

# Universities as Firms: The Case of U.S. Overseas Programs

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## Abstract

We observe two waves of overseas programs by U.S. universities: A supply driven wave during the late 1980s to the mid 1990s, and a current wave beginning in the early 2000s. Our data reveal that 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. Universities behave much like multinational corporations when they make investments overseas.

First draft: September 18, 2008

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's 2006 global university ranking, 15 of the top 20 universities worldwide are American.<sup>1</sup> More than 500,000 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 5<sup>th</sup> largest exporting service sector in the U.S. (Institute of International Education, 2006). 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.

Can we extend the standard economic analysis to study universities' activities abroad? Are university motives for foreign direct investment (FDI) 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 paper focuses on 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 a location, and how it determines program pricing/tuition. We examine these issues using hand-collected data on U.S. overseas programs from various sources.

Although there are important differences between non-profit universities and profit-seeking corporations, we assume universities, like firms, 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 (elite), 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 is not immediately obvious. While the moderately ranked universities may be more willing suppliers, local demand would be greater

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<sup>1</sup> Newsweek (August, 2006) at <http://www.msnbc.msn.com/id/14321230/>.

for programs offered by the elite type, which, however, 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 study 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, there is a new surge of overseas programs, 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. The current wave appears to be more demand driven, and the main suppliers of overseas programs are large research universities. Our hand-collected data reveal that elite universities are more active in developing overseas programs, and 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 appears to play 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 the 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.

Asia and the Middle East are the most popular destinations for overseas programs, but for different reasons. Because of its rising affluence, 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 in the recent surge in U.S. overseas programs, we should have observed more media coverage of attempts to establish

overseas programs there.<sup>2</sup>

Our analysis of tuition charges in overseas programs 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 or through financial support from government aid, 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 are different from for-profit corporations in various ways. Universities provide public goods. The two main products are knowledge creation through research and knowledge dissemination through teaching. Research results are freely available to most members of society and contribute to its 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 intellectual capital through higher education. The need for greater access to 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 non-profit entities.<sup>3</sup> Non-profit organizations receive more funding and gifts from public and private sectors. The Digest of Education Statistics (2007) reports that for the academic year 2004-2005, total tuition revenue represented 16.4% of total revenue for all public degree-granting institutions and 29.5% for all private non-profit degree-granting institutions in the U.S.

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<sup>2</sup> 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.

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

Unlike private enterprises with residual claim holders (stockholders), non-profit universities have multiple stakeholders without a clearly defined pecking order, which leads to multiple objectives without well-defined priorities. Within this multi-stakeholder and multi-objective framework, the choice of channels through which a university generates its revenues is endogenous. Consider a university that wants to maximize the present value of the difference between all future revenues--consisting of tuition, private gifts and endowments, and state subsidies--and all future costs 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 survival.

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 non-profit universities, because society expects for-profit universities to support their activities from their profits.

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, endowed with small 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 (elite) 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 is not immediately obvious. On the one hand, the tuition-dependent schools will view the overseas programs as opportunities to increase their tuition revenues and will more actively pursue them; that is, they 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 schools, 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. Universities with moderate reputation may have little to lose if their overseas programs are of low quality or even fail. 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.

Tuition revenue may be a less motivating factor for highly esteemed U.S. universities. They 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 to overseas teaching. However, when foreign governments seek to expand higher education opportunities for their citizens through overseas programs, they are more likely to invite highly ranked universities and entice them with financial subsidies. Consequently, successful programs are more likely to be the disciplines in which the universities already enjoy comparative strengths. Operating overseas

programs, if successful, can also broaden the university name recognition globally and attract foreign donors.

### II.A.2. Financial Costs

Universities need physical assets (e.g., classrooms) and human capital (e.g., faculty and staff) to establish overseas programs. Compared to manufacturing, 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 garners 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. 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 tuition surcharge, which lowers demand and keeps class size 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 receive financial inducements from local governments to offer costly degree programs overseas.

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

An important benefit to the sponsoring universities of offering overseas programs is globalizing American faculty. Faculty benefit from interactions with students and local researchers. They gain valuable international perspective from their experience abroad, which helps broaden their scope of both teaching and research. But these benefits are not without costs. Faculty have to be away from home, spend less time on research, and teach in unfamiliar foreign surroundings, all of which makes it difficult to secure a sufficient number of long term U.S. faculty on overseas campuses.

## II.B. Demand

### II.B.1. Alternative Choices

The university attendance rate of college-age students is below 15% in developing countries, compared to around 40% to 50% in developed countries.<sup>4</sup> To the extent that insufficient supply of

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<sup>4</sup> The Chronicle of Higher Education (May, 2007): The global campus, American colleges connect with the broader world.

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 vs. Overseas Programs*

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 superior to domestic colleges and will be in lower demand.

#### *Overseas Programs vs. Studying in the U.S.*

U.S. universities attract to their home campuses numerous international students, who often view degrees from U.S. universities as a stepping stones towards achieving their career objectives, or more simply as "tickets to the riches."<sup>5</sup> But studying in the U.S. also provides students an opportunity to improve their English language skills, which is 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. Some even end up staying in the U.S. permanently. 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.

However, choosing to attend a U.S. university 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. They target students who want foreign degrees without leaving their home. Those individuals unwilling to incur higher expenses while studying in the U.S., unable to obtain visas to study in the U.S., and

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<sup>5</sup> The Chronicle of Higher Education (April, 2001): Cornell's medical school will open degree granting branch in Qatar.



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. Many of these overseas programs also offer the opportunity to experience American campus life for an extended period.

### 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.<sup>6</sup> 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 support.

## 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. The 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 have to 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 study the historical archive of the Chronicle, an interesting pattern emerges. Most of the Chronicle articles on overseas activities are published either between the late 1980s and early 1990s, or in recent years, beginning in the early 2000s, with a sharply different focus. Articles from the two periods are different. 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

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<sup>6</sup> See Knight (2006) for a description of government policies regulating foreign providers of higher education.

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, such as how the deals are structured with foreign governments.

Why have elite U.S. universities suddenly started to offer overseas programs? Are we seeing a second wave of overseas programs with different players? Or is the new spate of articles a recurrence 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. 110 schools report overseas enrollment in 1986 and by 1998 the number of schools reporting overseas enrollment shrinks to 61. The total overseas enrollment 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 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.<sup>7</sup>

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

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<sup>7</sup> The Chronicle of Higher Education (June, 2000): Culture and unrealistic expectations challenge American campuses in Japan.

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, which were 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 dollars. Some even committed outright financial fraud.<sup>8</sup> These problems contributed to the difficulty of running U.S. overseas programs, leading to eventual closure of most of the programs.

Although it is difficult to pinpoint causes for the recent resurgence in overseas programs, it is not difficult to ascertain that the leading players are different. The sponsoring U.S. universities 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 Graduate School of Business (Chicago GSB) is illustrative. Chicago GSB offers full time, part time, and evening MBA programs in Chicago. It also offers Executive MBA programs in Chicago, London, and Singapore. According to the Chicago GSB website, tuition revenue from overseas programs represents about 14% of its total tuition revenue generated in 2006.<sup>9</sup> This percentage of revenue generated from foreign operations is quite comparable to that

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<sup>8</sup> The Chronicle of Higher Education (June, 2000): Culture and unrealistic expectations challenge American campuses in Japan.

<sup>9</sup> Our calculation is based on tuition data information obtained from the University of Chicago GSB website at

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.<sup>10</sup> 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 University's medical school \$750 million to provide medical programs in the Education City.<sup>11</sup>

Money seems to be an important determinant in decisions to offer these overseas programs. According to a Chronicle article, the University of North Carolina declined to set up overseas program in the Middle East region because the university was offered only \$10 million, falling short of the \$35 million the university requested.<sup>12</sup> 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.<sup>13</sup> 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.<sup>14</sup>

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 an attempt 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 (UNSW) set up the first comprehensive foreign university in Singapore with partial financing from Singapore's Economic Development Board (EDB). 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 reported a deficit of \$15 million dollars a year.

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<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.

<sup>10</sup> The Chronicle of Higher Education (March, 2008): Qatar succeeded by offering foreign institutions money.

<sup>11</sup> The Chronicle of Higher Education (April, 2001): Cornell's medical school will open degree granting branch in Qatar.

<sup>12</sup> The Chronicle of Higher Education (September, 2002): Qatar courts American colleges.

<sup>13</sup> The Chronicle of Higher Education (March, 2008): An academic building boom transforms the Persian Gulf.

<sup>14</sup> The Chronicle of Higher Education (March, 2008): How the deal was done: Michigan State in Dubai.

The branch campus was shut down in June 2007 after only three months of operation.<sup>15</sup> 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.<sup>16</sup>

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.<sup>17</sup> 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.<sup>18</sup>

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 the presence of several prominent, highly-ranked universities. Second, with the European Union's Bologna process, EU students can transfer their credits across accredited universities, providing flexibility in attending schools. Third, 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. For similar reasons, Australia and New Zealand attract relatively few U.S. overseas programs. Both European and Oceania universities are also the main competitors of U.S. universities for foreign students.

For those few U.S. universities offering overseas programs in Europe, location is important. For example, Chicago GSB started to offer a part time executive MBA program in Barcelona in 1994, but moved to London in 2005. London is the financial center for Europe, and Chicago GSB, 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 U.S. universities in the South and West. Census data shows these states are more heavily

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<sup>15</sup> Channel NewsAsia (May, 2007): University of New South Wales Singapore campus to shut in June.

<sup>16</sup> The Chronicle of Higher Education (August, 2006): Singapore to close Johns Hopkins Biomedical Center.

<sup>17</sup> The Chronicle of Higher Education (February, 2008): In India, limits on foreign universities lead to creative partnerships.

<sup>18</sup> Business Week (May, 2008): China: Why Western B-Schools are leaving.

populated with Hispanics.<sup>19</sup> The geographic and cultural proximity may explain why southern and western universities are more likely to offer programs in South America.

Few U.S. overseas programs in Africa are reported in the press.<sup>20</sup> Income disparities, cultural differences, language barriers, and insufficient high school graduates who can handle course work offered by American universities may all play a role in keeping U.S. overseas programs out of this continent that desperately needs improvement in both 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 the 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,<sup>21</sup> 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

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<sup>19</sup> See: [http://www.censusscope.org/us/map\\_hispanicpop.html](http://www.censusscope.org/us/map_hispanicpop.html)

<sup>20</sup> 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.

<sup>21</sup> We read the headlines of their news articles and special reports on the OBHE website at [www.obhe.ac.uk](http://www.obhe.ac.uk) .

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.<sup>22</sup> All the degree programs included in our sample require significant commitment from U.S. universities 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.

#### 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 2005 basic classification,<sup>23</sup> 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 the research universities, we use the most recent university rankings from ten sources<sup>24</sup>: American’s best national universities from U.S. News & World Report, Faculty Scholarly Productivity Index from Academic Analytics , Top

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<sup>22</sup> Medical programs are an exception. Medical programs offered by U.S. institutions abroad usually do not award foreign students 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.

<sup>23</sup> 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.

<sup>24</sup> Of the ten sources, nine are listed at a Wikipedia url ([http://en.wikipedia.org/wiki/College\\_and\\_university\\_rankings](http://en.wikipedia.org/wiki/College_and_university_rankings)) and were accessed from it to collect the data. When the ranking sources include liberal arts colleges in university rankings, we re-rank universities excluding colleges.

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), Top U.S. Universities from Times Higher Education, Academic Rankings of World Universities from Shanghai Jiaotong University, Top 100 Global Universities by Newsweek, and Webometrics Ranking of World Universities by the Cybermetrics Lab. These rankings employ a broad range of ranking methodologies and measure different dimensions of university reputation. For example, the widely cited U.S. News & World Report uses evaluations from peer institutions, faculty and financial resources, and student selectivity to construct the ranking. In contrast, Washington Monthly bases its college ranking on a university's social mobility, research activity, and service to community. Relying on these rankings alleviates some of the subjectivity inherent in using a single ranking methodology.

Table II shows the correlation between the ten ranking sources. They are positively correlated with each other, except for Washington Monthly College Rankings, illustrating the consistency throughout most rankings. 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. It shows most college rankings are highly positively correlated with the level of endowment, confirming the notion that the level of endowment plays an important role in school reputation.

There are 95 universities that appear at least once as top 50 in at least one of the 10 rankings. We follow Kim, Morse, and Zingales (2008) and use the Borda Count method to average the relative rankings within this group of 95 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 ten ranking sources. The average Borda Count Scores (BCS) are reported in Table III, which shows a natural break point at the thirty-first university. We classify these top 31 universities as "Top", and the remaining 64 schools as "Middle." 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."

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<sup>25</sup> times part time enrollment; *Part\_Time*, percentage of part-time enrollment to total enrollment;<sup>26</sup> *Non\_Resid*, percentage of nonresident alien enrollment to total enrollment; tuition revenue dependence, *Tui\_Dep*, the ratio of tuition revenue to total revenue;<sup>27</sup> 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*,<sup>28</sup> and growth rate of real GDP per capital, *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.

#### IV.B. Summary statistics

Table IV reports the number of universities with overseas programs, separately for non-profit public, non-profit private and for-profit universities in each of the seven categories--Top, Middle, Moderate, Master, baccalaureate colleges, associate's colleges, and other specialized institutions. It shows more or less equal participation by public and private universities. Among private schools, top universities are the dominant players, with 58% having overseas program. Among public schools, the difference is not as dramatic, with mid-level schools at 40% participation rate, followed by top schools with 25% participation rate.

Table IV also shows that less than 1% of schools in baccalaureate colleges, associate's colleges, and other specialized institutions categories offer overseas programs. The extremely low percentage of non-advanced degree granting institutions 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

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<sup>25</sup> This number is the average full time equivalent of part-time enrollment reported in IPEDS 2005 Enrollment Survey.

<sup>26</sup> Total enrollment is the sum of full time enrollment and part time enrollment.

<sup>27</sup> 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.

<sup>28</sup> It is measured in 2000 constant international dollars. An international dollar has the same purchasing power as U.S. dollar over U.S. GDP.

belong to the Top or Middle 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 non-profit universities in the Top, Middle, 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 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 four are offered by Top universities, indicating their reluctance to offer undergraduate degree programs. The main suppliers of the undergraduate programs are Master universities with 70% of market share. In contrast, Panel B shows that Top universities are more active in offering graduate level programs, offering 15% of the master's degree programs. Master universities are still the biggest suppliers, offering 43% of the master's level overseas 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 interest is what university characteristics help explain the likelihood of a university having overseas programs. To address this issue, we use the following probit specification:

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

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 non resident alien enrollment and measures a university's openness to foreigners.  $Tui\_Dep$  is tuition revenue as a percentage of total revenue. Variable  $Log(Endow\_FTE)$  is the log value of university endowment per full time equivalent student.  $Reputation$  is proxied by indicator variables,  $Top$ ,  $Middle$ , 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  $i$ . Variable Function  $G$  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.<sup>29</sup> 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 and control group in 1995. Table VII presents the summary statistics of the 1995 university enrollment and financial data.<sup>30</sup> It also shows that the 1995 data are highly correlated

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<sup>29</sup> 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 started to follow FASB. These accounting standards differ in their treatment of revenue and expenditure composition.

<sup>30</sup> 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 (private non-profit) institutions divided by total revenue of all

with their 2005 data, indicating persistency in university characteristics.

Table VIII reports the estimates using probit regression.<sup>31</sup> 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 0.7%, 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<sup>32</sup> is only 5.18%. Non-resident enrollment also has a positive and significant effect on the likelihood of having overseas programs. A 1% increase in non-resident enrollment increases the probability of having overseas programs by 0.3%, holding all other variables constant at the mean. Tuition revenue dependence has a significant positive effect as well. A 1% increase in tuition revenue dependence increases the likelihood of having overseas programs by 0.1%. Top universities are more likely to have overseas programs. Moving from Master to the Top category increases the likelihood of having overseas programs by 43.7% for private schools.<sup>33</sup>

These results suggest that the most active participants in overseas programs are large top 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 program, demonstrating the important role finance plays in the decision to offer overseas programs. How much economics matter in American universities' offering of foreign programs is the subject of investigation in the next two sections.

#### IV.C.2. Location choice

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public (private non-profit) 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.

<sup>31</sup> We also estimate OLS and Logistic regressions. The results (unreported) are quantitatively the same.

<sup>32</sup> An average university means all independent variables are held at their mean values. Mean values of independent variables are reported in Table VII.

<sup>33</sup> 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.

If finance plays an important role in universities' decision to offer overseas program, their 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, and the U.S. outflow of FDI by estimating the following regression:

$$Density_j = \alpha + \beta_1 * GDP\_PPP_j + \beta_2 * Growth_j + \beta_3 * Stu\_Pop_j + \beta_4 * FDI_j + \beta_5 * Continent_j + \varepsilon_j$$

Dependent variable *Density* measures the number of overseas programs located in host country *j*. It includes all overseas degree programs offered by advanced degree awarding 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. *GDP\_PPP* is the host country real gross domestic product (GDP) per capita. *Growth* is the growth rate of *GDP\_PPP*. *Stu\_Pop* is the tertiary school age population, which measures the potential size of the host country higher education market. *FDI* is U.S. foreign direct investment outflows to host country *j*. *Continent* is a set of dummy variables that indicates whether the host country *j* is located in Africa, Asia, Europe, Middle East,<sup>34</sup> 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 estimates using Negative Binomial regression. We use the Negative Binomial model because the variance of our dependent variable *Density* (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 in offering overseas programs. The two significant variables are the level of GDP per capita and student population, 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 the overseas program.

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<sup>34</sup> 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.

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 8.4%, 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 4.1%, holding all other variables constant. 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; however, the statistical significance is rather weak at the 15% level.

Table IX also shows that Asian and Middle Eastern countries are more popular destinations for overseas programs, but for different reasons. While 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, they are attracted to the Middle East mainly because of financial support from oil money.

To examine whether geographical and cultural proximity also matter in universities' location decisions, we divide U.S. universities into four regions according to U.S. Census Bureau geographic locations: Northeast, Midwest, South and West.<sup>35</sup> 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 representations 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 decisions seems to be economics.

#### IV.C.3. Tuition discount

If universities behave like firms, they may adjust pricings of their products to suit the local

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<sup>35</sup> 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.

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, offer more 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 universities' cost structures of operating overseas programs, which can be lowered by inviting a local university as a partner and employing local faculty at lower salaries than U.S. faculty. The costs can also be lowered by obtaining financial aid from local government and/or a third party such as the World Bank.

Thus, we use the following specification to analyze overseas program tuition:

$$Discount_{ijk} = \alpha + \beta_1 * GDP\_PPP_j + \beta_2 * Reputation_i + \beta_3 * Prof_k + \beta_4 * BA_k + \beta_5 * Joint_k + \varepsilon_{ijk}$$

$Discount_{ijk}$  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. Our tuition discount analysis is conducted at the sub-program level because some universities offer several degree programs in multiple disciplines at each location. Since tuition varies across degree levels and disciplines, we break down an overseas program offered by a U.S. university 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 an average of four 3-credit courses per semester, or equivalently, eight 3-credit courses per academic year whenever necessary.

$GDP\_PPP_j$  is host country j's real per-capita GDP, measuring the local affordability of overseas programs.  $Reputation_i$  includes the three indicator variables *Top*, *Middle*, and *Moderate* to reflect university i's reputation relative to Master universities. *Prof* is an indicator variable for professional schools, equal to 1 if the overseas program is in engineering, EECS, business, law, medicine, or other professional disciplines, and 0 otherwise. *BA* is equal to 1 if the overseas program is a bachelor's program and 0 otherwise. *Joint* is equal to 1 if the overseas program has a partner university in the host country or has received full or partial local financial support. This variable is our proxy for lower cost.

Table XI reports the OLS regression estimates with robust and clustered (at 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.

The only variables with statistical significance are the real GDP per capita and the indicator variable for bachelor's program. Overseas programs offer less tuition discount in higher income countries. An increase in real GDP per capita by a hundred dollar (2000 constant international dollar) leads to a 0.2% decrease in tuition discount, holding all other variables constant.

Bachelor's programs offer 23% more tuition discounts 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 than advanced degree programs do. Although the majority of undergraduate degree programs are offered by moderately ranked universities, reputation per se has little effect on tuition discounts; the regression estimates show no significant effects of *Top*, *Middle*, and *Moderate* indicator variables on tuition discounts.

Finally but equally interesting, our proxy for lower costs, *Joint*, has no effect on tuition discount, implying that U.S. universities do not pass on the cost savings to local students in the form of lower tuition. In this regard, their 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 abroad, universities are not bound by the same set of implicit contracts they have entered over time with various domestic stakeholders.

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 and/or with affordability. 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.

However, this does not necessarily imply that U.S. universities behave like firms domestically. Because non-profit universities produce public goods with support from multiple stakeholders without a clear pecking order in terms of priorities, their behavior may differ substantially from



those of private enterprises with residual claimholders. 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 think of certain similarities in governance structures between large universities and large diffusely held public corporations with separation of ownership and control: centralized administration, bureaucratic behavior, me-first mentality among those who govern and coordinate activities of individual units within the organization, 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 a clear policy implication. 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 is quoted, saying that he “wanted to be sure that colleges that established branches overseas did not price themselves too cheaply and ‘start giving away the store’.”<sup>36</sup> Our results suggest that regulators 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 attempts to generate more resources for the benefit of their home campuses in the U.S.

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<sup>36</sup> The Chronicle of Higher Education (August, 2007): House panel quizzes universities on value of overseas ventures.

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

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.

Majority Owned Foreign Affiliates (%)	1999	2000	2001	2002	2003	2004	Average
All industries	27.08	27.25	27.07	28.41	30.45	31.79	28.68
Mining	48.61	24.97	25.00	35.28	38.91	37.30	35.01
Utilities	12.79	14.92	15.03	15.72	11.58	10.20	13.37
Manufacturing	34.68	35.44	36.14	37.81	40.20	41.72	37.66
Wholesale trade	28.65	26.56	25.79	19.18	21.60	23.13	24.15
Information	13.05	12.38	12.27	13.83	14.83	17.22	13.93
Finance (except depository institutions) and insurance	15.33	17.84	17.32	17.37	18.50	18.83	17.53
Professional, scientific, and technical services	36.83	34.68	36.18	36.40	40.20	38.65	37.16
Other industries	13.04	14.18	15.31	15.77	16.68	15.78	15.13

**Table II. Correlations among 10 university ranking sources and endowment per full time equivalent enrollment (Endow\_FTE)**

WM refers to Washington Monthly College Rankings, Web refers to Webometrics Ranking of World Universities by the Cybermetrics Lab, NW refers to Top 100 Global Universities by Newsweek, SJTU refers to Academic Rankings of World Universities from Shanghai Jiaotong University, USN refers to American's best national universities from U.S. News & World Report, Times refers to Top U.S. Universities from Times Higher Education, Avery refers to revealed ranking from Avery et al. (2005), NRC refers to United States National Research Council Rankings, FSP refers to Faculty Scholarly Productivity Index from Academic Analytics , and ASU refers to Top American Research Universities from the Center for Measuring University Performance at Arizona State University.

Endow\_FTE is the 2005 market value of endowment assets divided by full time equivalent enrollment.

Correlation	WM	Web	NW	SJTU	USN	Times	Avery	NRC	FSP	ASU
Web	0.65									
NW	0.16	0.53								
SJTU	0.15	0.56	0.83							
USN	-0.17	0.22	0.76	0.67						
Times	-0.08	0.38	0.84	0.83	0.76					
Avery	-0.10	0.38	0.77	0.62	0.89	0.69				
NRC	0.47	0.63	0.59	0.59	0.18	0.51	0.19			
FSP	0.02	0.29	0.86	0.71	0.82	0.70	0.75	0.36		
ASU	0.13	0.47	0.83	0.61	0.80	0.69	0.77	0.37	0.86	
Endow_FTE	-0.28	0.09	0.63	0.54	0.67	0.57	0.74	0.05	0.53	0.44

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

We use the Borda Count method to average the relative rankings from ten 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 ten ranking sources to calculate the average Borda Count Scores. When the ranking sources include liberal arts colleges in university rankings, we re-rank universities excluding colleges.

Rank	Institution Name	BCS	Rank	Institution Name	BCS
1	Stanford University	46.4	49	Case Western Reserve University	8.7
2	Harvard University	46	50	Michigan State University	8
3	Massachusetts Institute of Technology	44.1	51	University of Rochester	7.9
4	University of California-Berkeley	42.2	52	Boston University	7.8
5	University of Pennsylvania	41.1	53	Tufts University	7.6
6	Columbia University in the City of New York	40.4	54	Rutgers University-New Brunswick/Piscataway	6.7
7	Cornell University	39.3	55	College of William and Mary	6.2
8	Yale University	38.1	56	University of California-Irvine	5.9
9	University of Michigan-Ann Arbor	37.4	57	North Carolina State University at Raleigh	5.5
10	University of California-Los Angeles	37.2	58	Indiana University-Bloomington	4.8
11	Princeton University	35.5	59	Virginia Polytechnic Institute and State University	4.3
12	Duke University	34.6	60	University of Iowa	4.1
13	University of Chicago	34.1	61	South Carolina State University	4.1
14	Johns Hopkins University	32.9	62	Wake Forest University	3.6
15	University of Wisconsin-Madison	30.4	63	University of California-Riverside	3.6
16	University of Washington-Seattle Campus	29.8	64	Brigham Young University	3.4
17	University of California-San Diego	28.2	65	Iowa State University	3.1
18	California Institute of Technology	27.6	66	Rockefeller University	3.1
19	University of Illinois at Urbana-Champaign	27.1	67	Boston College	3
20	The University of Texas at Austin	26.8	68	Lehigh University	2.9
21	Northwestern University	25.8	69	University of Massachusetts-Amherst	2.5
22	University of North Carolina at Chapel Hill	22.9	70	University of Texas Southwestern Medical Center at Dallas	2.1
23	New York University	20.2	71	Stony Brook University	2.1
24	University of Minnesota-Twin Cities	19.7	72	Brandeis University	2

25	Washington University in St Louis	19.7	73	Alabama A & M University	2
26	Carnegie Mellon University	19.4	74	Rensselaer Polytechnic Institute	1.5
27	University of Southern California	19	75	Arizona State University at the Tempe Campus	1.5
28	Pennsylvania State University-Main Campus	18.8	76	Florida State University	1.4
29	Vanderbilt University	17.9	77	Jackson State University	1.4
30	Brown University	17.8	78	University of Miami	1.3
31	University of Virginia-Main Campus	17.7	79	Baylor College of Medicine	1.2
32	University of Pittsburgh-Main Campus	15.3	80	SUNY at Buffalo	1
33	University of Florida	14.4	81	Southern Methodist University	1
34	University of California-Davis	14.4	82	University of Georgia	0.8
35	University of Maryland-College Park	13.9	83	University of Alabama at Birmingham	0.6
36	Emory University	12.6	84	University of Utah	0.6
37	University of Notre Dame	12.5	85	Miami University-Oxford	0.5
38	University of California-Santa Barbara	12.5	86	CUNY Bernard M Baruch College	0.5
39	Rice University	12.4	87	Fordham University	0.4
40	Georgia Institute of Technology-Main Campus	11.9	88	George Washington University	0.4
41	Dartmouth College	11.9	89	Widener University-Main Campus	0.4
42	Texas A & M University	11.8	90	Marquette University	0.3
43	Ohio State University-Main Campus	11.8	91	Catholic University of America	0.2
44	University of California-San Francisco	11.4	92	University of Illinois at Chicago	0.2
45	University of Arizona	11.1	93	Oregon State University	0.2
46	Georgetown University	10.2	94	Syracuse University	0.1
47	University of Colorado at Boulder	9.9	95	Tulane University of Louisiana	0.1
48	Purdue University-Main Campus	9.8			

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

Column (1) shows the total number of universities in each category based on Carnegie 2005 basic classification and our average Borda Count Score. 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.

Type	Public			Private Non-profit			Private For-Profit		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Top	12	3	25.0%	19	11	57.9%	0	0	-
Middle	38	15	39.5%	26	4	15.4%	0	0	-
Moderate	120	12	10.0%	65	7	10.8%	8	0	0.00%
Master	268	7	2.6%	375	18	4.8%	43	5	11.63%
Baccalaureate	149	0	0.0%	511	1	0.2%	77	1	1.30%
Associate	1,073	1	0.1%	132	0	0.0%	589	0	0.00%
Other	545	0	0.0%	906	0	0.0%	2,047	1	0.05%
Total	2,205	38	1.7%	2,034	41	2.0%	2,764	7	0.25%



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

Arts & Sciences includes foreign languages, economics, physics, and others. Engineering includes mechanical engineering, material engineering, and other traditional engineering programs. Electrical engineering and computer science, 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: Bachelor	Arts & Sciences	Education	Engineering	EECS	Business	Public Affairs	Law	Medicine	Other	Total
Top	1	0	0	2	1	0	0	0	0	4
Middle	3	1	2	1	1	2	0	0	0	10
Moderate	4	1	0	2	2	1	0	1	2	13
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
Top	2	0	0	6	5	3	0	1	1	18
Middle	1	1	2	5	15	1	0	1	0	26
Moderate	0	3	0	4	11	1	1	3	1	24
Master	5	5	1	3	26	6	0	3	2	51
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
Top	0	0	1	1	0	0	0	2	0	4
Middle	1	0	1	1	0	0	0	0	0	3
Moderate	0	0	0	0	1	0	1	1	0	3
Master	0	0	0	0	0	0	1	0	0	1
Total	1	0	2	2	1	0	2	3	0	11

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

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 dollar. 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 till 1997. Since then 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 may make the financial data for public and private schools not directly comparable after 1997.

Category	Control	Overseas	Enrol FTE	Part Time (%)	Non Resid (%)	Tui Dep (%)	Endow FTE
Top	Public	Yes	34,360	9.1	9.4	16.4	50,815
		No	32,389	14.5	6.2	14.1	39,312
	Private	Yes	14,921	17.7	14.8	20.5	293,933
		No	14,238	11.8	15.7	13.8	411,854
Middle	Public	Yes	26,864	20.2	7.6	20.1	8,155
		No	20,087	16.1	5.3	17.1	29,067
	Private	Yes	16,311	25.6	9.4	51.5	37,613
		No	9,283	16.2	10.0	34.0	156,205
Moderate	Public	Yes	18,825	31.2	5.3	22.9	7,225
		No	13,962	28.4	4.6	23.2	6,793
	Private	Yes	8,887	33.8	8.5	61.0	28,178
		No	5,092	33.2	6.8	61.6	29,884
Masters	Public	Yes	11,611	29.4	3.3	32.9	1,008
		No	6,625	31.7	2.1	26.1	2,290
	Private	Yes	3,829	42.0	4.8	69.3	10,271
		No	2,449	33.6	3.2	62.7	17,533

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

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.

Variable Name	Observations	Mean	Median	Std. Dev.	Min	Max	Correlation with 2005 data
Enrol_FTE	917	6,592	4,000	6,980	62	43,861	0.98
Part_Time	917	32.9	30.0	17.9	0.2	99.1	0.79
Non_Resid	917	3.7	2.3	4.6	0.0	43.2	0.79
Tui_Dep	917	44.5	40.6	22.8	0.0	100.0	0.89
Endow_FTE	917	23,804	3,493	206,681	0	5,983,527	0.88

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

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, divided by 1,000. 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 divided by 1,000. All financial and enrollment variables are 1995 value. Top is an indicator variable equal to 1 if a university's Borda Count Score is ranked in the top 31 and 0 otherwise. Middle is equal to 1 if a university's Borda Count Score is ranked between 32 and 95. Moderate is equal to 1 if a university is considered a research university by Carnegie Foundation but is ranked below 95. Variable 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.

Variable Name	Coefficient	Marginal Effect Evaluated at Mean
Enrol_FTE	0.068*** (0.014)	0.007*** (0.002)
Part_Time	0.006 (0.004)	0.001 (0.000)
Non_Resid	0.031*** (0.011)	0.003*** (0.001)
Tui_Dep	0.013** (0.006)	0.001** (0.001)
Log (Endow_FTE)	-0.029 (0.074)	-0.003 (0.008)
Top	1.642*** (0.459)	0.437** (0.176)
Middle	0.354 (0.381)	0.048 (0.063)
Moderate	0.197 (0.246)	0.023 (0.032)
Public	-0.070 (0.343)	-0.007 (0.036)
Top*Public	-1.845*** (0.649)	
Middle*Public	0.473 (0.448)	
Moderate*Public	-0.018 (0.347)	
Constant	-2.997*** (0.497)	
Observations	917	
Pseudo R-Squared	0.23	

**Table IX. Negative Binomial location regression**

Dependent variable Density measures the number of overseas programs offered in host country  $j$  by advanced-degree-awarding U.S. institutions. All our independent variables are averaged values from 1999 to 2003. GDP\_PPP is host country real gross domestic product (GDP) per capita in 2000 constant international dollars divided by 1,000. Growth is the growth rate of GDP\_PPP. Stu\_Pop is the tertiary school age population divided by 1,000,000. FDI is the U.S. foreign direct investment outflows to the host country in millions of 2000 constant U.S. dollars divided by 1,000. 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.

Variable Name	Negative Binomial Coefficient	Percentage Change (%)
GDP_PPP	0.081*** (0.019)	8.4***
Growth	-0.009 (0.040)	-0.9
Stu_Pop	0.040*** (0.005)	4.1***
FDI	0.093 (0.064)	9.8
Africa	-0.742 (0.711)	-52.4
Asia	1.133** (0.506)	210.4**
Europe	-0.104 (0.552)	-9.8
Middle East	1.030* (0.604)	180.2*
Oceania	-0.340 (0.743)	-28.8
Constant	-2.381*** (0.469)	
Observations	184	
Pseudo R-Squared	0.20	

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

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.

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

**Table XI. Tuition discount regression**

Dependent variable Discount is 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 university's U.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 divided by 100. Top is an indicator variable equal to 1 if a university's Borda Count Score is ranked in the top 31 and 0 otherwise. Middle is equal to 1 if a university's Borda Count Score is ranked between 32 and 95. Moderate is equal to 1 if a university is considered a research university by Carnegie Foundation but ranks below 95. Dummy variable Prof is equal to 1 if the overseas program is in engineering, EECS, business, law, medicine, and other professional disciplines and 0 otherwise. Dummy variable BA is equal to 1 if the overseas program is a bachelor's program and 0 otherwise. Dummy variable Joint is equal to 1 if the overseas 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.

Variable Name	OLS Coefficient
GDP_PPP	-0.002*** (0.000)
Top	0.070 (0.136)
Middle	0.175 (0.106)
Moderate	0.054 (0.124)
Prof	0.049 (0.047)
BA	0.228* (0.115)
Joint	-0.003 (0.065)
Constant	0.420*** (0.139)
Observations	98
R-squared	0.477