



Tuition Discounting Goes Global

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It is not necessary to change. Survival is not mandatory. ~W. Edwards Deming

The concept and practice of tuition discounting has been in practice for over 30 years in the United States and increasingly, the drivers of discounting in the U.S. are appearing in countries across the globe. This has led to increased interest in tuition discounting as higher education administrators from non-US countries begin to address their changing marketplaces and seek to optimize enrollments and maximize net revenue in their own institutions.

Initially, the practice of tuition discounting in the U.S. arose from major shifts within the higher education system that began during the decade of the 1980s. First, the U.S. federal government subsidization of higher education through direct grants decreased in favor of loans to students and their families and individual tax incentives. As this trend continued, U.S. institutions of higher education had to place more of the financial responsibility on individual students and their families. The resulting problem of affordability was compounded as the cost of attendance in all sectors of higher education spiraled upwards well ahead of the rate of inflation. Combined with the rise of formal institutional rankings which increased competition for the most desirable students, tuition discounting has become an integral and necessary component of the U.S. higher education system.

These factors, combined with large-scale demographic shifts, have forced individual institutions to offer significant financial incentives through institutionally-funded grants and scholarships in order to attract the right number and mix of students to remain competitive. These grants and scholarships effectively discount the price of attendance for many students; however, they can work against an institution's bottom line in terms of net revenue.

Regardless of country of origin, the question for college and university decision-makers continues to be: how do we enroll the kinds of students who will allow us to succeed without bankrupting ourselves in the process? One solution to this dilemma has been through the use of tuition discounting.

The Rising Global Focus of Tuition Discounting

Recent changes in higher education systems and policies in non-US countries look much like what occurred in the U.S. over 30 years ago. Governments are cutting back on higher education subsidies, allowing once dependent institutions to lift tuition caps and become more financially autonomous. Consequently, a greater percentage of costs are being placed on institutions, students and their families (Lambert and Butler, 2006). As the cost of higher education becomes more of a deciding factor for individuals and families, the demand for comparative (ranking) information on non-U.S. colleges and universities will increase as well (Usher & Savino, 2007).

Heller & Rogers (2006) found that the higher education financing changes that have occurred in the U.S. are being implemented in a much shorter time frame in other countries. Indeed, in the United Kingdom, decreasing government subsidies for higher education are resulting in a wider financial gap that needs to be filled through other sources of funding. Recent research suggests that the £3000 maximum cap for tuition fees in the U.K. will have to at least double by 2010 to make up the difference (Meikle, 2007).

Anticipating the changes in the U.K., it is no surprise that Sallie Mae, the largest provider of student loans in the United States, launched [Sallie Mae UK](#) in May of 2007. The purpose of the new service is to meet the financial needs of students and families when “when grants, bursaries and government loans may not provide a sufficient means to cover the cost of higher education.”

Significant changes are afoot in Japan as well. The population of high school graduates in the country has been declining steadily for well over a decade. In part due to this trend, Japan’s government is recommending a drastic reduction in the number of higher education institutions, and at the same time creating their own version of the Ivy League. Of Japan’s hundreds of universities, 30 will compete for “world class” titles, and five are expected to attain “top 30” global rankings. The government in Japan is creating market competition within the higher education sector--a highly competitive environment where institutions have to compete with each other for students just to keep their doors open.

Unprecedented shifts in demographics, government policies that reduce subsidies and promote competition, and standards (costs) of living appear likely to combine again in favor of yet higher tuition fees and increased competition for students across the globe. These higher fees will likely be offset by tuition discounting to attract and retain desired student populations. It is not surprising that higher education administrators across the globe are looking to the U.S. and considering variable tuition discounting to fill their classes and ensure a strong financial bottom line for their institutions in their own changing markets.

The Basics of Tuition Discounting

The goal of tuition discounting is to maximize the value of each institutionally-funded dollar while attracting and retaining desired students. This is accomplished through the strategic awarding of grants, bursaries, or scholarships (money that students don’t have to repay) which effectively lowers the cost of attending the institution for that student. Tuition discounts can be based on a student’s calculated financial need, non-need and based on merit (a particular student’s value to the institution), or a combination of both. The most desirable students are offered higher discounts in the hopes that the lower net cost will entice them to enroll at the institution. Less desirable students are offered lower discounts, and some students may not be offered any discount at all.

The definition of “desirability” varies from institution to institution. Some colleges aim to increase their average quality and seek students with higher exam scores. Other institutions want to increase their enrollments and fill certain majors. Still others wish to attract students from outside their primary markets, increase market share, and/or enroll under-represented populations. Some want all of the above. Virtually all institutions want to increase their net revenue while achieving these goals.

Tuition discounting is one way to achieve multiple goals because differentially awarding institutional funds allows institutions to target the very students it wants or needs. Although the published price of the institution remains stable, the actual costs per student vary based on the desirability of that student at that particular time. Research findings support the theory that reductions in net price (cost of attendance minus financial aid) positively affect enrollment decisions (Heller, 1997; Usher, 2006).

How Tuition Discounting Works

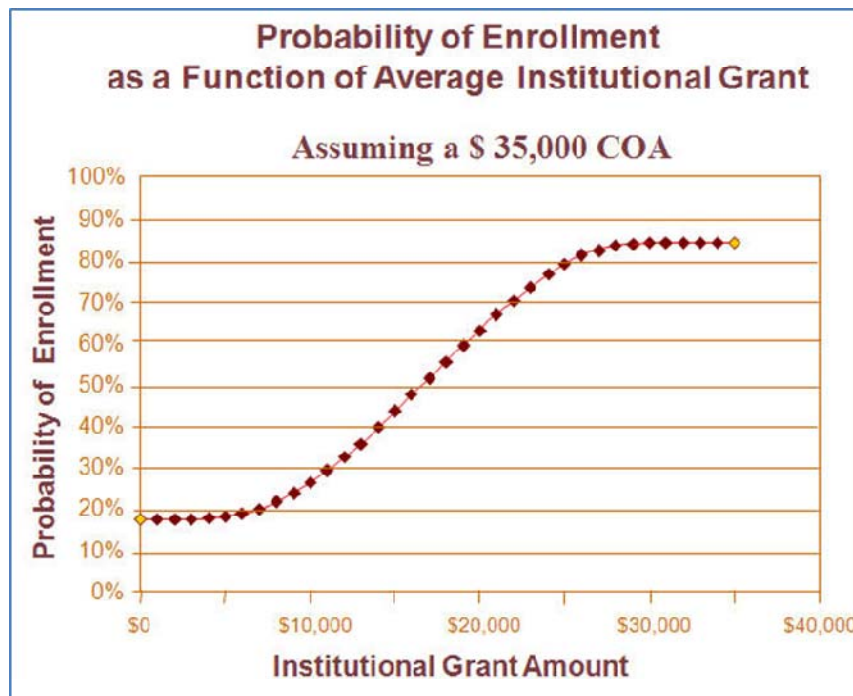
Tuition discounting relies on past performance data to predict future results. The primary ingredient to begin research that will inform a tuition discounting process is data. The essential data comprise unit-specific student characteristics and quality indicators, enrollment patterns and yields, grants, scholarships or bursaries offered, and the cost of attendance at the specific institution. This institutional data is collected for the most recent two to three years, and can be reviewed in various frameworks. The goal is to develop a predictive model--based on recent data--that will help guide and institution's future enrollment and discounting decisions.

Predictive modeling is typically employed as the primary method of analysis to assess individual student's likelihood of enrollment (Siefert and Galloway, 2006; Cullen and Pauls, 2006). Logistic regression is most often the statistical tool of choice, because the enrollment probability function uses a dichotomous dependent variable (*i.e.*, the student did or did not enroll). Taken one step further, a combination of logistic regression, calculus, and matrix mathematics can most effectively determine the amount of institutionally-funded aid that should be awarded to each individual student in order to maximize the probabilistic net tuition revenue that the institution will realize from that student.

Tuition Discounting Concepts

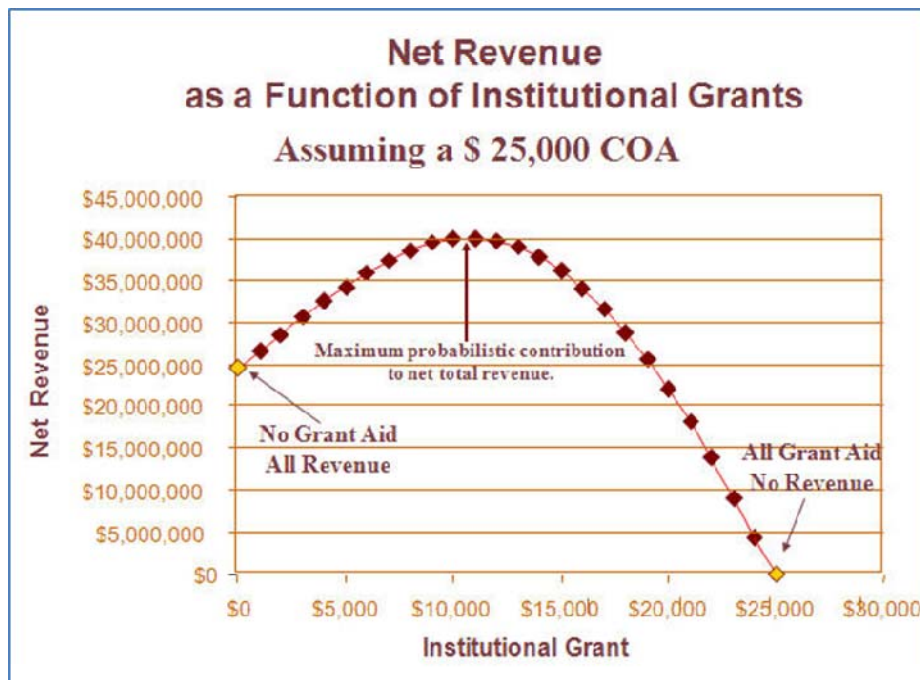
Conceptually, the relationship between institutional grant offer and probability of enrollment is always an S-curve (Table 1, below). The lower left portion of the curve is flat at the first few grant offers while the majority of points show the probability of enrollment increasing as the grant amount increases. The top portion of the S-curve is, again, flat at the highest grant amounts.

This relationship is valuable to colleges and universities because it explains that the grant amount must reach a certain level to start impacting enrollment decisions, but that at another point, giving larger grant offers stops impacting those decisions. In other words, the scenario in Table 1 shows that awarding a student \$3000 in scholarship is not effective because it won't positively influence his or her decision to enroll at the institution. Likewise, offering full cost of attendance (COA) scholarships of \$35,000 may be over-awarding, because an award of \$27,000 might have been sufficient to enroll the student (and resulted in net gain to the institution).



Using a statistical model to determine at which point institutional grant offers no longer influence enrollment decisions allows institutions to save money and avoid spending more than necessary to reach institutional goals. In other words, students are not under-awarded (which would negatively affect enrollment) or over-awarded (which would positively affect enrollment but negatively affect net revenue to the institution). A good statistical model will determine the most effective institutional grant offers, allows schools to maximize revenue and simultaneously attain several institutional goals, including (but not limited to) net total revenue, headcount, and discount rate.

A more uniform curve is shown depicting revenue as a function of institutional grant offers at a specific cost of attendance (Table 2, below). This aggregate curve shows the relationship between net revenue and institutional grant awards. There is a point under the curve in which an aid strategy will generate the maximum net total revenue possible for a given admitted student population. In this example, an average institutionally funded award (discount) of approximately \$11,000 (across the entire class) would enroll desired students and bring in the most net revenue to the institution. An average award greater than \$11,000 would result in enrolling students, however the net revenue to the institution would decrease as a result of over-awarding. While the math behind the statistics does not change, each college or university is unique and should rely on a customized model specific to that institution.



Developing a Predictive Model

The development of a predictive model is a critical step in the process of price-setting and tuition discounting. Logistic regression is most often the statistical tool of choice, because the enrollment probability function uses a dichotomous dependent variable (*i.e.*, the student did or did not enroll). Logistic regression is a predictive modeling technique (similar to multiple regression) that allows us to take student characteristics (such as scholarship amount, exam scores, sex, and need), and use them to predict the probability that an accepted student will matriculate to a given institution.

Key to the success of a predictive model is good quality data. Institutions that are considering variable tuition discounting should begin to collect and archive admission and institutional aid (scholarships, bursary, grants) data immediately, because the nature of the predictive

modeling process is to look to the past to develop a model to manage to the present and envision the future. If no data are available, then the predictive modeling process cannot be undertaken.

Important data to collect for predictive modeling:

Student demographics

Exam scores

High school information

Family income

Student financial need

Recruitment status

First contact source

Enrollment status

Resident/Commuter

Institutional aid offered

Special recruit/legacy status

Cost of attendance (tuition, fees, room & board)

Campus visit/interest indicators.

Setting the Optimal Price

One consequence of lessening governmental control over institutions of higher education is that the colleges and universities will be free to set their own tuition price. This will dramatically change the landscape of higher education within countries because consumers will make choices based on the net price of a college or university relative to their perception of the institution's value or reputation relative to other institutions (Maguire Associates, 2003).

In the case of the U.S., where colleges and universities are free to set their price, too often we find that institutions set enrollment and financial goals without anticipating the non-linear consequences of price setting and financial aid practices on their institutional budget and enrollment outcomes (Cox-Maguire, 2007). If the cost of attendance is set higher than the market is willing (or able) to bear, the institution will lose enrollment and revenue, because there will be fewer students paying the higher price. If the cost of attendance is set too low, the institution may have healthy enrollment but be sacrificing much needed revenue. In fact, tuition increase decisions, enrollments, and financial aid policies are intertwined.

As a first step, it is helpful to learn more about the reaction of students at all levels of financial need to the University's price. In demonstrating reactions to price, a good analysis will show how the University's current price and institutional grant aid policies relate to enrollment and financial outcomes in recent years. Then, the modeling process will illustrate what *could have been* achieved last year financially (financial aid budget, discount rate, and net tuition and net total revenue) and in enrollment results (increasing diversity, drawing more students from targeted geographic markets, raising academic quality, etc.). This process allows institutions to *quantify* the consequences of different actions before they are taken. It reveals specific outcomes that are beyond human ability to assess without the assistance of modeling tools.

A New Role for Researchers

As institutional administrators begin to rely more on data to make sound decisions, the roles

of institutional researchers and data analysts who turn data into viable information will become increasingly critical. With this in mind, institutional administrators and researchers should familiarize themselves with the concepts and practices of tuition discounting and price sensitivity. College and universities will be in need of data, and more importantly, *information* to inform their decisions about pricing and tuition discounting.

Top-quality researchers and analysts are the informed link between institutional issues, data, appropriate statistical methodologies and tools. Data professionals are the active conduit between institutional data and actionable information. Most importantly, data analysts and researchers may well be the difference between institutions that thrive in the new higher education economy, and those that can't keep pace.

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About Maguire Associates

Founded in 1983, Maguire Associates is a research-based consulting firm exclusively serving educational clients in the United States and abroad. We have been a leader in the evolution of enrollment management since its inception. Our founder and Chairman, John (Jack) Maguire, is credited with inventing and developing the concept and coining the term. We have served over 350 clients, applying innovations in market research, analysis, and predictive modeling to help our clients understand the dynamics of past performance, apply insightful knowledge to sound decision-making in the present, and attain critical outcomes in the future.

We have a strong track record of supporting efforts across an institution – from strengthening the admissions process and helping deliver more robust, balanced incoming classes; to strategic pricing and ensuring the most effective use of financial resources; to image/brand development, target marketing, and competitive positioning; to improving student retention; to marshalling the talents of faculty and staff; to engaging alumni in all facets of institutional life.

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