $35 million the university requested.[13] Another article reports that New York University chose Dubai over Abu Dhabi because Abu Dhabi did not meet the university's demand for a $50 million upfront fee, plus payment for construction and expenses.[14] Michigan State University will open a branch campus in the UAE and receive a line of credit with favorable terms in several million dollars from Tecom Investments.[15]

Asia is another popular destination for overseas programs. Hong Kong, Singapore, and South Korea welcome foreign universities' overseas degree programs with financial support and tax exemptions in their efforts to become regional higher education hubs. Many U.S., U.K., and Australian universities have responded by setting up degree programs there or are currently in negotiations to do so. However, local government support does not guarantee success. The University of New South Wales set up the first comprehensive foreign university in Singapore with partial financing from Singapore's Economic Development Board. It hoped to enroll 300 students in the first semester and had a target enrollment number of 15,000 students by 2020. It was able to attract only 148 students and projected a deficit of $15 million dollars. The branch campus was shut down in June 2007 after only three months of operation.[16] Johns Hopkins University's Biomedical Center in Singapore also closed in 2007 because it failed to attract well known scientists or enroll Ph.D. students despite $50 million dollars the Singapore government spent to support the program.[17]

Other Asian countries, especially those with large college age populations, such as China and India, also attract numerous U.S. universities. Although we were unable to find profiles of many of these programs, one Chronicle article reports that at least 66 such programs exist in India.[18] Again, the huge potential demand in these countries does not guarantee success for overseas programs. Some business schools failed in China because they could not attract enough executives with sufficient English proficiency to enroll in their programs.[19]

U.S. overseas programs in Europe are few relative to the size of the economy, although it shares the same Western culture and is a popular destination for FDI outflow from the U.S. Several factors weaken the competitive edge of U.S. overseas programs there. First, Europe enjoys

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[13] The Chronicle of Higher Education (September, 2002): Qatar courts American colleges.
[14] The Chronicle of Higher Education (March, 2008): An academic building boom transforms the Persian Gulf.
[15] The Chronicle of Higher Education (March, 2008): How the deal was done: Michigan State in Dubai.
[16] Channel NewsAsia (May, 2007): University of New South Wales Singapore campus to shut in June.
[17] The Chronicle of Higher Education (August, 2006): Singapore to close Johns Hopkins Biomedical Center.
[18] The Chronicle of Higher Education (February, 2008): In India, limits on foreign universities lead to creative partnerships.
[19] Business Week (May, 2008): China: Why western b-achools are leaving.

the presence of several prominent, highly-ranked universities. Second, it is easier for European students to come to the U.S. for higher education. Income disparities, culture, and language present lower barriers for Europeans. It is also much easier for Europeans to obtain U.S. visas in comparison to other nationalities, especially after 9/11. Furthermore, with the European Union's Bologna process, after 2010, EU students will be able to transfer their credits across accredited universities, providing flexibility in attending schools. For similar reasons, Australia and New Zealand attract relatively few U.S. overseas programs.

European and Oceania universities are also the main competitors of U.S. universities for foreign students. According to a report by Organization for Economic Cooperation and Development (OECD, Education at Glance, 2007), U.S. universities enrolled about 540,000 foreign students in 2005, making it the most popular destination for international students. U.K. and Australia are not too far behind, with their universities enrolling approximately 324,000 and 162,000 foreign students, respectively. These two countries have also been very active in setting up overseas programs.[20] The University of Nottingham was the first foreign university to set up a branch campus in China and the University of New South Wales was the first to set up branch campus in Singapore. However, recent overseas activities of Australian universities have been slowing down,[21] presumably due to low demand for their degrees.[22] Failures of U.K. overseas programs have also been reported in the media.[23]

For those few U.S. universities offering overseas programs in Europe, location is important. For example, Chicago initiated a part-time executive MBA program in Barcelona in 1994, but moved to London in 2005. London is the financial center for Europe. Chicago, best known for finance, wanted to move closer to their potential clients.

There are also a number of U.S. overseas programs in South America. The majority are set up by southern and western U.S. universities. Census data shows these states are more heavily populated with Hispanics.[24] The geographic and cultural proximity may explain why these universities are more likely to offer programs in South America.

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[20] New Zealand Ministry of Education (2001).
[21] The Chronicle of Higher Education (July, 2007): Australian universities cull overseas programs.
[22] The Chronicle of Higher Education (November, 2007): "Beer and beaches" image said to hurt Australia's higher-education "brand."
[23] Business Week (May, 2008): China: Why western b-schools are leaving.
[24] See: http://www.censusscope.org/us/map_hispanicpop.html

Few U.S. overseas programs in Africa are reported in the press.[25] Income disparities, cultural differences, language barriers, and insufficient high school graduates who can handle course work offered by American universities all may play a role in keeping U.S. overseas programs out of a continent that desperately needs improvement in the quantity and quality of higher education. If altruism were the primary motive for the recent surge in U.S. universities' overseas programs, we should observe more media coverage of their attempts to establish programs there.

IV. Empirical Analysis

To conduct an empirical investigation of the interplay of supply and demand, we collect data on overseas programs, university characteristics, and host country characteristics. We use these data to identify what type of universities is more likely to offer overseas programs, what host country characteristics are important in attracting U.S. university programs, and how the programs are priced overseas relative to their home campus tuitions.

IV.A. Sample Construction

IV.A.1. Data on overseas programs

Our dataset covers U.S. overseas programs from January 1988 through August 2008 because our online access to The Chronicle of Higher Education via Proquest Research Library starts in January 1988. The data is hand-collected using a three-step search process. We first search the Chronicle of Higher Education using terms "overseas," "offshore," and "branch campus." We read all newspaper articles and identify universities with overseas programs in foreign countries during this period. We supplement the data with Observatory on Higher Education (OBHE) breaking news and special reports headlines,[26] American Council on Education (ACE) publications (Green, 2007; Green, Luu, and Burris, 2008), and Institute of International Education (IIE) Open Doors Report 2007. We include an overseas program in our sample whether it is failed, struggling, or forthcoming (i.e., agreement reached). An overseas program may or may not have a partner in the host country, and it may have a "brick and mortar" presence in the host country or offer degree programs only through online education. We exclude those in a discussion stage, or those awarding only certificates rather than degrees.[27] All the degree programs included in our sample require

[25] Insider Higher Education (September, 2007) reports that Cornell University offers a master's degree program in Agriculture and Rural Development in Ethiopia with a World Bank grant.
[26] We read the publicly available headlines of their news articles and special reports on the OBHE website at www.obhe.ac.uk.
[27] Medical programs are an exception. Medical programs offered by U.S. institutions abroad usually do not award foreign students

significant commitment from U.S. universities (i.e., awarding degrees overseas) and put their reputation at stake.

For each overseas program we identify, we run additional Chronicle of Higher Education searches using the sponsoring university name and the location of the overseas program to obtain necessary information. When available, we record information on discipline, establishment date, curriculum, size, and financing of the programs.

For information concerning tuition and other program characteristics not covered in the articles, we search the websites of the overseas programs using the university's name and location of the program, and record additional information on tuition. Sometimes this additional search leads to more overseas degree programs offered by the same universities. Based on these sample selection processes and criteria, we identify 159 overseas programs offered by 86 U.S. universities in 46 countries. [28]

IV.A.2. Data on university characteristics

U.S. universities come in many different forms and shapes in both intellectual and physical contexts. To categorize university types, we rely on the Carnegie Basic Classification (2005),[29] which categorizes universities into very high research universities, high research universities, research universities, master's universities, baccalaureate colleges, associate's colleges, and other specialized institutions.

To obtain an objective measure of the ranking among research universities, we use the 2007-2008 university rankings from four sources[30]: American's best national universities from U.S. News & World Report[31], Top 100 Global Universities from Newsweek[32], THE-QS World University Rankings from The Times Higher Education Supplement (THES) and Quacquarelli

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degrees or certificates qualifying them to practice medicine in the U.S. However, the students are mainly trained by U.S. institutions, and we include these medical programs in our sample.

[28] The CGS (2007) survey of graduate schools finds that 29% of American graduate schools have established collaborative overseas degree programs. Our sample is smaller because their survey includes programs that award certificates. Our sample is also smaller than Green, Luu, and Burris's (2008) survey that identifies 101 U.S. degree granting institutions. The discrepancy here seems to be mainly due to media coverage bias; namely, overseas programs offered by lower level schools and small colleges are less likely to be reported. These omissions should not affect our results because our empirical analyses focus only on overseas activities of doctoral and master degree level institutions.

[29] The data is obtained from Integrated Postsecondary Education Data System (IPEDS) 2005 Institutional Characteristics Survey. Each UnitID is treated as a university. UnitID is a unique identification number assigned to postsecondary institutions surveyed by IPEDS. Institutions participating in Federal financial assistance programs are required to complete IPEDS surveys.

[30] Worldwide ranking sources can be found at Wikipedia (http://en.wikipedia.org/wiki/College_and_university_rankings).When these ranking sources include foreign universities, we re-rank American universities excluding foreign universities.

[31] Available at http://colleges.usnews.rankingsandreviews.com/college/national-search/c_final_tier+1 .

[32] Available at http://en.wikipedia.org/wiki/Top_100_Global_Universities.

Symonds (QS) [33] and Academic Rankings of World Universities from Shanghai Jiaotong University.[34] The last two are compiled by ranking agencies outside the United States (British and Chinese, respectively) and reflect the reputation and competitiveness of U.S. universities outside the U.S., which suits our purpose of analyzing U.S. degree programs abroad. The U.S. News & World Report and Newsweek rankings are the most widely cited and are readily available on the internet to all foreign students interested in U.S. universities. Moreover, these four rankings employ a broad range of ranking methodologies and measure different dimensions of university reputation. For example, U.S. News & World Report uses evaluations from peer institutions, faculty and financial resources, and student selectivity to construct the ranking. In contrast, Shanghai Jiaotong University bases its university ranking on the numbers of publications in *Science* and *Nature*, Nobel laureates, and Fields Medal winners. Relying on these four rankings takes into account both domestic and international reputation and alleviates some of the subjectivity inherent in using a single ranking methodology.

Table II shows the correlation between the four ranking sources. They are all highly correlated with each other. Yet, the correlations also indicate substantial variation across the rankings. This table also contains 2005 university endowment per full time equivalent (FTE) enrollment, *Endow_FTE*, which is obtained from 2005 IPEDS college finance survey. All four university rankings are highly correlated with the level of endowment, demonstrating the important role endowment plays in the development of university visibility and reputation.

There are 67 U.S. universities that appear at least once as top 50 in at least one of the four rankings.[35] We follow Kim, Morse, and Zingales (2009) and use the Borda Count method to average the relative rankings within this group of 67 universities. A university ranked first in a ranking study is given a score of 50; the second is given 49; and so on. We then take the simple average of the scores each university gets from the four ranking sources. The average Borda Count Scores (BCS) are reported in Table III, which shows a natural break point at the sixteenth university. We classify these top 16 research universities as "Elite", and the remaining 48 research universities (excluding specialized institutions) as "Good".[36] The other research universities not included in the list of 67 are defined as "Moderate." We follow Carnegie 2005 basic classification

[33] Available at http://www.topuniversities.com/worlduniversityrankings/results/2007/overall_rankings/top_400_universities/ .
[34] Available at http://www.arwu.org/rank/2007/ARWU2007_TopAmer.htm .
[35] In Newsweek's top 100 global university ranking, only 44 are U.S. universities.
[36] We exclude from our sample highly regarded but specialized institutions such as Rockefeller University, University of California at San Francisco, and University of Texas Southwestern Medical Center at Dallas.

and define all other universities that award at least 50 master's degrees and fewer than 20 doctoral degrees per year as "Master." To check the sensitivity to the choice of different ranking sources, we add six more ranking sources to classify university categories. The results (unreported) are robust.[37]

We retrieve university level enrollment and financial data for these universities from the IPEDS. We use a number of IPEDS surveys, including its Institutional Characteristics Surveys, Enrollment Surveys, and Finance Surveys. From these sources we construct the following variables: full time equivalent enrollment*, Enrol_FTE*, which is full time enrollment plus 0.38[38] times part-time enrollment; *Part_Time*, percentage of part-time enrollment to total enrollment;[39] *Non_Resid*, percentage of nonresident alien enrollment to total enrollment; tuition revenue dependence, *Tui_Dep*, the ratio of tuition revenue to total revenue;[40] and university endowment, *Endow_FTE*, the market value of endowment assets divided by full time equivalent enrollment.

IV.A.3. Data on host country characteristics

We obtain host countries' real gross domestic product (GDP) per capita, *GDP_PPP,*[41] and growth rate of real GDP per capita, *Growth,* in years 1999 through 2003 from Penn World Tables (Heston, Summers and Aten, 2006). The tertiary school age population, *Stu_Pop,* in years 1999 to 2003 is from United Nations Educational Scientific and Cultural Organization (UNESCO) Institute for Statistics Data Center. The U.S. FDI outflows to other countries from 1999 to 2003 are obtained from Bureau of Economic Analysis (BEA) website. We also obtain measures of government stability *Gov_Stab*[42] and strength of legal system *Law_Order*[43] from the International Country Risk Guide in years 1999 to 2003 (Political Risk Services Group) and the ease of doing

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[37] The six additional university ranking sources are: Faculty Scholarly Productivity Index from Academic Analytics, Top American Research Universities from the Center for Measuring University Performance at Arizona State University, United States National Research Council Rankings, Washington Monthly College Rankings, Avery et al. (2005), and Webometrics Ranking of World Universities by the Cybermetrics Lab. There are 95 universities that appear at least once as top 50 in at least one of the 10 rankings. We use the Borda Count method to average the relative rankings within this group of 95 universities. We classify the top 31 universities as "Elite", and the remaining 64 schools as "Good." The other research universities not included in the list of 95 are defined as "Moderate." We follow Carnegie 2005 basic classification and define all other universities that award at least 50 master's degrees and fewer than 20 doctoral degrees per year as "Master." All our empirical results remain quantitatively the same.

[38] This number is the average full time equivalent of part-time enrollment reported in IPEDS 2005 Enrollment Survey.

[39] Total enrollment is the sum of full time enrollment and part-time enrollment.

[40] Total revenue includes tuition revenue; revenue from federal, state, and local governments; endowment income; private gifts and grants; sales and services income; auxiliary income; hospital income; independent operations income; investment income; and others.

[41] It is measured in 2000 constant international dollars. An international dollar has the same purchasing power as U.S. dollar over U.S. GDP.

[42] It ranges from 1 to 12 with 12 as the highest governance stability.

[43] It ranges from 1 to 6 with 6 as the strongest judicial system.

business index *Ease_Bus* in years 2004 to 2009 from the Doing Business website.[44]

IV.B. Summary statistics on overseas programs, discipline and degrees, and financial and enrollment data

Table IV reports the number of universities with overseas programs, separately for nonprofit public, nonprofit private and for-profit universities in each of the seven categories: Elite, Good, Moderate, Master, baccalaureate colleges, associate's colleges, and other specialized institutions. In terms of percentage, elite universities are dominant players, with 66.7% of public universities and 53.8% of private universities having overseas programs. It also shows relatively higher participation rates by public research universities than by their private counterparts. This is because relative to private universities, public universities face greater operational constraints imposed by external stakeholders (e.g., local governments and state legislators). For example, they are often required to give preferential treatment to in-state students in terms of tuition and admission standards. These constraints no longer apply when these public universities go abroad, providing stronger incentives for public universities to venture abroad.

Table IV also shows that less than 1% of schools belonging to the categories of baccalaureate colleges, associate's colleges, and other specialized institutions offer overseas programs. This extremely low percentage may be due partially to the lack of press coverage on those institutions. However, the Chronicle usually covers activities by even very small and little known colleges if the activities are newsworthy. Among for-profit universities, none belong to the Elite or Good universities, and most belong to Associates or Others. Out of 2,764 for-profit universities, we are able to identify only seven that offer overseas programs, with five belonging to Masters. There are probably many more overseas programs offered by for-profit universities, which are not covered by the press and, hence, are not identified through our search process. Based on these data considerations, we focus our investigation only on nonprofit universities in the Elite, Good, Moderate, and Master categories.

Table V shows the number of overseas degree programs offered by the four categories of universities and by nine broadly defined disciplines. Arts & Sciences includes foreign languages, economics, physics, and others. Engineering includes mechanical engineering, chemical

[44] Available at http://www.doingbusiness.org/CustomQuery/ . The ease of doing business index ranks business regulations for 181 countries. It covers ten aspects including starting a business, dealing with construction permit, employing workers, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts, and closing business. A higher ranking means simpler regulation and stronger protection of property rights.

engineering, material engineering, and other traditional engineering programs. EECS refers to electrical engineering, computer science, and IT programs. Business includes finance, accounting, marketing, and management. Public affairs include international relations and public policy. Medicine includes medical education, nursing, and health care. Other includes film, theater, and hotel management.

Panel A shows that among the 91 undergraduate overseas programs, only one is offered by Elite universities. The main suppliers of the undergraduate programs are Master universities with 70% of market share. In contrast, Panel B shows that Elite universities are more active in offering graduate level programs, offering 9% of the master's degree programs. Master universities are still the biggest suppliers, offering 48% of the master's degree programs. Although not included in the table, Master universities are much more likely to offer both undergraduate and graduate programs in a variety of disciplines at the same location.

In terms of discipline, Business and EECS are by far the most popular majors offered in overseas programs. Finally, Panel C shows U.S. universities offer significantly fewer doctoral-level overseas programs, perhaps because they require substantial research expenditures without generating sufficient tuition revenue.

Table VI shows the average university financial and enrollment data in years 1995 to 2005 by university category and by whether or not they have overseas programs. Higher-ranked schools are generally larger and better endowed than lower level schools. Private schools are better endowed, depend more on tuition revenue, are smaller, have more nonresident alien students, and have more part-time students than public schools. This table also shows that universities with overseas programs are larger and more dependent on tuition revenue.

IV.C. Regression Results

IV.C.1. Likelihood of having overseas programs

Our first inquiry is what university characteristics help explain the likelihood of a university having overseas programs. For this purpose, we use the following probit specification:

$$Pr\ (overseas_i) = G\ (\beta_0 + \beta_1 * Enrol\_FTE_i + \beta_2 * Part\_Time_i + \beta_3 * Non\_Resid_i + \beta_4 * Tui\_Dep_i + \beta_5 * Log(Endow\_FTE)_i + \beta_6 * Reputation_i + \beta_7 * Public_i + \beta_8 * interaction\ terms_i + \varepsilon_i)$$

The dependent variable *Pr (overseas)* is equal to 1 if a university has overseas programs and 0 otherwise. *Enrol_FTE* is full time equivalent enrollment and measures the size of a university. *Part_Time* is the percentage of part-time student enrollment. *Non_Resid* is the percentage of

nonresident alien enrollment and measures a university's openness to foreigners. *Tui_Dep* is tuition revenue as a percentage of total revenue. Log (*Endow_FTE)* is the log value of university endowment per full time equivalent student. *Reputation* is proxied by indicator variables, *Elite, Good,* and *Moderate*. *Public* is an indicator variable for public university. We also include interaction terms between university ranking categories and the *Public* indicator. Subscript *i* refers to university *i*. G is the probit cumulative distribution function.

Because overseas programs affect tuition revenue, expenditure, and the percentage of nonresident alien enrollment, we lag all financial and enrollment variables by using 1995 university enrollment and financial data. Of the 144 current overseas programs offered by advanced degree awarding institutions, only four existed in 1995. Furthermore, both public and private schools followed the same accounting standard (the Old Form) at that time, making their financial data more directly comparable.[45] As a robustness check, we also use 2005 data as independent variables in unreported regressions. The results are quantitatively the same.

When universities have missing data in 1995, we use the average values of universities in the same category (in terms of reputation and the public/private classification) in 1995. Table VII presents the summary statistics of the 1995 university enrollment and financial data.[46] The 1995 data are highly correlated with their 2005 data, indicating persistency in university characteristics.

Table VIII reports the estimates using probit regression.[47] University size, measured by full time equivalent enrollment, has a positive and significant effect on the probability of having overseas programs, indicating larger universities are more likely to offer overseas programs. A 1,000 increase in full time equivalent enrollment increases the probability of having an overseas program by 0.8%, holding all other variables constant at the mean. This impact of size is non-trivial, considering that the likelihood of sponsoring overseas programs for an average university[48] is only 5.33%. Nonresident enrollment also has a positive and significant effect on the likelihood of having overseas programs. A 1% increase in nonresident enrollment increases the

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[45] Public institutions used the Old Form until 2002, and were required to follow New GASB no later than 2004. Private institutions used the Old Form until 1997, when they switched to FASB. These accounting standards differ in their treatment of revenue and expenditure composition.

[46] The average tuition dependency in Table VII is much higher than those reported by Digest of Education Statistics (2007) for the academic year 2004 - 2005. The difference is mainly due to the difference in computing the average. The averages reported by DES are value-weighted—calculated as total tuition revenue of all public (or private nonprofit) institutions divided by total revenue of all public (or private nonprofit) institutions, whereas the average in Table VII is equal weighted. Thus, the DES averages give greater weights to top tier, larger schools with greater endowment, which Table VI shows are less tuition dependent.

[47] We also estimate OLS and Logistic regressions. The results (unreported) are quantitatively the same.

[48] An average university means all independent variables are held at their mean values. Mean values of independent variables are reported in Table VII.

probability of having overseas programs by 0.4%, holding all other variables constant at the mean. Tuition revenue dependence has a significant positive effect as well.[49] A 1% increase in tuition revenue dependence increases the likelihood of having overseas programs by 0.1%, holding all other variables constant at their mean. Elite universities are more likely to have overseas programs. Moving from Master to the Elite category increases the likelihood of having overseas programs by 44.9% for private schools, holding all other variables constant at their mean.[50]

These results suggest that the most active participants in overseas programs are large Elite research universities. Schools more open to foreign students are also more likely to have overseas programs. It appears that the best schools are making efforts to globalize their institutions and to provide higher education opportunities overseas.

The regression estimates also indicate that universities with higher tuition dependency are more likely to have overseas programs, demonstrating the important role finance plays in the decision to offer them. How much economics matter in offering of overseas programs is the subject of investigation in the next two sections.

IV.C.2. Location choice

If finance plays an important role, universities' location choice may not be much different from those of multinational corporations making FDI. Thus, to examine how host country characteristics are related to the location of overseas programs, we follow the international trade literature. Specifically, we relate the number of overseas programs in a host country to measures of economic development, the recent economic growth rate, the size of market for higher education, the U.S. outflow of FDI, and other local environmental factors by estimating the following regression:[51]

$$Density_j = \beta_0 + \beta_1 * GDP\_PPP_j + \beta_2 * Growth_j + \beta_3 * Stu\_Pop_j + \beta_4 * FDI_j + \beta_5 * Gov\_Stab_j + \beta_6 * Law\_Order_j + \beta_7 * Ease\_Bus_j + \beta_8 * Continent_j + \varepsilon_j$$

Density measures the number of overseas programs located in host country j. It includes all

[49] We also use two alternative measures of tuition dependency that take into account of student financial aid. The first is the ratio of tuition revenue net of financial aid to total revenue; the second ratio is based on the same numerator divided by total revenue net of financial aid. The results (unreported) are quantitatively the same.

[50] We are not interpreting the marginal effects of the interaction terms, because we have three interaction terms in the probit regression. Interpreting interaction effect in nonlinear models is complicated and the widely-used Norton, Wang, and Ai (2004) interaction effect correction can only be applied to probit specification with one interaction term. Not correcting for interaction effect does not affect the marginal effects of other independent variables.

[51] As a robustness check, we also estimate a conditional (fixed-effect) logit and a standard logit model with clustered standard errors (at university level) by relating a university's probability of having overseas programs in a host country (1 if having overseas programs in the host country and 0 otherwise) to host country characteristics. The results (unreported) are very similar.

overseas degree programs offered by advanced degree awarding U.S. universities in that country. As a robustness check, we include overseas programs offered by all categories of universities and colleges. The results (unreported) do not change.

All independent variables are averaged values from 1999 to 2003 except for *Ease_Bus*, which is available only from 2004 to 2009. *GDP_PPP* is the host country real gross domestic product (GDP) per capita. *Growth* is the growth rate of *GDP_PPP*. These two variables measure the level and the slope of economic development of host country j. *Stu_Pop* is the tertiary school age population, which measures the potential size of the host country's higher education market. *FDI* is U.S. foreign direct investment outflow to host country j. *Gov_Stab* is government stability of the host country, which is a proxy for political risk. *Law_Order* measures the strength of judicial system and *Ease_Bus* measures the ease of conducting business in the host country. *Continent* is a set of dummy variables that indicates whether the host country j is located in Africa, Asia, Europe, Middle East,[52] North America (Canada), and Oceania. We would have liked to include the likelihood of obtaining local financial support and the quality and openness of local higher education markets; unfortunately, we can obtain such data only for a handful of countries, making it impossible to conduct meaningful tests.

Table IX reports the regression estimates. We use the Negative Binomial model because the variance of the dependent variable (2.68) is much larger than the mean (0.77). A likelihood ratio test confirms the existence of over-dispersion.

The regression estimates in Table IX indicate that economics play an important role in location decisions of U.S. universities. The two significant variables, the level of GDP per capita and student population, are both critical ingredients for financial viability. U.S. universities target countries with large potential markets where the local population has the economic means to pay for their programs.

The regression estimates imply that a one thousand dollar increase (in 2000 constant international dollars) in real GDP per capita increases the expected number of overseas programs in a country by 7.1%, holding all other variables constant. The size of the local market also has an important impact. An increase in the tertiary school age population by one million increases the expected number of overseas program in a country by 4.4%, holding all other variables constant.

[52] Following the IIE Open Doors 2007, the Middle East region includes Bahrain, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Palestinian Authority, Qatar, Saudi Arabia, Syria, United Arab Emirates, and Yemen.

U.S. universities also seem to follow U.S. FDI outflow, perhaps because they regard the countries with close trade relationships with the U.S. as having friendlier environments for U.S. entities to conduct business and having higher demand for U.S. style higher education. An increase of one billion dollars (in 2000 constant international dollars) in U.S. FDI outflow increases the expected number of overseas programs in a country by 4.9%.

U.S. universities also are more likely to have overseas programs in countries with business friendly environments and weaker regulations. A one point improvement in the ease of doing business index[53] increases the expected number of overseas programs by 1.6%, and a one point increase in the strength of judicial system[54] decreases the expected number of overseas program by 31.6%. We doubt that U.S. universities purposefully target countries with weaker judicial systems; rather, the correlation seems to be due to the fact that de-facto barriers against setting up overseas programs are less effective in countries with weaker judicial systems.

Table IX also shows that Asian and Middle Eastern countries are more popular destinations for overseas programs. U.S. universities offer more overseas programs in Asia because of its large market size for higher education and greater local demand for U.S.-style higher education. The main attraction to the Middle East appears to be its financial support with oil money.

To examine whether geographical and cultural proximity also matter when universities make decisions about location, we divide U.S. universities into four regions according to U.S. Census Bureau geographic locations: Northeast, Midwest, South and West.[55] Table X tabulates the number of overseas programs located in the seven continents by the region. It shows that Asia and Europe have more or less equal representation from all four regions (relative to the total number of overseas programs offered by universities in each region). The Middle East has a high representation of universities from the Northeast region. Middle Eastern countries tend to target top U.S. universities with substantial financial aid and the Northeast region has more top ranked universities. The only indication of cultural and geographic proximity affecting location decision is the relatively higher representation of universities from the South and West regions in Latin America (relative to the total number of overseas programs offered by universities in each region). In short, although geographic and cultural distance may matter, the overriding factor in location

[53] This variable ranges from 1 to 181, where 1 is the country where it is easiest to do business.
[54] This variable ranges from 1 to 6, where 6 indicates the strongest judicial system.
[55] Northeast states include ME, NH, VT, MA, CT, NY, NJ, PA, and RI. Midwest states include MI, OH, IN, IL, WI, MN, IA, MO, KS, NE, SD, and ND. South states include TX, OK, AR, LA, MS, AL, TN, KY, GA, FL, SC, NC, VA, WV, DC, MD, and DE. West states include WA, OR, CA, NV, ID, UT, AZ, NM, CO, WY, MT, AK, and HI.

decisions seems to be economics.

IV.C.3. Tuition discounts

If universities behave like firms, they will adjust product pricing to suit the local environment. In this section we investigate this pricing issue by focusing on tuition discounts. We hypothesize that universities adjust their tuition based on affordability; that is, they offer higher tuition discounts in countries with lower income to attract a sufficient number of students. Other factors relevant to the local demand include the reputation of the sponsoring university, the degree level, and the discipline.

Tuition discounts may also be influenced by the cost structures of overseas programs. Costs can be lowered by inviting a local university as a partner and by employing local faculty at lower salaries than U.S. faculty. Costs can also be lowered by obtaining financial aid from the local government and/or a third party such as the World Bank. Thus, we use the following specification to analyze overseas program tuition:

$$Discount_{ijk} = \beta_0 + \beta_1 * GDP\_PPP_j + \beta_2 * Stu\_Pop_j + \beta_3 * Gov\_Stab_j + \beta_4 * Reputation_i + \beta_5 * Public_i + \beta_6 * Prof_k + \beta_7 * BA_k + \beta_8 * Joint_k + \varepsilon_{ijk}$$

$Discount_{ijk}$ is 1 minus the ratio of overseas sub-program k's tuition in host country j to the tuition of a comparable program at the same degree level and in the same discipline on university i's U.S. home campus. Because some universities offer several degree programs in multiple disciplines at the same location and tuition varies across degree levels and disciplines, we break down an overseas program at each location into sub-programs by their degree levels and disciplines. We make tuition comparable across programs and locations by assuming that a student takes, on average, four 3-credit courses per semester, or equivalently, eight 3-credit courses per academic year.[56]

The average tuition discounts are 21%, 26%, 28%, and 8% for Master, Moderate, Good, and Elite universities, respectively. The discounts are significantly greater than zero at the 1% level for all types except Elite universities.

$Prof_k$ is an indicator variable for professional schools, equal to 1 if the overseas sub-program is in engineering, EECS, business, law, medicine, or other professional disciplines, and 0 otherwise. BA_k is equal to 1 if the overseas sub-program is a bachelor's program and 0 otherwise. $Joint_k$ is equal to 1 if the overseas sub-program has a partner university in the host country or has received

[56] If overseas program tuition is in foreign currency, we convert it to U.S. dollars using the exchange rate as of August 29, 2008.

full or partial local financial support. This variable is our proxy for lower cost. Other independent variables are defined earlier.

Table XI reports the OLS regression estimates with robust and clustered (at the university level) standard errors. We exclude overseas Ph.D. programs, because doctoral students often work as research and/or teaching assistants, receiving financial stipends and tuition waivers.

Three variables show statistical significance: real GDP per capita, Good university category, and bachelor's degree programs. Overseas programs offer lower tuition discounts in higher income countries. An increase in real GDP per capita by a thousand dollars (2000 constant international dollar) leads to a 2.2% decrease in tuition discount, holding all other variables constant.

Tuition discounts for Bachelor's programs are 25.5% more than master's programs, holding all other variables constant. This greater discount is mainly due to the stiffer competition undergraduate degree programs face from local universities, relative to advanced degree programs.

Indicator variable *Good* has a significant effect on tuition discounts, while *Elite* and *Moderate* do not. Moving from the Master university group to the Good group increases tuition discounts by 23.6%, holding all other variables constant. Even though tuition at Elite universities' home campuses are much higher than Masters, Elites do not offer higher tuition discounts because of their high visibility and reputation. Lacking the same visibility and reputation, Good universities may have to offer significantly higher tuition discounts to attract a sufficient number of students.[57]

Finally but equally interesting, our proxy for lower costs, *Joint,* has no effect on tuition discounts, implying that U.S. universities do not pass on any cost savings to local students in the form of lower tuition. This pricing behavior is similar to that of profit-seeking corporations.

V. Conclusion

This paper contains a selection bias by design. We purposefully chose to examine U.S. university overseas programs because if universities ever behave like firms, they are more likely to do so when they make investments overseas. When operating abroad, universities are not bound by the same set of implicit and explicit contracts entered over time with domestic stakeholders.

[57] Differences in home campus tuition charged by Moderate and Master level universities are much smaller than those between Good and Master; hence, Moderate schools may not need to offer significantly more tuition discounts than Master schools. The average private university home campus tuitions for the 2007 – 2008 academic year are $35,082, $34,941, $25,220, and $21,084 for Elite, Good, Moderate, and Master groups, respectively. The corresponding averages for public schools are $8,259, $8,030, $6,318, and $5,374.

We unearth an abundance of evidence in support of our hypothesis that U.S. universities behave like firms when they make overseas investments. Universities with higher tuition dependency are more likely to offer overseas programs. They target markets with a large pool of potential clients with affordability, and with business friendly environment and loose regulation. Upon entering these markets, they price their products to suit local affordability and local competition. Furthermore, when they save costs by forming local partnerships or by obtaining local financial support, we find no evidence that they pass on the savings to local clients. These behaviors are exactly what one would expect from profit-seeking multinational firms in their foreign direct investments.

These findings do not necessarily imply that U.S. universities behave like firms in their domestic operations, however. Because nonprofit universities face various constraints from explicit and implicit contract entered over time with multiple stakeholders, their domestic behavior may differ substantially from those of private enterprises with residual claimholders. Nevertheless, as is true in all organizational forms, the behavior of universities reflects the governance structure, self-interests, and priorities of those who govern the institutions. One can easily think of similarities in governance structures between large universities and large, diffusely held public corporations with clear separation of ownership and control: centralized administration, bureaucratic behavior, me-first mentality among those who participate in the governance process, and finally, but most important, the need to ensure sustainability by ensuring sufficient financial resources. Whether these similarities lead large modern U.S. universities to emulate profit-seeking public corporations in operating home campuses within the U.S. border is an interesting subject for future research.

Finally, our results have an implication on how U.S. universities' overseas programs affect domestic programs. In a recent hearing by the House Committee on Science and Technology, lawmakers questioned whether university ventures abroad are undermining American economic competitiveness. Rep. David Wu of Oregon says that he "wanted to be sure that colleges that established branches overseas did not price themselves too cheaply and 'start giving away the store'."[58] Our results suggest that the public can rest assured that U.S. universities are not diverting resources to the benefit of overseas students. Quite the contrary, U.S. universities seem to price their products strategically, like U.S. multinational corporations, using their competitive edge in

[58] The Chronicle of Higher Education (August, 2007): House panel quizzes universities on value of overseas ventures.

attempts to generate more resources for the benefit of their home institutions.

References

Avery, C., Glickman, M.E., Hoxby, C., and Metrick, A. (2005). A revealed preference ranking of U.S. colleges and universities. NBER Working Paper No. W10803.

Bhandari, R. and Chow, P. (2007). Open Doors 2007: Report on International Educational Exchange. New York: Institute of International Education.

Black, D.A., and Smith, J.A. (2006). Estimating the returns to college quality with multiple proxies for quality. Journal of Labor Economics 24(3), 701-728.

Bureau of Economic Analysis: International economic account data at http://www.bea.gov/international/index.htm .

Brewer, D.J., Eide, E.R., Ehrenberg, R.G. (1999). Does it pay to attend an elite private college? Journal of Human Resources 34(1), 104-123.

The Carnegie Classification of Institutions of Higher Education (2005). The Carnegie Foundation for the Advancement of Teaching.

Coleman, J. S. (1973).The university and society's new demand upon it. In Carl Kaysen (Ed.).Content and Context, 359-399. McGraw-Hill, New York.

Council of Graduate Schools (CGS). (2007). Findings from the 2007 CGS international graduate admissions survey. Phase II: Final applicants and initial offers of admission. At http://www.cgsnet.org/portals/0/pdf/R_IntlAdm07_II.pdf .

Dichev, I. (2001). News or Noise? Estimating the Noise in the U.S. News University Rankings. Research in Higher Education 42(3), 237-266.

Digest of Education Statistics, 2007 (March 2008). (Washington DC: NCES), NCES No. 2008022.

Doing Business (2004-2008). At http://www.doingbusiness.org/CustomQuery/

Easley, D., and O'Hara, Maureen (1983). The economic role of the non-profit firm. Bell Journal of Economics 14(2), 531-538.

Goldin, C. and Katz, L.F. (1999). The shaping of higher education: The formative years in the United States, 1890 to 1940. Journal of Economic Perspectives 13(1), 37-62.

Green, M. (2007). Venturing abroad: Delivering U.S. degrees through overseas branch campuses and programs. American Council on Education, Washington DC.

Green, M., Luu, D.T., and Burris, B. (2008). Mapping internationalization on U.S. campuses: 2008 ddition. American Council on Education, Washington, DC.

Heston, A., Summers R., and Aten, B. (2006). Penn World Table Version 6.2, Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania.

Insider Higher Education (September, 2007): Cornell Degree Offered in Africa.

Kim, E.H., Morse, A., and Zingales, L. (2009). Are elite universities losing their competitive edge? Forthcoming, Journal of Financial Economics.

Knight, J. (2006). Crossborder education: An analytical framework for program and provider mobility. In J.C. Smart (Ed.). Higher Education: Handbook of Theory and Research, Volume 21, 345-395. Dordrecht, The Netherlands: Springer.

National Center for Education Statistics: Integrated Postsecondary Education Data System at http://nces.ed.gov/ipedspas/.

New Zealand Ministry of Education (2001). New Zealand's Offshore Public Tertiary Education Programs at http://www.minedu.govt.nz/educationSectors/InternationalEducation/Initiatives/Offshore%20Education/NZsOffshorePublicTertiaryEducationProgrammes.aspx.

Newsweek university ranking at http://en.wikipedia.org/wiki/Top_100_Global_Universities.

Norton, E. C., Wang, H., and Ai, C. (2004). Computing interaction effects and standard errors in logit and probit models. Stata Journal 4: 103-116.

Observatory on Higher Education (2002-2008): breaking news and special reports headlines publically available to nonsubscribers at http://www.obhe.ac.uk/news/ and http://www.obhe.ac.uk/products/reports/.

Organization for Economic Cooperation and Development (OECD). Education at a Glance, 2007 at http://www.oecd.org/dataoecd/4/55/39313286.pdf.

Political Risk Services Group (PRS, 1999-2003). International Country Risk Guide. East Syracuse, NY.

Shanghai Jiaotong University ranking at http://www.arwu.org/rank/2007/ARWU2007_TopAmer.htm.

Times Higher Education Supplement (THES) and Quacquarelli Symonds (QS) university ranking at http://www.topuniversities.com/worlduniversityrankings/results/2007/overall_rankings/top_400_universities/.

United Nations Educational Scientific and Cultural Organization: Institute for Statistics Data Center at http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=143&IF_Language=eng.

U.S. News & World Report university ranking at http://colleges.usnews.rankingsandreviews.com/college/national-search/c_final_tier+1.

Wikipedia: College and university rankings at http://en.wikipedia.org/wiki/College_and_university_rankings.

Table I. U.S. foreign direct investment (selected industries)

Majority Owned Foreign Affiliates (%)	1999	2000	2001	2002	2003	2004	Average
All industries	27.1	27.3	27.1	28.4	30.5	31.8	28.7
Mining	48.6	25.0	25.0	35.3	38.9	37.3	35.0
Utilities	12.8	14.9	15.0	15.7	11.6	10.2	13.4
Manufacturing	34.7	35.4	36.1	37.8	40.2	41.7	37.7
Wholesale trade	28.7	26.6	25.8	19.2	21.6	23.1	24.2
Information	13.1	12.4	12.3	13.8	14.8	17.2	13.9
Finance (except depository institutions) and insurance	15.3	17.8	17.3	17.4	18.5	18.8	17.5
Professional, scientific, and technical services	36.8	34.7	36.2	36.4	40.2	38.7	37.2
Other industries	13.0	14.2	15.3	15.8	16.7	15.8	15.1

Note: This table shows the percentage of sales from majority-owned foreign affiliates, calculated as sales revenue of majority-owned foreign affiliates divided by the total sales of U.S. parent firms and majority-owned foreign affiliates. The numbers are based on worldwide sales of U.S. parent firms and majority-owned foreign affiliates from 1999 to 2004 obtained from Bureau of Economic Analysis website.

Table II. Correlations among four university ranking sources and endowment per full time equivalent enrollment (Endow_FTE)

	USNews	NewsWeek	Times	SJTU
NewsWeek	0.61			
Times	0.76	0.72		
SJTU	0.54	0.90	0.70	
Endow_FTE	0.68	0.48	0.57	0.45

Note: USNews refers to America's best national universities from U.S. News & World Report, NewsWeek refers to Top 100 Global Universities by Newsweek, Times refers THE-QS World University Rankings from The Times Higher Education Supplement (THES) and Quacquarelli Symonds (QS), and SJTU refers to Academic Rankings of World Universities from Shanghai Jiaotong University. Endow_FTE is the 2005 market value of endowment assets divided by full time equivalent enrollment obtained from 2005 IPEDS college Finance Survey.

Table III. Relative ranking of universities using average Borda Count Scores (BCS)

Institution Name	BCS	Diff	Institution Name	BCS	Diff
Harvard University	50.00	-	University of Minnesota-Twin Cities	14.50	0.00
Yale University	46.75	-3.25	University of North Carolina at Chapel Hill	14.50	0.00
California Institute of Technology	46.25	-0.50	Rice University	13.25	-1.25
Stanford University	46.25	0.00	University of Rochester	13.00	-0.25
Massachusetts Institute of Technology	46.00	-0.25	Boston University	12.75	-0.25
Princeton University	44.75	-1.25	University of Virginia-Main Campus	12.50	-0.25
Columbia University in the City of New York	43.75	-1.00	Purdue University-Main Campus	10.50	-2.00
University of Chicago	42.25	-1.50	Case Western Reserve University	10.50	0.00
University of Pennsylvania	41.25	-1.00	Georgetown University	10.25	-0.25
University of California-Berkeley	40.25	-1.00	University of California-Davis	10.25	0.00
Cornell University	38.50	-1.75	North Carolina State University at Raleigh	9.25	-1.00
Duke University	38.00	-0.50	University of Notre Dame	8.25	-1.00
Johns Hopkins University	36.00	-2.00	Georgia Institute of Technology-Main Campus	7.50	-0.75
University of California-Los Angeles	35.00	-1.00	Rockefeller University	7.25	-0.25
University of Michigan-Ann Arbor	33.50	-1.50	Pennsylvania State University-Main Campus	7.25	0.00
Northwestern University	33.25	-0.25	University of California-Irvine	6.75	-0.50
University of California-San Diego	29.00	-4.25	Tufts University	5.75	-1.00
University of Wisconsin-Madison	28.00	-1.00	Wake Forest University	5.75	0.00
University of Washington-Seattle Campus	27.75	-0.25	Michigan State University	5.25	-0.50
New York University	26.00	-1.75	University of Texas Southwestern Medical Center at Dallas	5.25	0.00
Washington University in St Louis	24.75	-1.25	Brandeis University	5.00	-0.25
Brown University	24.25	-0.50	University of Florida	5.00	0.00
Carnegie Mellon University	23.00	-1.25	College of William and Mary	4.75	-0.25
University of Illinois at Urbana-Champaign	22.50	-0.50	Texas A & M University	4.75	0.00
Vanderbilt University	22.00	-0.50	Ohio State University-Main Campus	4.50	-0.25
The University of Texas at Austin	22.00	0.00	Boston College	4.25	-0.25
University of California-San Francisco	19.75	-2.25	Rutgers University-New Brunswick/Piscataway	4.00	-0.25

University of Maryland-College Park	16.75	-3.00	Lehigh University	4.00	0.00
University of Southern California	16.75	0.00	University of Arizona	3.25	-0.75
Dartmouth College	16.50	-0.25	Rensselaer Polytechnic Institute	2.50	-0.75
Emory University	16.50	0.00	University of Massachusetts-Amherst	1.75	-0.75
University of Pittsburgh-Main Campus	16.25	-0.25	Indiana University-Bloomington	1.25	-0.50
University of California-Santa Barbara	14.75	-1.50	Yeshiva University	0.25	-1.00
University of Colorado at Boulder	14.50	-0.25			

Note: We use the Borda Count method to average the relative rankings from four ranking sources. A university ranked first in a ranking study is given a score of 50, the second is given 49, and so on. We then take the simple average of the scores each university gets from the four ranking sources to calculate the average Borda Count Score (BCS). When the ranking sources include foreign universities, we re-rank American universities excluding foreign universities. Diff is the difference in BCS scores between a university and the university ranked one place above it. A natural breakpoint in BCS is at the sixteenth university. We classify the first sixteen universities as “Elite” and the rest forty-eight research universities (excluding specialized institutions Rockefeller University, University of California at San Francisco, and University of Texas Southwestern Medical Center at Dallas) as “Good”.

Table IV. Number of universities with overseas programs by university category and type

Type	Public			Private Nonprofit			Private For-Profit		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Elite	3	2	66.7%	13	7	53.8%	0	0	-
Good	27	9	33.3%	21	5	23.8%	0	0	-
Moderate	136	18	13.2%	74	10	13.5%	8	0	0.0%
Masters	270	8	3.0%	375	18	4.8%	43	5	11.6%
Baccalaureates	149	0	0.0%	511	1	0.2%	77	1	1.3%
Associates	1,073	1	0.1%	132	0	0.0%	589	0	0.0%
Others	547	0	0.0%	908	0	0.0%	2,047	1	0.0%
Total	2,205	38	1.7%	2,034	41	2.0%	2,764	7	0.3%

Note: Column (1) shows the total number of universities in each category based on our average Borda Count Score and Carnegie 2005 basic classification. Column (2) shows the number of universities with overseas programs in each category. Column (3) shows the percentage of universities with overseas programs in each category, which is calculated as number of universities with overseas programs divided by the total number of universities in that category. Each UNITID in IPEDS is treated as a university.

Table V: Number of programs by degree level, discipline, and the sponsoring university's category

Panel A: Bachelor	Arts & Sciences	Education	Engineering	EECS	Business	Public Affairs	Law	Medicine	Other	Total
Elite	1	0	0	0	0	0	0	0	0	1
Good	1	1	2	2	1	1	0	0	0	8
Moderate	6	1	0	3	3	2	0	1	2	18
Master	15	1	1	13	27	5	0	1	1	64
Total	23	3	3	18	31	8	0	2	3	91
Panel B: Master	Arts & Sciences	Education	Engineering	EECS	Business	Public Affairs	Law	Medicine	Other	Total
Elite	2	0	0	1	4	2	0	1	1	11
Good	1	0	1	8	5	2	0	1	0	18
Moderate	0	4	1	6	16	1	1	3	1	33
Master	5	5	1	3	32	6	0	3	2	57
Total	8	9	3	18	57	11	1	8	4	119
Panel C: Ph.D.	Arts & Sciences	Education	Engineering	EECS	Business	Public Affairs	Law	Medicine	Other	Total
Elite	0	0	0	0	0	0	0	2	0	2
Good	1	0	1	1	0	0	0	0	0	3
Moderate	0	0	1	1	1	0	1	1	0	5
Master	0	0	0	0	0	0	1	0	0	1
Total	1	0	2	2	1	0	2	3	0	11

Note: Arts & Sciences includes foreign languages, economics, physics, and others. Engineering includes mechanical engineering, material engineering, and other traditional engineering programs. EECS refers to electrical engineering, computer science, and IT programs. Business includes finance, accounting, marketing, and management. Public affairs include international relations and public policy. Medicine includes medical education, nursing, and health care. Other includes film, theater, and hotel management.

Table VI. Summary statistics of financial and enrollment variables (1995-2005)

Category	Control	Overseas	Enrol_FTE	Part_Time (%)	Non_Resid (%)	Tui_Dep (%)	Endow_FTE
Elite	Public	Yes	33,047	8.6	9.0	15.3	65,557
		No	35,214	4.5	6.2	8.3	13,573
	Private	Yes	14,308	16.6	15.0	17.3	347,639
		No	13,729	13.9	17.9	8.4	633,932
Good	Public	Yes	29,997	16.8	8.1	19.7	8,349
		No	29,377	14.6	5.9	17.2	29,200
	Private	Yes	17,472	18.4	13.6	35.3	112,854
		No	8,800	10.8	9.7	29.6	210,896
Moderate	Public	Yes	21,338	27.6	5.8	20.9	7,846
		No	14,158	27.6	4.6	22.8	6,888
	Private	Yes	10,037	34.4	8.1	60.0	29,953
		No	5,936	32.4	6.8	60.0	29,059
Masters	Public	Yes	11,633	30.4	4.2	34.0	910
		No	6,619	31.7	2.2	26.1	2,291
	Private	Yes	3,829	42.0	4.8	69.3	10,271
		No	2,449	33.6	3.2	62.7	17,533

Note: All variables are averaged values from 1995 to 2005. Enrol_FTE is full time equivalent enrollment, which is full time enrollment plus 0.38 times part-time enrollment. Part_Time is the percentage of part-time enrollment to total enrollment. Non_Resid is the percentage of nonresident alien enrollment to total enrollment. Tuition revenue dependence, Tui_Dep, is the ratio of tuition revenue to total revenue. Endow_FTE is market value of endowment assets divided by full time equivalent enrollment. Endow_FTE is adjusted by inflation and is in 2005 constant dollars. Financial variables are available in 1995, 2000, 2001, 2002, 2003, 2004, and 2005 IPEDS Finance Surveys. Enrollment variables are available in all IPEDS Enrollment Surveys from 1995 to 2005. IPEDS surveys were not conducted in 1999. Both public and private schools follow the Old Form accounting standards until 1997, after which most of the public schools follow Governmental Accounting Standards Board (GASB) accounting rules while the rest follow Financial Accounting Standards Board (FASB) accounting standards. GASB and FASB treat revenue items differently, which render the financial data for public and private schools not directly comparable after 1997.

Table VII. Summary statistics for independent variables in the likelihood regression

Variable Name	Observations	Mean	Median	Std. Dev.	Min	Max	Correlation with 2005 data
Enrol_FTE	913	6,614.5	4,026.8	6,986.6	61.9	43,860.7	0.98
Part _Time	913	33.0	30.0	17.9	0.2	99.1	0.79
Non_Resid	913	3.7	2.3	4.4	0.0	35.7	0.79
Tui_Dep	913	44.7	40.6	22.7	4.9	100.0	0.89
Endow_FTE	913	17,761.4	3,352.8	73,845.3	0.0	1,703,445.0	0.88

Note: Enrol_FTE is full time equivalent enrollment, which is full time enrollment plus 0.38 times part-time enrollment. Part_Time is the percentage of part-time enrollment to total enrollment. Non_Resid is the percentage of nonresident alien enrollment to total enrollment. Tuition revenue dependence, Tui_Dep, is the ratio of tuition revenue to total revenue. Endow_FTE is market value of endowment assets divided by full time equivalent enrollment. All variables are based on data obtained from 1995 IPEDS College Enrollment and Finance Surveys.

Table VIII. Probit regression on the likelihood of having overseas programs

Variable Name	Coefficient	Marginal Effect
Enrol_FTE	0.074***	0.008***
	(0.015)	
Part_Time	0.006	0.001
	(0.004)	
Non_Resid	0.035***	0.004***
	(0.012)	
Tui_Dep	0.011*	0.001*
	(0.006)	
Log (Endow_FTE)	-0.043	-0.005
	(0.077)	
Elite	1.640***	0.449***
	(0.505)	
Good	0.617	0.102
	(0.401)	
Moderate	0.180	0.021
	(0.234)	
Public	-0.166	-0.018
	(0.337)	
Elite*Public	-0.855	
	(0.930)	
Good*Public	-0.576	
	(0.554)	
Moderate*Public	0.020	
	(0.317)	
Constant	-2.839***	
	(0.495)	
Observations	913	
Pseudo R-Squared	0.22	

Note: The dependent variable is equal to 1 if a university has overseas programs and 0 otherwise. Enrol_FTE is full time enrollment plus 0.38 times part-time enrollment in thousands. Part_Time is the percentage of part-time student enrollment. Non_Resid is the percentage of nonresident alien enrollment. Tui_Dep is tuition revenue as a percentage of total revenue. Log(Endow_FTE) is the log value of university endowment per full time equivalent student in thousands. All financial and enrollment variables are 1995 value. Elite is an indicator variable equal to 1 if a university's Borda Count Score is ranked in the top 16 and 0 otherwise. Good is equal to 1 if a university's Borda Count Score is ranked between 17 and 67 (specialized institutions excluded). Moderate is equal to 1 if a university is considered a research university by the Carnegie 2005 report but is ranked below 67. Public is an indicator variable for public university. Robust standard errors are reported in parentheses. ***, **, and * indicate the significance level at 1%, 5%, and 10%, respectively.

Table IX. Negative Binomial location regression

Variable Name	Negative Binomial Coefficient	Percentage Change (%)
GDP_PPP	0.069**	7.1**
	(0.029)	
Growth	-0.006	-0.6
	(0.046)	
Stu_Pop	0.043***	4.4***
	(0.006)	
FDI	0.048**	4.9**
	(0.021)	
Gov_Stab	0.015	1.5
	(0.138)	
Law_Order	-0.379*	-31.6*
	(0.226)	
Ease_Bus	-0.016**	-1.6**
	(0.008)	
Africa	-0.183	-16.7
	(0.751)	
Asia	1.054**	186.9**
	(0.452)	
Europe	-0.350	-29.5
	(0.683)	
Middle East	1.078**	193.9**
	(0.518)	
Oceania	0.196	21.7
	(0.726)	
Constant	0.446	
	(1.655)	
Observations	117	
Log Pseudo Likelihood	-111.47	

Note: Dependent variable is Density, which measures the number of overseas programs offered in a host country by U.S. institutions that award advanced degrees. All our independent variables (except for Ease_Bus, which is averaged from 2004 to 2009) are averaged values from 1999 to 2003. GDP_PPP is host country real gross domestic product (GDP) per capita in 2000 constant international dollars (in thousands). Growth is the growth rate of GDP_PPP. Stu_Pop is the tertiary school age population in millions. FDI is the U.S. foreign direct investment outflows to the host country in 2000 constant U.S. dollars (in billions). Gov_Stab measures government stability. Law_Order measures the strength of legal system. Ease_Bus measures the easiness of doing business. Africa, Asia, Europe, Middle East, and Oceania are dummy variables indicating the location of host country. The Middle East region includes Bahrain, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Palestinian Authority, Qatar, Saudi Arabia, Syria, United Arab Emirates, and Yemen. Robust standard errors are reported in parentheses. ***, **, and * indicate the significance level at 1%, 5%, and 10%, respectively.

Table X. Number of overseas programs offered by region and by Census Bureau geographic location of U.S. universities

Location of U.S. university	Africa	Asia	Europe	Latin America	Middle East	North America	Oceania	Total
Midwest	0	29	6	1	3	0	0	39
Northeast	2	27	7	4	11	1	2	54
South	1	25	8	5	6	0	1	46
West	0	10	3	4	0	3	0	20
Total	3	91	24	14	20	4	3	159

Note: Northeast includes ME, NH, VT, MA, CT, NY, NJ, PA, and RI. Midwest includes MI, OH, IN, IL, WI, MN, IA, MO, KS, NE, SD, and ND. South includes TX, OK, AR, LA, MS, AL, TN, KY, GA, FL, SC, NC, VA, WV, DC, MD, and DE. West includes WA, OR, CA, NV, ID, UT, AZ, NM, CO, WY, MT, AK, and HI. Middle East region includes Bahrain, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Palestinian Authority, Qatar, Saudi Arabia, Syria, United Arab Emirates, and Yemen. This table includes all 159 overseas programs identified from the press.

Table XI. Tuition discount regression

Variable Name	OLS Coefficient
GDP_PPP	-0.022***
	(0.004)
Stu_Pop	-0.000
	(0.001)
Gov_Stab	-0.050
	(0.054)
Elite	0.021
	(0.187)
Good	0.236**
	(0.114)
Moderate	0.046
	(0.113)
Public	0.006
	(0.074)
Prof	0.050
	(0.053)
BA	0.255*
	(0.131)
Joint	0.032
	(0.068)
Constant	0.913
	(0.572)
Observations	86
R-squared	0.510

Note: Discount is the ratio of overseas sub-program tuition in a host country to the tuition of a comparable program at the same degree level and in the same discipline on the sponsoring U.S. university's home campus. We make tuition comparable across programs and locations by assuming that a student takes an average of four 3-credit courses per semester, or equivalently, eight 3-credit courses per academic year whenever necessary. GDP_PPP is host country's real per-capita GDP in 2000 constant international dollars (in thousands). Stu_Pop is the tertiary school age population in millions. Gov_Stab measures government stability, which is a proxy for political risk. Elite is an indicator variable equal to 1 if a university's Borda Count Score is ranked in the top 16 and 0 otherwise. Good is equal to 1 if a university's Borda Count Score is ranked between 17 and 67 (three specialized institutions excluded). Moderate is equal to 1 if a university is considered a research university by the Carnegie Classification but is ranked below 67. Variable Public is an indicator variable for public university. Prof is equal to 1 if the overseas sub-program is in engineering, EECS, business, law,

medicine, and other professional disciplines and 0 otherwise. BA is equal to 1 if the overseas sub-program is a bachelor's program and 0 otherwise. Joint is equal to 1 if the overseas sub-program has a partner university in the host country or has received local financing support. Robust and clustered (at university level) standard errors are reported in parentheses. ***, **, and * indicate the significance level at 1%, 5%, and 10%, respectively.