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Tuition Discounting at Small, Private, Baccalaureate Institutions: Reaching a Point of No Return?

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Cover Page Footnote

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Tuition Discounting at Small, Private, Baccalaureate Institutions: Reaching a Point of No Return?

By Luke Behaunek and Ann Gansemer-Topf

This paper describes relationships between tuition discounting (TD), net tuition revenue, and other institutional characteristics at four-year, liberal arts institutions. TD, a practice whereby institutional grants are used to subsidize a student's educational expense, has become a common practice at four-year institutions. TDs impact on enrollments, financial aid, and budgets continues to increase, raising concerns about the long-term sustainability of the practice. Drawing upon Breneman's (1994) economic theory of four-year private institutions, this research examined trends in student characteristics, enrollment, institutional grants, and net tuition revenue (NTR) and the relationship between TD practices NTR. Analyzing panel data of four-year, small, liberal arts colleges from 2003-2012, results illustrated that over the 10-year period, enrollment, tuition, and number and amount of institutional grant aid increased; average yield and SAT average score decreased. NTR has increased but lags behind increases in tuition and gross tuition revenue. Additionally, there is a point at which TD practices do not generate additional revenue. The results highlight the importance of financial aid officers and institutional leaders to examine the effectiveness of their current tuition discounting practices, the demand for their institution, and strategies for improving enrollment and retention.

Keywords: *tuition discounting, liberal arts colleges*

Tuition discounting, a practice whereby institutional grants are used to subsidize a student's educational expense (Hubbell & Lapovsky, 2004), has become a common practice across the country (Doyle, 2010a). Almost every four-year, private institution uses tuition discounting in admissions offers (NACUBO, 2014) as a way to attract students who are either unable to pay, who are unwilling to pay the full cost of tuition, or to strategically recruit students with specific background or academic characteristics (Baum, Lapovsky, & Ma, 2010; Doyle, 2010a; Doyle, 2010b; Heller, 2008). From 2005 to 2016, the average full-time freshmen tuition discount rate at four-year, private institutions has increased from 38% to 49.1%; almost half of all students receive some amount of grant aid (NACUBO, 2016).

Various constituents define tuition discounting in a variety of ways. As Allan (1999) outlined, institutional leaders may define tuition discounting as the percentage of tuition revenue that is used to fund institution grants. Financial aid staff who are responsible for tracking aid may include gifts and endowments within the definition, and those responsible for marketing and recruiting students may add in other federal grants and external scholarships. For our study, tuition discounting included only grant aid provided to students through an institution, which is the most common definition and source of tuition discounting (NACUBO,

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2013). Our study's definition of tuition discounting does not include scholarships, grants, and other sources of money external to the institution that a student may collect as they attend college. An institution can provide grant aid through two venues, restricted and unrestricted. Restricted grant aid, also known as funded grants, is funded by gifts or accounts specifically designated for and restricted to student financial aid. Unrestricted grant aid, also known as unrestricted funds, is commonly referred to as general funds of an institution, can be used at an institution's discretion to fulfill its mission in a wide array of interests (Hillman, 2012). Our definition of tuition discounting includes both restricted and unrestricted funds, and we use the term restricted and unrestricted grants to refer to funds used for financial aid purposes. Of particular importance is the amount of tuition discounting occurring from the general operating budgets of institutions - the unrestricted or unfunded tuition discounts. The amount of these funds divided by tuition and fees of full-time equivalent (FTE) students is known as the unfunded tuition discount rate (UTDR). This rate more acutely signals the trade-offs among enrollment, tuition, and tuition revenue which may be present based on the practice of tuition discounting (Hillman, 2011).

In competing for highly desirable students in a competitive marketplace, institutions of higher education (IHEs) are using large amounts of unrestricted grant aid to enroll students and fulfill the goals of the institutions. Consequently, the extent of this discounting may impact net tuition revenue (NTR) generated by incoming classes (Hillman, 2012; Summers, 2004). NTR is the revenue gained through tuition and fees after subtracting institutional grant aid. As the percentage and amount of funds dedicated to tuition discounting practices continue to rise (Merea, 2010), the sustainability and effectiveness of using this strategy to achieve enrollment and fiscal goals is being questioned (Ehrenberg, Zhang, & Levin, 2006; Heller, 2008; NACUBO, 2016; Redd, 2000; Supiano, 2012).

In some cases, increasing tuition discounting may have a negative impact on meeting enrollment goals and generating tuition revenue, thus impacting the financial health of an institution. This study examines these relationships among tuition discounting, enrollment, and NTR at small, four-year, private institutions that commonly utilize this strategy. Our research questions were:

1. What are trends in institutional grant aid and institutional characteristics for small, private, four-year, not-for-profit, baccalaureate institutions?
2. For institutions with varying levels of UTDR, what is the effect on institutional characteristics?

Using data from 2003-2012, we examined changes in institutional characteristics (i.e., student applications and enrollment numbers, tuition, applications, admittance and yield rates, average standardized test scores, minority student enrollment, and Pell-eligible students). Because tuition discounting is used to meet enrollment goals or attract specific populations of students, we were interested in first examining trends in these areas.

A large majority of institutional tuition discounting practices are funded by unrestricted grant aid (NACUBO, 2013); only about 10% of merit aid is currently being funded by endowment earnings, which is the most common source of restricted grant aid (NACUBO, 2013). As the amount and percentage of unrestricted grant aid continue to increase, so do concerns about the influences of these increases on other institutional enrollment and financial goals. Our second research question examined the relationships between institutional characteristics and varying amounts of UTDR. Table 1 provides an overview of the variables and their definitions that were the focus of our research.

Theoretical Framework

Breneman's (1994) economic theory provided our study with a framework that facilitated an understanding and interpretation of tuition discounting decisions taking place at four-year, baccalaureate institutions. In Breneman's work, he suggested a two-stage optimization approach, with the first stage of the theory "setting

the desired enrollment, as well as creating the inputs (e.g., faculty, staff, facilities,) needed to serve that enrollment at a financially sustainable quality" (Breneman, 1994, p. 37). In the second stage, a college focuses on the quality of the students, staff, and facilities, while being confined to certain budgetary restraints. Tuition discounting plays an important role in the second stage, because the "determinants of total revenue are an essential part of the budget constraint, and net tuition revenue (gross tuition revenue minus unfunded student aid) is, for most colleges, the largest single revenue source" (Breneman, 1994, p. 38). Breneman stressed the importance of tuition discounting when analyzing private, four-year, institutions, especially due to their reliance on tuition. In our study, we assumed that institutions had set their enrollment goals (i.e., first stage) and we were then interested in how tuition discounting may impact other quality factors measured by the percentage of minority and low-income students and academic performance as measured by SAT scores (i.e., second stage). Thus, we first examined trends in these variables over 10 years and then subsequently examined if quality markers (i.e., academic performance, minority status, income) varied by institutions with differing levels of tuition discounting.

Figure 1 presents a graphical representation of Breneman's theory. Institutions face a downward sloping demand curve and seek to enroll an optimal number of students (X_N), determined in the first stage of the two-step optimization model. However, only a portion of these students (X_{FP}) will be able and willing to pay the full tuition and fees of the institution. Area *abc* shows the amount of unrestricted institutional grant aid required to reach optimal enrollment levels at tuition level P and demand curve DD. The demand curve is a representation of the number of students willing to pay various tuition amounts. Within the local, state, regional, national, or international market places, the willingness of students to pay a certain tuition amount will depend on a number of factors.

Table 1

Variables, Calculations, and Variable Codes derived from IPEDS

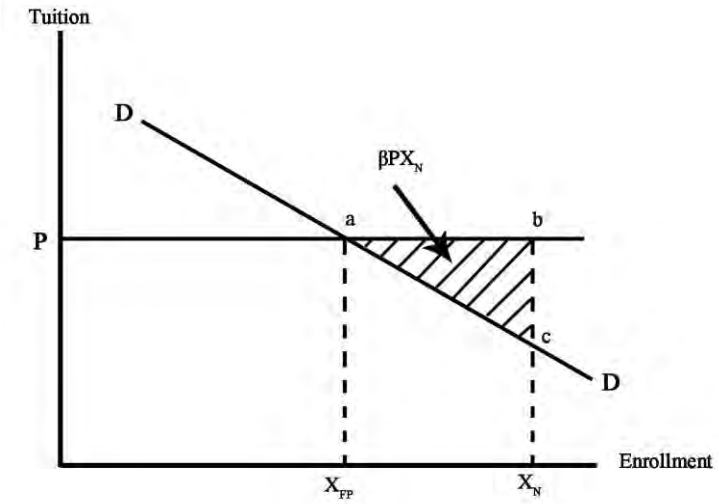
Variables	**Calculation**	**Variable Codes**
Financial Variables		
Unfunded/Unrestricted Grants	Grants from general funds of an institution, can be used at an institution's discretion to fulfill its mission in a wide array of interests	
Funded/Restricted Grants	Gifts or accounts specifically designated for and restricted to student financial aid	
Tuition Discount Rate	(Restricted Institutional Grants + Unrestricted Institutional Grants) / ((Undergraduate Tuition and Fees*UFTE) + (Graduate Tuition and Fees*GraduateFTE))	TDR
Restricted Tuition Discount Rate (RTDR)	(Restricted Institutional Grants) / ((Tuition and Fees)*FTE))	RTDR
Unrestricted Tuition Discount Rate (UTDR)	(Unrestricted Institutional Grants) / ((Tuition and Fees)*FTE))	UTDR

Endowment Value	Endowment Assets at Beginning of Fiscal Year	END
Endowment Value per FTE	Endowment Assets at Beginning of Fiscal Year/FTE	
Net Tuition Revenue (NTR)	(((Tuition and Fees)*FTE) – (Restricted Institutional Grants + Unrestricted Institutional Grants))	NTR
Net Tuition Revenue per FTE (NTR FTE)	(((Tuition and Fees)*FTE) – (Restricted Institutional Grants + Unrestricted Institutional Grants)) / FTE	NTRFTE
Institutional Variables		
Undergraduate FTE Enrollment (Enrolled)	Full-Time Equivalent Undergraduate Enrollment (Instructional Activity Derivation)	UFTE
Tuition and Fees (Tuition)	Published In-District Tuition and Fees (Current Year)	Price
Admission Rate (Admit Rate)	(Admissions total)/(Applicants total)	ADM
Yield Rate	(Enrollment total)/(Admissions total)	Yield
Pell Grant	Percentage of Students Receiving Pell Grants	PG
Pell Grant per FTE	Percentage of Students Receiving Pell Grants/FTE	Pell Grant/FTE
Percentage of Minority Students	(Grand Total – Race Unknown Total – White Non-Hispanic Total) / (Grand Total – Race Unknown Total)	Minority
Standardized test score, measured by SAT*	(SAT Critical Reading 75th Percentile Score + SAT Math 75th Percentile Score)	SAT

*Concordance tables used for institutions with ACT as primary reported test

Figure 1

Enrollment Demand and Unrestricted Tuition Discounting. β represents the tuition discount rate for unrestricted funds. X_{FP} is amount of full-pay students, and X_N is total enrollment. P is the tuition level of the institution, and line DD indicates the demand curve facing institutions. Adapted from "Liberal Arts Colleges: Thriving, Surviving, or Endangered," by David W. Breneman,1994. Copyright 1994 by The Brookings Institution.



Breneman posited that the challenges and futures facing liberal arts institutions varied widely: some institutions were thriving, a majority were surviving, and a few were endangered. Even though most of the institutions during his study are still functioning, a few colleges and universities have closed their doors since Breneman's publication (Bidwell, 2015), and many others have shifted in focus (Baker, Baldwin, & Makker, 2012). In *Demographics and the Demand for Higher Education,* Grawe (2018) provides a more nuanced examination of future projections of higher education enrollment and their impact on colleges and universities. Except for elite institutions and highly ranked four-institutions, the majority of higher education colleges and universities will be experiencing significantly less demand in the upcoming decades. The current context coupled with future projections indicate how important it is to understand the influence of tuition discounting in the sustainability for small, private, and four-year colleges.

Review of Literature

Tuition discounting has been part of the system of United States higher education for centuries (McPherson & Shapiro, 1998), beginning with a small, singular donation at Harvard University in the 1600s to help a needy college student (Martin, 2012). The practice did not spread widely and remained focused on small, need-based programs until the 1950s when the College Scholarship Service (CSS) was established to "apply a uniform methodology in the determination of financial need" (McPherson & Shapiro, 1998, p.6). For the first time, meritorious attributes such as academic aptitude and special skills (e.g., arts, athletics) were included in the discussion of financial aid practices (McPherson & Shapiro, 1998).

The 1970s to early 1980s witnessed a sharp growth in merit-based aid practices (Davis, 2003; McPherson & Shapiro, 1998; Russo & Coomes, 2000); this growth was followed by steady and significant increases in tuition levels (Russo & Coomes, 2000). Merit aid began to be used as an important leveraging tool to attract the highest achieving students; subsequently creating a competitive marketplace (McPherson & Shapiro, 1998). During the 1980s and 1990s, merit aid practices continued to expand. From 1995-96 to 2007-08 the percentage of undergraduates receiving merit aid doubled, increasing from 6% to 14% (NCES, 2011). Awarding this type of aid became a valuable enrollment management tool (Davis, 2003). Even as early as 1990, concerns about the escalating tuition discount levels increased (Russo & Coomes, 2000), and as tuition

discounting rates have climbed, so have the conversations over the drawbacks and unintended consequences of the practice.

As tuition discounting levels have increased, the potential trade-offs between spending institutional resources on financial aid and other major areas of a college or university's budget became more apparent. Dollars spent on unfunded, or unrestricted, institutional grant aid are provided by the IHE's general resources. As a result, allocating more funds to this type of institutional aid results in redirecting resources away from other areas of the budget and potentially altering the educational experience for students and faculty (Griffith, 2009; Massa & Parker, 2007). If an institution increases unfunded tuition discounts but does not realize growth in net revenue, the institutions may be less able to provide a quality education and compete for future students (Davis, 2003). Nonetheless, the upward trend of institutional tuition discounts has continued in spite of the potentially negative consequences.

National Association of College and University Business Officers (NACUBO) has been collecting data on tuition, tuition discounting, grant aid, and NTR from business officers at four-year, nonprofit institutions for over two decades. A review of the data from the past decade demonstrated a few trends: tuition continues to increase; the amount of money spent on and the number of students benefiting from tuition discounting have increased; the percentage of funds coming from unfunded sources (i.e., general funds) that are redistributed to grant aid for tuition discounting purposes has increased; reliance on endowment revenues to discount tuition has decreased; and NTR has remained the same (NACUBO, 2013, 2014). College Board's (2017) Trends in College Pricing ricing found that between 1987-88 and 2017-18, tuition at private colleges increased 129% and tuition at public institutions increased 213% and tuition discounting at private colleges has now exceeded 50% (NACUBO, 2019). Because of these trends, institutional leaders and policymakers are questioning the sustainability and effectiveness of these trends (NACUBO, 2016).

Reasons for Discounting

Colleges and universities employ tuition discounting for a variety of reasons, but they generally fall into two categories: enrollment management and revenue generation (Doyle 2010a; Hillman, 2012). Institutions may attempt to shape or craft a class to fit enrollment priorities. This practice may include removing barriers to increase accessibility for students unable to pay full tuition prices, focusing on students from diverse backgrounds, recruiting academically talented students, or enticing students with other characteristics the institution finds desirable (Breneman, 1994; Davis, 2003; Hillman, 2012; Redd, 2000).

Many students are unable to pay the cost of attendance, even after other sources of financial aid are exhausted. Consequently, institutions may decide to direct institutional grant aid to meet the uncovered costs of these students' attendance, either out of a sense of mission or obligation or if an institution will still realize a net gain in tuition revenue (Doyle, 2010a; Redd, 2000).

Although traditionally focused on lower-income students, tuition discounting practices have expanded and now are being applied to wealthier students as a way to meet enrollment goals or enroll students with specific characteristics (e.g., athletic or artistic talent) (Ehrenburg et al., 2006; Redd, 2000). In doing so, institutions began to focus on the academic performance of prospective students as a reason to employ tuition discounting strategies (Breneman, 1994; Davis, 2003; Hillman, 2012; Redd, 2000). Offering merit-based scholarships to incoming students increases incentives to perform well in high school (Henry & Rubenstein, 2002) and enables institutions to compete for the highest caliber of students, hopefully sustaining or increasing the academic profile of an incoming class (Davis, 2003; Redd, 2000).

Tuition discounting also may be used to diversify the racial or ethnic profile of a campus (Breneman 1994; Davis, 2003; Hillman, 2012; Redd, 2000). Researchers have noted that differences in the type of aid

impact racial groups differently. Student expectations surrounding tuition discounts and grant aid can have a significant influence on college choice, these expectations and enrollment patterns also differ by race (DesJardins, Ahlburg, &McCall, 2006; Kim, DesJardins, & McCall, 2009). In her study examining almost 20 years of data at private, four-year colleges, Griffith (2009) found that increasing merit aid negatively affected African American enrollment at middle and top selectivity institutions but increased enrollment at the bottom-tiered institutions. Griffith (2009) concluded that because of merit aid "Black students are being redistributed from top-tier college to bottom-tier colleges" (p. 19). Wealthier students are more likely to enroll, regardless of race. When aid is similar, White and Asian American students are more likely than African-American and Hispanic students to enroll, suggesting that institutional leaders need to adjust tuition discounting practices for different student populations to meet institutional goals (Kim et al., 2009). Decisions on the type of aid awarded (i.e., merit versus need) and the amount and type given to specific student populations will have consequences for student enrollment and the demographic make-up of the institution.

Tuition discounting has continued to increase so we were interested in examining the relationship between tuition discounting and other factors over a 10-year period. Specifically, we examined the trends in applications, yield, enrollments, student academic profile, ethnicity, and low-income students and the relationship between UTDR and these institutional characteristics. For our study, Pell Grants were used an indicator of low-income students, the percentage of minority students was used a proxy for racial diversity, and SAT scores were used as a measure of academic quality.

Methods

Data Sources and Study Population

We used data from the Integrated Postsecondary Education Data System (IPEDS) and The Institute for College Access and Success (TICAS). We used IPEDS to gather all data except Pell Grant recipients. The IPEDS dataset only had recorded data for numbers of Pell Grant recipients from 2008 so Pell Grant files from TICAS were merged with IPEDS data to create a panel data set that included data from 2003 – 2012. The panel data sets illustrate historical changes in variables thus allowing for trends and differences among institutions to be observed (Bosshardt, Lichtenstein, Palumbo, & Zaporowski, 2010).

This study focused on 456 four-year, not-for-profit, private institutions that were classified as Bachelor's/Arts and Sciences or Bachelor's/Diverse Fields Arts and Sciences (Carnegie, 2010) from 2003-2012. These types of institutions can be categorized as "small" with average undergraduate FTE of around 1450 students. This institution type was chosen for three main reasons. First, this classification of institutions is highly dependent upon tuition revenue (Martin, 2012). Any fluctuations in tuition revenue impact these types of institutions since they have minimal state, federal, or external grant funding compared to large state institutions or research universities (Martin, 2012). Second, although 50% of institutions had at least one FTE graduate student, these institutions are primarily focused on undergraduate education. Lastly, these types of institutions rely heavily on tuition discounting for enrollment and financial strategies (NACUBO, 2014).

The years of interest included the time spanning 2003-2004 and 2012-2013 academic years, including the years between, with the 2012-2013 academic year being the latest period that IPEDS student financial aid data was fully available at the time of data collection. The data from these years was utilized to construct a panel data set to analyze the relationship between tuition discounting and net tuition revenue. This range of time allowed for annual differences to be present to analyze the relationship between tuition discounting practices and net tuition revenue, while maintaining a small enough range where common reporting

practices were maintained and broad institutional changes, such as dramatic shifts in mission, were minimized (Baltagi, 1995).

Before analysis, we screened the data for reporting errors and missing data. We included institutions with the data available for each variable but eliminated institutions where reporting errors were evident. We also eliminated a small subset of colleges who had unique institutional missions and tuition discounting practices. These included Berea College, College of the Ozarks, Alice Lloyd College, and Cooper Union for the Advancement of Science and Art.

Institutions such as Berea College and College of the Ozarks primarily are funded through endowment revenues and have lean staffs, requiring the students attending the institutions to complete a certain amount of hours of work per week in service to the institution. They are outliers when compared to the other college and universities, by charging no tuition while admitting students with limited financial resources (Berea College, 2015; College of the Ozarks, 2015). Due to this, the amounts of grant aid these two institutions were awarding to students was very high compared to other institutions, and it was not fitting to include them in the data since it skewed the results significantly. Other colleges such as Alice Lloyd College and Cooper Union for the Advancement of Science and Art provide free or low-cost tuition and were also not included in the study.

One final check of the data set for outliers was undertaken to check for statistical reporting errors that would skew data and results significantly. Upon analysis of net tuition revenue per FTE, a small set of institutions had a negative value for NTR per FTE for at least one year of interest. When this occurred, we reviewed institutional data. In most cases, we noted reporting errors. For example, one college reported an enrollment of 70 FTE in one year when the average enrollment for other years was 1029. We eliminated four colleges based on reporting errors.

Variables

This study examined (a) financial variables that included undergraduate tuition and fees, tuition discount rate (TDR), restricted tuition discount rate (RTDR), unrestricted tuition discount rate (UTDR), endowment value per full-time student (FTE), and net tuition revenue (NTR) and (b) institutional variables that included undergraduate and graduate FTE enrollment, admission rates, percentage of Pell Grant recipients, percentage of minority students, and standardized test scores (see Table 1).

For this study, institutional grants were divided into restricted and unrestricted types based on means of funding. Using NACUBO's (2014), definition, TDR was calculated by the total amount of institutional grants divided by total tuition and mandatory fee revenue. Other researchers who have focused on tuition discounting have also defined TDR using the same formula (Baum et al., 2010; Martin, 2012; Summers, 2004).

Data Analysis

To answer the first research question, we calculated descriptive statistics for frequency of institutional aid, application, admittance, and yield rates, average SAT, enrollment, tuition, NTR, average unfunded and funded grants, and tuition discount rates. Tuition was examined using reported tuition rates but was also converted using the Higher Education Price Index (HEPI) to account for inflation. The HEPI was utilized to provide a better estimate of NTR, as over time, revenue dollars generated by an institution will have varying amounts of purchasing power based on the cost drivers facing higher education (Commonfund, 2015), thus providing a more accurate picture of the purchasing power of NTR. As mentioned earlier, tuition discounting has been used to meet enrollment goals, provide financial aid for low-income students,

diversify the population, and raise the academic quality of the institution. Therefore, we also analyzed trends in enrollment rates, Pell Grant recipients, percentage of minority students, and SAT scores.

To answer Research Question 2, we divided institutions by decile by their UTDR rate in 2012-2013 and average UTDR, RTDR, price NTR per FTE, admit rate, SAT, percent of minority students and Pell Grant recipients, and endowment per FTE were reported. We then examined the average annual change from 2003-2012 by each decile group. Through this relatively simplistic data analysis, we could illustrate relationships between UTDR and other variables.

Limitations

This study has several limitations that may impact the interpretation and application of results. Although the population of institutions was narrowly defined to Bachelor's/Arts and Sciences or Bachelor's/Diverse Fields, this set of institutions still represents a population that includes a variety of missions, strategies, selectivity levels, and student populations. Although primarily baccalaureate, some of these institutions offer graduate degree programs. Of the 456 institutions, 271 had at least one FTE graduate student in 2012-2013, with 167 of these institutions having 99 or fewer graduate FTE students. The average number of FTE graduate students enrolled at institutions with graduate offerings was 113. This study did not examine the potential influence of graduate student tuition revenue. Our findings, which assume that most NTR is driven by undergraduate tuition discounting, may not be applicable for institutions who generate a significant amount of tuition from graduate students.

Because this study focused on aggregate measures of institutional grant funding, the strategies across institutions on how that aid is dispersed are not included in the analyses. Institutions may have made significant changes in how they awarded institutional grant aid over the years in the study to maintain or gain a competitive edge in the marketplace. However, the data did not capture these efforts and thus, can offer few insights into specific strategies that may assist institutions in increasing NTR.

The undergraduate tuition and fee levels were for the fall of each year and affected every student attending at an undergraduate level. At all private institutions in the dataset, the in-district or in-state tuition and fees levels were equal to the out-of-district or out-of-state tuition and fee levels, so the in-district amounts were arbitrarily chosen as the variable of interest. This fact was verified when the data set was fully generated, but it is possible that specific academic programs may have differing tuition amounts. If this occurred, one strategy for increasing NTR might be to charge higher tuition for popular programs or discount these programs less. Unfortunately, the limitations of the dataset did not allow for this analysis.

We focused on first-time, first-year, entering cohorts but the breakdown between UTDR and RTDR by class year is not provided in IPEDS; the measures are only provided as a total expenditure item. Because these strategies are used primarily for recruitment, it would be useful to narrow the search directly to focus on first-time, first-year students when considering funding aid through unrestricted and restricted funds. Doing so could provide a more nuanced understanding of the association between NTR and institutional characteristics related to enrollment, academic performance, and low-income and underrepresented students.

Findings

The first research question examined trends in institutional grant aid and institutional characteristics for small, private, four-year, not-for-profit, baccalaureate institutions.

Frequency of Institutional Aid

In 2003, 158 (35%) IHEs were awarding institutional grant aid to 95% or more of their entering cohort; 56 (12.5%) were awarding institutional grant aid to 99% or 100% of incoming first-year students. For the Fall, 2012 incoming cohort, 262 of the 448 institutions (58%) awarded institutional grant aid to more than 95% of their incoming first-year students. Of these, 170 of the 448 IHEs (38%) awarded institutional grant aid to 99% or 100% of the incoming first-year cohort in the same year. The increase from 158 institutions in 2003 to 262 IHEs in 2012 represented an increase of over 65%. The number of institutions awarding institutional grant aid for 95% - 98% of incoming fall cohorts had fluctuated slightly but remained between 91 and 108 (20% to 24%). The number of institutions awarding to 99% or 100% of students has grown steadily, tripling from 56 in 2003 to 170 in 2012 (see Figure 2).

Applications for Admission, Yield, Institutional Characteristics, and Institutional Grants

Breneman (1994) believed that a major obstacle to the high prevalence of institutional grant aid practices and high tuition levels would be a shift in demand represented by admissions applications, and by extension, the yield of applicants enrolling in institutions. By this line of thought, as tuition levels increased over the 10 years of the study, institutions in the study should witness a decrease in applications due to the outcry from the public criticizing the high tuition levels and lack of affordability (Breneman, 1994). The situation, however, is more complicated within the institutions of interest than Breneman (1994) predicted.

Figure 2

Number of institutions with high frequencies of institutional grant aid (n=448). Counts represent number of institutions awarding institutional grant aid to over 99 or 100 percent and 95 to 98 percent of incoming first-time, first-year students for each fall cohort.

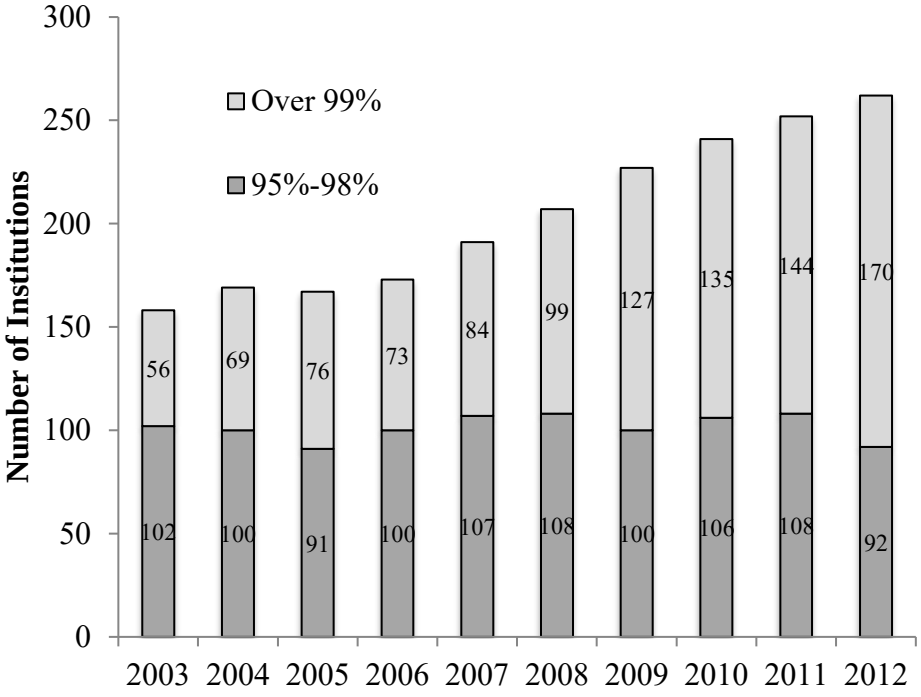


Table 2 and Figure 3 illustrate trends in average applications and enrolled students, average SAT scores, admitted rate, yield, unfunded and funded rates, and average percent of minority and Pell grant students. The average number of applications at each institution increased over 57% from 2003 to 2012, from an

average of 1,633 applications per institution in 2003 to 2,576 in 2012. The average admitted rate declined (68% to 61%). These changes occurred consistently and steadily over the years. Nevertheless, in the same period, yield rates have declined over 10%, from 41.3% in 2003 to 30.7% in 2012. This decline indicates that the marketplace is more competitive for these institutions. Institutions are spending more time reviewing applications, deciding who to enroll, and developing financial aid packages with lower percentages of students choosing to enroll. This downward yield trend, combined with the increasing applications, may be that within the past decade, students are applying to more institutions (Kaminer, 2014).

Average SAT scores decreased over the 10-year period. The average enrollment for each fall cohort of first-time, first-year students increased slightly from 338 in 2003 to 352 in 2012. The average percentage of minority student enrollment increased 8%, and percentage of Pell Grant increased 4%. Of the 375 institutions that had sufficient data to calculate the change in enrollment, 39.2% witnessed a smaller first-time, first-year, student class in 2012 than 2003, 1.6% remained the same, and 59.2% had increased enrollment.

The unfunded discount rate represented the amount of tuition and fees that are distributed to students through grant aid awards that were funded through unrestricted sources within institutions' budgets. This rate has steadily climbed from 2003-2012, increasing seven percentage points from 23.6% in 2003 to 30.6% in 2012. Put another way, for every dollar a student paid in tuition and fees, an average of approximately 30 cents was returned to them in the form of unfunded institutional grant aid in 2012. The funded discount rate, the percentage of tuition and fees that was covered by funds solely dedicated to that purpose, declined over the 2003-2012 timeframe (8.1% to 5.8%). When these two rates are combined, the result was an increase in the total tuition discount rate, reaching a peak of 36.4% in the academic year of 2012-2013.

The upward trend of tuition discount rates over the 2003-2012 timespan was similar to the trend witnessed in NACUBO's annual study (NACUBO, 2014). In their report, NACUBO's 401 reporting member institutions reported an overall tuition discount rate of 33.9 percent in 2003 and a rate of 40.2 percent in 2012 (NACUBO, 2014). In summary, institutions were funding more grant aid from their general operating budget, and the rising tuition levels that have been facing students have been mitigated by increases in unfunded grant aid, resulting in an annualized 1.26 percent increase in net price for students from 2003 to 2012.

Price and Tuition Discounting Levels

Table 3 and Figure 4 illustrate trends in tuition, average NTR, average NTR per FTE, average unfunded grants, and average funded grants. Modest but steady increases in the price of tuition and fees were witnessed during 2003-2012: tuition increased 16%, and the HEPI-adjusted annualized percentage increases were 2.1%. The average NTR at institutions increased at an annualized 2.3 percent, climbing about $4.7 million per institution during 2003-2012, and matching the tuition and fee level annual growth as measured by the HEPI. NTR per FTE in 2012 was $1735 greater than 2003, representing an annualized increase of 1.26 percent between 2003 and 2012. Enrollment has outpaced NTR, leading to a lower growth rate in NTR per FTE when compared to NTR.

Total grant aid increased significantly, but the increases in institutional grant aid directed to students were almost entirely driven by significant growth in unfunded grant aid. Funded grant aid, money restricted for the sole purpose of funding institutional grants, saw a modest .3% annualized increase, whereas unfunded grant aid expanded significantly at an annualized rate of over 6.1%. The increase from an average of $7.8 million in 2003 to $13.3 million in 2012 represented an overall increase of over 70%. Therefore, although institutions have increased pricing levels and made small gains in enrolling more students, the NTR gains have been minimized by increases in institutional grant aid awarded through unfunded sources. Gross

tuition and fee revenue increased, in 2012 HEPI dollars, by approximately $12.12 million between 2012 and 2003. NTR only increased by $4.7 million during that time, indicating that 61% of increased gross tuition and fee revenue went directly back to funding unrestricted tuition discounts. This finding is similar to Redd's (2000) calculation of 59.1% over the 1990s.

Varying Amounts of UTDR

The second question examined the effect on institutional characteristics for institutions with varying amounts of UTDR. Table 4 shows the 448 institutions broken into decile groups by UTDR and the corresponding characteristics of those groups. To provide a snapshot of these relationships, only the 2012-2013 academic year is shown in the table.

In Table 4, the decile ranges had average UTDRs that varied widely, the top 10 percent of unfunded discounters had an average of 51.5% of tuition and fees covered by unfunded grant aid. The bottom 10 percent only had an average unfunded rate of 1.0 percent. Through the decile rankings, there were few trends or patterns discerned. The principal aims of tuition discounting at the institutional level which may include academic profile, minority students, and low-income students, did not trend in a positive direction. Lower rates of unfunded discounting were associated with higher rates of Pell Grant recipients and minority students. Endowment values did not indicate a strong pattern associated with unfunded tuition discounting rates, and there was only a slight inverse pattern between unfunded and funded rates.

When analyzing the relationship between UTDR and NTR, an interesting pattern is unveiled. The lowest values of NTR per FTE were found within the institutions with the highest and lowest rates of unfunded tuition discounting. The NTR per FTE values reach a peak in the seventh decile group as UTDR values diminish from the highest levels in Decile Group 1. As values of UTDR continue to decrease through Decile Group 10, NTR per FTE diminishes to levels even with Decile Group 1, which is composed of institutions with the highest values of UTDR. The highest amounts of NTR per FTE existed at institutions in Decile Group 7. The UTDR values within this group ranged between 25.0 and 28.7, and these 44 institutions had an NTR per FTE value of just over $19,500. The NTR per FTE was similar for Decile Group 1 ($13,391) and Decile Group10 ($13,587).

Table 2

Applications, Standardized Test Averages, Enrollment, Admitted Rates, Yield, Pell Grant, Minority, Unrestricted and Restricted Rates

Year	Average Applications	SAT	Average Enrolled	Average Admitted Rate %	Average Yield %	Average % Minority	% Pell Grant	Unfunded Rate %	Funded Rate %
2003	1,633	1,197	338	68	41.3	24.8	37.90	23.6	8.1
2004	1,668	1,194	337	66.9	40.9	25.5	36.80	23.5	7.8
2005	1,784	1,194	342	66.1	38.9	25.7	35.50	24.2	7.7
2006	1,832	1,188	345	65.1	39.4	26.3	33.80	24.7	7.5
2007	1,955	1,185	349	64.6	37	27.1	33.60	24.6	7.2
2008	2,116	1,189	366	63.2	37.3	28	35.90	25.8	6.8
2009	2,186	1,186	351	63	34.9	29	39.90	26.9	6.4
2010	2,308	1,189	354	62.2	33.7	30.5	42.20	28.1	5.8
2011	2,466	1,182	353	61.8	31.9	31.8	43.70	29.5	5.8
2012	2,576	1,184	352	61.3	30.7	32.8	42.00	30.6	5.8

Figure 3

Average applications, admitted rate, yield, enrollment, SAT scores, percentage of minority, Pell Grant, unfunded rate, funded rate, tuition rate Baccalaureate Institutions 2003-2012 (N=448).

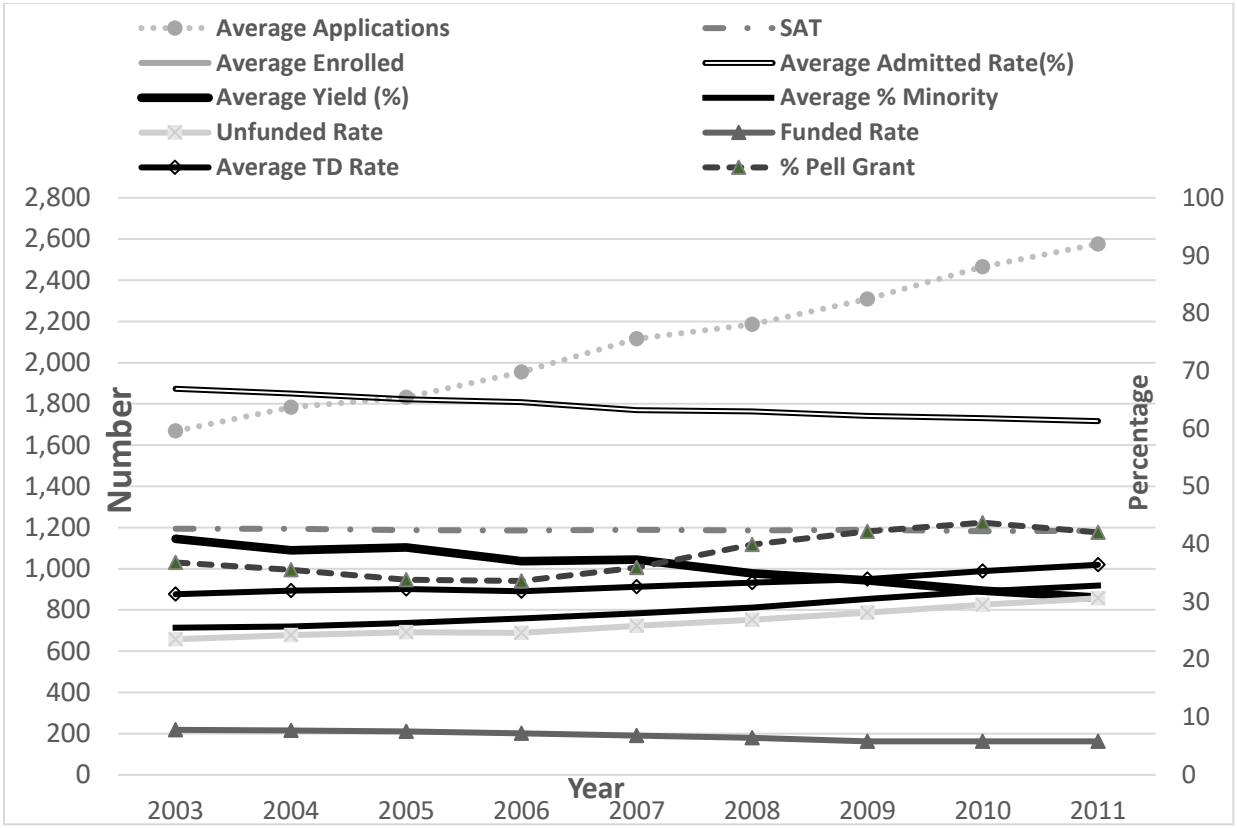


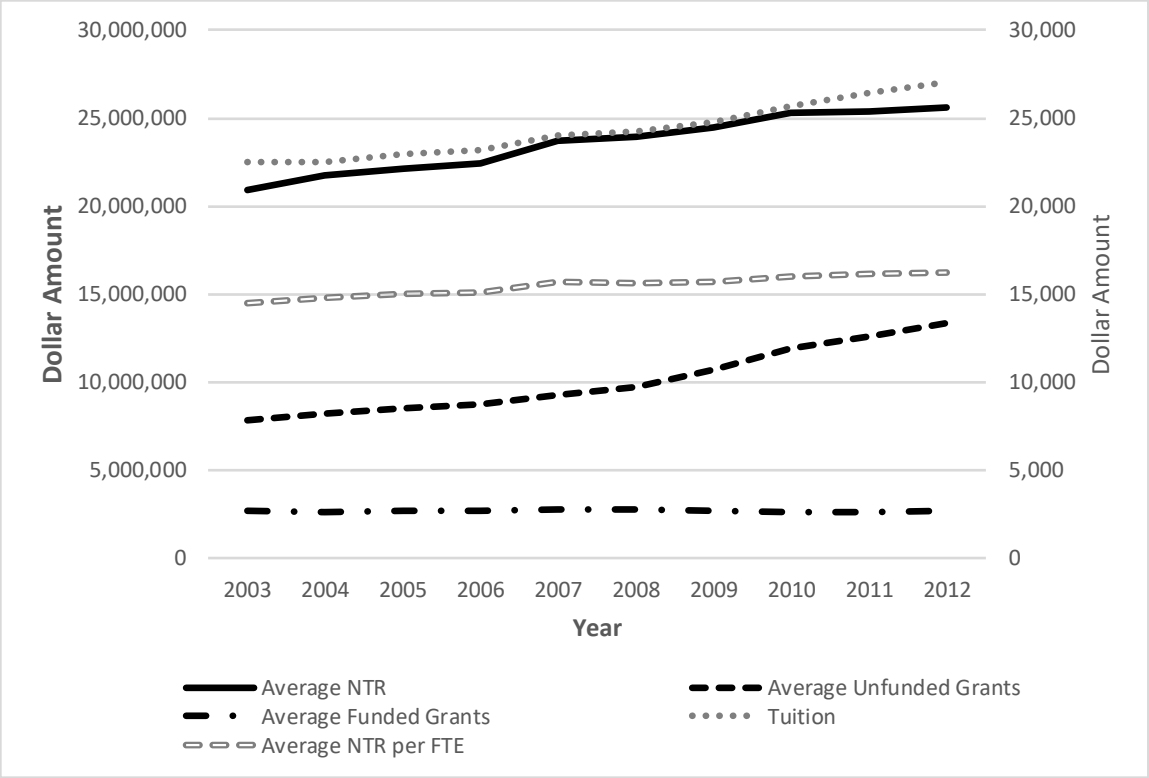
Table 3

Average Net Tuition Revenue and Institutional Grant Aid for Baccalaureate Institutions 2003-2012 (N=448).

Year	Average NTR	Average Unfunded Grants	Average Funded Grants	Tuition	Average NTR per FTE
2003	20,897,966	7,791,040	2,628,939	22,529	14,468
2004	21,744,106	8,167,707	2,615,699	22,489	14,812
2005	22,158,862	8,490,802	2,656,182	22,928	15,003
2006	22,407,211	8,754,925	2,644,731	23,177	15,113
2007	23,706,989	9,257,719	2,716,236	24,018	15,659
2008	23,960,132	9,735,629	2,724,041	24,249	15,580
2009	24,509,871	10,726,169	2,665,329	24,787	15,662
2010	25,328,627	11,882,777	2,586,851	25,706	16,003
2011	25,414,360	12,580,658	2,622,965	26,428	16,126
2012	25,598,272	13,319,584	2,699,012	27,052	16,203

Figure 4

Average net tuition revenue, average unfunded and funded grants, average net tuition revenue per full-time enrollment, and tuition for Baccalaureate institutions 2003-2012 (N=448).



This finding indicates that UTDR is associated with growing levels of NTR, but the practice is then associated with diminishing values of NTR per FTE after a UTDR around 28.7 percent (see Figure 5).

There was also a strong inverse relationship between average UTDR values and Pell Grants per FTE especially prominent with Decile Groups 7 through 10. When comparing Decile Group 1 to Decile Group 10 in Figure 5, Pell Grants per FTE varied from 38% to 69%.

Changes in UTDR Over Time

We then examined the impact of UTDR on other institutional characteristics by examining changes over the years of study. Table 5 displays the institutions in the study by decile groupings based on the average annual change of unfunded discount rates and other institutional characteristics during the 2003-2012 timeframe.

The deciles in Table 5 were grouped by the average annual percentage point change of UTDR rates for the institutions. Of the 433 institutions in the study that had sufficient data to calculate an average change in UTDR between 2003-2012, 328 witnessed growth in the UTDR, 19 of the institutions had the same UTDR value, and the remaining 86 institutions had a lower level of UTDR. The overall average of the 433 institutions was an increase of 7.11 UTDR points during the years of the study, which was an average annual change of .79 percentage points. The highest decile had an average annual increase of 3.50 percentage points for an average overall increase of over 31 points from 2003-2004 to 2012-2013. The lowest decile had an average annual decrease of 1.36 points per year, or approximately 12 points decrease overall. The two deciles' averages represented over a 40-point difference in the UTDR value change between the ends of the decile spectrum.

As the values of UTDR changed between the decile groups, one would expect other values of variables to shift if there were relationships between UTDR and the aims of tuition discounting. As discussed, these aims could include NTR generation, increasing the academic profile of students, serving various populations, or leveraging tuition discounting to increase interest in the institutions (Hillman, 2012).

When price and NTR per FTE were shown, a consistent and powerful pattern emerged. As UTDR annual change levels increased through the decile groups, price increased consistently, with Deciles 1, 2, and 3 having annual average increases of $654 to $689 in undergraduate tuition and fees and Decile 10 having an annual average increase of only $334, less than half of the changes in Deciles 2 and 3.

Table 4

Institutional Characteristics by Unfunded Tuition Discount Rate, by Decile for Academic Year 2012-2013

Decile	Avg. UTDR	Avg. RTDR	Price	NTR / FTE	Admit Rate	SAT	Minority	Pell Grants / FTE	Endowment/ FTE	N
1	51.5	3.5	30,175	13,391	65.4	1212	26.2	38.0	75,411	45
2	44.5	4.0	27,823	14,095	67.8	1162	23.6	35.6	59,440	45
3	41.0	3.9	30,200	16,009	66.9	1203	21.0	33.5	56,079	45
4	37.5	4.4	29,923	17,015	64.7	1185	21.8	32.4	59,032	45
5	34.3	3.8	29,234	17,450	65.0	1185	24.2	37.1	59,338	45
6	30.6	4.7	29,237	18,190	58.1	1188	32.0	37.0	97,036	44
7	26.8	6.1	29,897	19,569	54.1	1216	29.1	33.4	100,791	44
8	22.8	6.7	26,560	17,875	52.8	1213	37.0	42.5	92.719	44
9	14.5	5.3	19,404	14,922	57.7	1111	55.1	63.7	45,588	44
10	1.0	16.5	18,112	13,587	58.7	1113	59.7	69.1	105,869	44

Figure 5

NTR/FTE and Pell Grants per FTE, by UTDR Decile Group, 2012-2013.

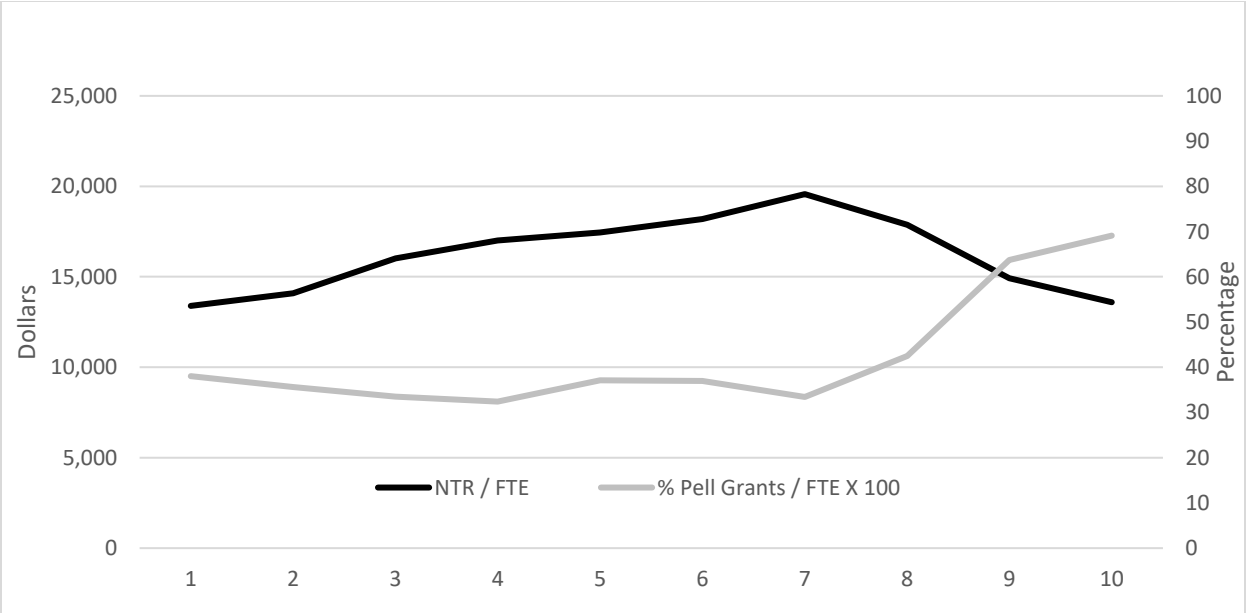


Table 5

Average Annual Change in Variable Value from 2003-2012, by UTDR Decile Group

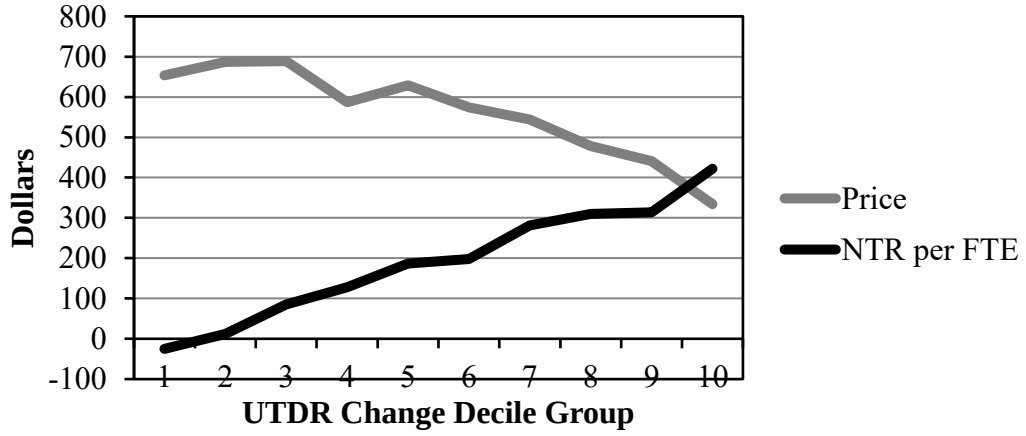
Decile	UTDR	Price	NTR per FTE	FTE	Admissions Rate	SAT	Minority	Pell Grants
1	3.50	654	-25	.9	-0.8	-2.8	0.9	0.8
2	1.90	687	12	9.7	-0.5	.3	1.0	0.8
3	1.33	689	85	5.5	-0.8	-2.9	1.2	0.9
4	1.05	587	128	8.5	-0.6	-1.4	0.8	0.7
5	0.81	629	187	12.0	-1.0	-0.1	1.0	0.6
6	0.58	574	198	15.2	-0.7	-0.5	0.9	0.5
7	0.32	544	281	14.7	-1.0	.4	0.5	0.2
8	0.06	478	310	81.3	-1.2	-1.0	0.8	-1.3
9	-0.21	441	314	18.0	-1.0	1.3	0.8	0.7
10	-1.36	334	422	29.0	-.7	-2.6	0.8	0.8

Note: Price and NTR per FTE in HEPI adjusted 2012 dollars. Amounts calculated by ((2012 value – 2003 value) / 9). N = 433.

However, the higher levels in price were not associated with increased revenues, as one may expect. An inverse relationship was present, and higher levels of price increase and UTDR values were associated with lower levels of NTR amounts per FTE students. Decile 1 witnessed an average annual decrease of $25 per FTE student between 2003-2004 and 2012-2013 while Decile 10, the group that averaged a reduction in UTDR values during the years of interest, experienced an increase of $422 per FTE student during the same period. Additionally, the Decile 10 gained an average of 29.0 students per year while Decile 1 only increased FTE enrollment by .9 students per year. Figure 6 displays the changes in price and NTR per FTE, by the decile groups formed on UTDR changes. There were clear trendlines present in both price and NTR per FTE changes over the decile groups. Decile Group 10, the group that witnessed the greatest gains in NTR per FTE, employed negative UTDR changes and kept tuition increases to the lowest level in the sample, as an average.

Figure 6

Changes in tuition and fees and NTR per FTE, by changes in UTDR, 2003-2012. Decile group 1 had the highest increases in UTDR; Decile Group 10 had the lowest increases in UTDR. Price and NTR HEPI adjusted to 2012 dollars.



Discussion

This study examined trends in enrollment and institutional student and financial characteristics at small, private, baccalaureate institutions from 2002-2013. Breneman's (1994) economic model for private liberal arts colleges provides a plausible explanation for many of these results. In the first step of the process, Breneman (1994) suggested that institutions set desired enrollment and inputs. Based on the results, institutions have been enrolling a relatively steady number of students, but it seems that institutions are finding a more competitive market. The number of applications for admittance has continued to increase, but the yield rate has declined by 11%, indicating a more highly competitive environment.

The decrease in the average admitted rate could be the result of a few different factors. First, institutions simply may be more selective due to the higher application amounts witnessed in 2012 compared to 2003, allowing fewer students to enter the institutions as a percentage of application totals. This reasoning would lead to fewer admitted students when combined across all institutions, but this did not happen. Total admissions grew by almost 200,000 students, increasing from 372,122 in 2003 to 566,392 in 2012, a growth of over 52%.

Another reason the average admitted student rate could have declined would be an increase of applications from inadmissible students, whether it is due to a lack of academic preparation or a combination of other factors. This increase would lead institutions to admit a lower percentage of incoming applications if the admittance standards remained consistent. As measured by SAT averages, average standardized test scores over the years of interest have declined slightly for enrolled first-time, first-year cohorts. This decline mirrors trends of SAT scores for college-bound seniors for the same period (NCES, 2013). This decline could be due to a change in academic preparation of incoming student applications, the increase of the number of students taking the exam, a lowering of academic standards for admittance across the time frame for some institutions, or a combination of the three.

Although the yield of new students has declined across the institutions in the study, the demand measured by applications has not. This decline signals a lack of outcry from consumers, possibly driven by smaller changes in net price once tuition discounts are offered. This lack of consumer outrage was predicted by Breneman's (1994) position that if tuition levels rose to a point in which tuition discounts were offered to almost every person who was accepted, the marketplace would accept the change. As institutions have increased tuition prices and grant aid dollars together, there have not been institutions in isolation making this decision alone; if only a few had adopted a high-discount, high-tuition model in which there was only a few if any, full-pay students, sticker shock at those locations would be enhanced. This strategy has normalized the high-price, high-discount model to new extremes. The practice of applying to an institution, receiving a financial assistance package, and then determining the college choice seems to be employed more frequently by students and families as indicated by the greater number of applications and admitted students but lower yield. Thus, when accounting for students who will matriculate at institutions after net price is considered, the demand facing these institutions is not increasing, as the number of applications would signal.

The growing access to apply to a variety of colleges also complicates the application and yield relationship. The Common Application, a non-profit organization, allows students to choose from over 500 member institutions when filling out one application, making selecting many institutions easier (The Common Application, 2015). Additionally, some institutions have begun waiving application fees altogether, broadening access to apply (Hopkins, 2012).

Providing tuition discounts to almost all enrolled students is becoming more of a norm than an exception as over 58% of the IHEs in the study are awarding institutional aid to 95% or more of incoming classes.

Within Breneman's (1994) theoretical framework, this change represents a shift in more institutions seeking to maximize NTR by shifting price levels to where very few students are paying the full price of admission. Breneman posited that even though this situation was plausible, it would be unlikely. Grawe (2018) found that the number of full-pay students has been on the rise since 2010, but the majority of these students attend top-tiered institutions. The number of full-pay students in the upcoming decades is likely to remain flat except at more selective institutions where demand is higher (Grawe, 2018).

When combining these statistics with sticker price, which varies from $30,175 in Decile 1 to $18,112 in Decile 10, it seems that Pell-eligible students are much less represented at high-tuition, high-discount institutions. This finding is consistent with concerns over accessibility to higher education for low-income students as many low-income students may be dissuaded from applying to institutions they perceive as unaffordable (Cabrera & La Nasa, 2000). The net price of each decile of institution is the same, but one is serving significantly more Pell-eligible students, indicating these students are interacting with those institutions differently. This study did not focus on student-level data but suggests that future research focused on low-income student and family decision-making, specifically related to small, private institutions, would be beneficial to the field.

Of the 448 institutions, 269 (60%) had a UTDR value of greater than 28.7%. Within Breneman's (1994) framework, if these institutions are not able to increase additional revenue generation using unrestricted tuition discounting, they should focus less on the raw number of the UTDR value and instead concentrate on the demand curve facing their institution. By digging into market-related research, an institution may be able to shift the demand curve presented in Breneman (1994), which would mean that more students would be willing to pay to attend at a specific amount, or the same amount of students would attend but would be willing to pay more to attend. Either of these situations would increase net revenue for an institution. It may be the case that funds should be redirected into a variety of new marketing and recruitment efforts to shift the demand curve, or additional efforts may be possible to discern further where a student falls on a demand curve to exactly meet their willingness to pay (Breneman, 1994; Cheslock, 2006). Nevertheless, these attempts may reap few awards as the data suggests that institutions are already working to maximize their NTR gains through unrestricted discounting strategies, and it may be difficult to generate additional revenue without other changes.

This study focused only on NTR for the incoming class. Institutional leaders must also consider the advantages of the potential additional enrollment, despite the higher tuition discount, over the course of a student's enrollment. It may be that over the course of a student's enrollment, the institution will gain additional tuition revenue and gain added benefits from having additional students on campus. For example, will financial aid given to students keep pace with tuition increases? Tuition revenue for each student may increase during four years. In addition to paying tuition, students spend money in other areas on and off campus, participate in institutional activities, and contribute their time and talent in a variety of ways. These benefits must also be considered in examining tuition discounting practices.

Over the years of the study, a majority of the institutions in the study witnessed increases in the UTDR. The 10% of institutions that increased their rates by the greatest amounts witnessed negative NTR growth despite increasing tuition and fees by over $650 per year. These institutions also realized the fewest gains in FTE students and failed to make strides in serving more students with higher scores on academic performance, Pell Grant recipients, or minority students than the other baccalaureate institutions in the study. Conversely, the institutions that fared the best in terms of NTR per FTE growth kept tuition increases lower and actually reduced their unrestricted tuition discount rate between 2003-2004 and 2012-2013. Overall, there was not a positive result found in high UTDR increases across the institutions' economic and student profile characteristics.

The IHEs in the study that had the highest levels of UTDR values also had lower rates of minority or low-income students than institutions that had lower tuition levels and lower amounts of unrestricted tuition discounts. A recent study provided by the University of New Hampshire (Johnson, 2015) estimated that 95% of the United States population increase in 2014 was due to non-White population growth. Therefore, attracting and retaining minoritized students will be important for institutions over the coming decades as they work to strengthen their demand in local, regional, or national markets.

To be able to sustain the practice of general funds to cover institutional grant aid, the main focus should be on the demand curves facing these institutions (Breneman, 1994). Can these institutions enroll enough students who are willing to pay the relatively high costs of education at these colleges and universities, many of which focus on small classroom sizes, labor-intensive practices, and lack state support? With increasing unsustainable tuition discount rates, some institutions have recently decided to close or are going through a painful and lengthy process to evaluate how it is possible to remain open (Bidwell, 2015). Based on the lack of full-pay students, Breneman would suggest that NTR is being maximized, and instead of continuing to increase tuition levels to attempt to generate NTR, institutions should instead consider how to make changes and decisions to strengthen demand. The relationship between unfunded discounts, tuition and fees, and demand has substantial implications for these tuition-driven schools, and unfortunately, will cause some to close their doors.

Implications for Practice and Policy

The complex balance between pricing, tuition discounting, and enrollment goals is a crucially important topic for non-profit, four-year, baccalaureate institutions (NACUBO, 2015, 2016). From a student perspective, the sticker price of these institutions becomes harder to understand; thus impacting perceived access. Net price calculator requirements have created a more realistic initial estimate of the cost of education (NCES, 2015b), but many students and families report having difficulty in finding and using these tools (TICAS, 2012). Minoritized, low income, and first-generation student families may not even attempt to generate an estimate due to high costs, perceived barriers, or lack of financial literacy (Cabrera &La Nasa, 2000; Heller, 2008).

In our study, lower rates of unfunded discounting were associated with higher rates of Pell Grant recipients and minoritized students, indicating that students within those demographics were more highly represented at institutions that had sticker prices more reflective of net price. Additionally, the ability for institutions to price discriminate between individual students, charging different tuition levels to different students for reasons unlikely to be known to incoming students, creates unpredictability in net prices for students (Baum, Lapovsky, & Ma, 2010). Even if a student or family understands general financial aid practices, net price may still be difficult to predict (Baum, Lapovsky, & Ma, 2010). However, other students with more affluence and knowledge may use current scholarship-awarding techniques to their advantage. Those students and families that do understand the complex institutional and federal financial aid systems can create a bidding war or engage in negotiating to leverage their merits for increased aid packages (de Vise, 2011).

Providing more transparency during the recruitment and admissions process (Allen, 1999) may encourage applications that can then increase enrollment. Conversely, not providing specific details allows enrollment managers to be more flexible with their grant aid and make changes throughout an enrollment cycle to meet institutional goals. Institutional leaders must continuously weigh the pros and cons of transparency to students and parents against their ability to adjust to new financial and enrollment expectations.

Some institutions have engaged in tuition-slashing measures in order to lower tuition and tuition discounting while leaving NTR stable through the transition (Kiley, 2011; Lapovsky, 2004; Massa & Parker,

2007; Stripling, 2009). These tuition resets are aimed at reducing sticker shock and appearing more affordable to prospective students and families (Lapovsky, 2004), while also diminishing the heavy reliance on unfunded tuition discounts within the college's budget and economic model. Many institutions may benefit from undertaking this type of analysis to see if it is strategically and economically viable, but this type of adjustment also is risky. Lowering the price may change the institution's peer group who are charging similar tuitions, and the "unintended result could be to move the college out of the competitive sphere it is currently in, and down a notch to another set" (Massa & Parker, 2007; p. 96).

It seems likely that the institutions that could benefit the most from this type of adjustment have a well-known and positive reputation in their respective markets; subsequently mitigating the potential negative impact on perceived quality or peer-comparisons. Nevertheless, it is also probable that an institution with such a reputation is not facing such a demand dilemma to force its decision makers into such a difficult situation. As Epple, Romano, & Sieg's (2006) study demonstrates, institutions that are perceived as providing high-quality education may be more in demand than those institutions not perceived as high quality and may not need to be as concerned about increasing tuition. Therefore, before decisions are made, it is critical for institutions to assess the marketplace and demand for education at one's institution.

As a result of the competitive environment and demand issues facing many of these institutions, some will expand or modify their missions in order to navigate complex economic times (Baker et al., 2012). Baker et al. (2012) found that only 130 of Breneman's 212 original liberal arts institutions would still meet the classification. The introduction of professional or pre-professional programs shifted many institutions' missions based on their criteria. This approach, especially adding majors that have a higher market demand, may result in increased enrollment with lower tuition discounting needed or might justify adding tuition differentials for popular majors. Institutions may look at investing in academic alternatives such as on-line programs that can reach a wider audience or invest in other areas such as fine arts or athletics to attract a new population of students.

As Breneman (1994) would suggest, a limited focus on capping or limiting the amount of unfunded tuition discounts an institution awards can hamstring an institution when those boundaries do not meet the enrollment demands of an institution. In this sense, the focus on UTDR and its impact on budgets and enrollment is largely a product of the demand facing an institution. If institutions cannot leverage unfunded (or funded) discounts to increase demand and positively impact NTR, tuition prices and UTD rates will continue to climb without any significant impact on net revenue. This trend can lead to undesirable outcomes, such as the ones already witnessed in the institutions with the highest amounts of or largest changes in UTD rates.

As institutions continue to make decisions focused on how to use tuition discounts, the larger demand picture must be evaluated, including pricing levels and a realistic assessment of the true value of their education. If an institution is offering at least a 50% tuition discount to each student attending their institution, is the sticker price still reflective of the price or value of an education? Although a 50% reduction may be viewed as a generous amount, how does the net price compare to other less expensive institutions (e.g., community colleges or public institutions) that a student may be considering? Once a thorough analysis of the demand picture facing an institution is undertaken, enrollment managers can strategize how to implement tuition discounting packages to attract the desired populations of students.

Grawe's (2018) projections of college-going rates in the next decade signal challenging times for all but the most selective institutions. Decreased fertility rates, immigration, and migration will significantly influence demand. Comprehensive, impactful, and difficult conversations related to the demand for one's institution are necessary for institutional sustainability.

Our study focused on tuition discounting to meet enrollment goals but did not consider its impact on retention. For many institutions especially those struggling to increase demand, increasing retention may be a more effective strategy. In their examination of the role of retention in institutional finance strategies, Schuh and Gansemer-Topf (2012) illustrated that small to modest increases in retention rates could have significant increases in tuition revenues. So, for example, if an institution has an incoming class of 300 students, average NTR of $20,000, and an average retention rate is 80%, they would anticipate that the second-year cohort will be 240 students. Increasing the retention rate five percent would result in 15 more students be retained, helping to meet overall institutional enrollment goals as well as generating additional revenue of $300,000. Additional research focused on the relationship between retention efforts and tuition discounting is warranted.

The potential trade-offs present between unfunded tuition discounting, the academic profile of students, quality of other aspects of the college, and NTR have important institutional policy implications (Hillman, 2012). When guiding enrollment management policy at the institutional level, administrators and college board members or trustees may choose to broaden access to a group of students via institutional grant aid. For example, it could be decided to focus on low-income students, students with interests in certain disciplines, or individuals from diverse backgrounds. This research has not shown significant gains in these efforts on a national level, but individualized, nuanced approaches at an institutional level may be more effective.

Although IPEDS data is an excellent resource for comparing across institutions, it does not provide data needed to isolate strategies influencing tuition discounting and revenue. This study is limited in its ability to accomplish this task; but by providing overall trends, it emphasizes the critical need for financial aid and enrollment managers to investigate these practices within their own institutions.

Nexus: Connecting Research to Practice

- Tuition discounting may not be sustainable; therefore, institutions must evaluate their market and demand, including pricing levels and a realistic assessment of the value of their education.
- Recognize that high sticker prices, regardless of the amount of tuition discounting, may dissuade certain populations (e.g., underrepresented, low-income) from applying to an institution. Institutions that wish to diversify and provide access to these populations must develop effective communication strategies to encourage students to apply.
- Consider new ways to generate enrollment. Potential initiatives may include developing new marketing strategies, new majors, expanding to online delivery to reach a wider audience, or invest in non-academic but attractive extra-curricular activities such as athletic or fine arts programs.
- This study did not evaluate specific strategies influencing tuition discounting. Rather, we highlight the need for financial managers to understand the effectiveness of their financial aid and tuition discounting practices in meeting enrollment and financial goals and the importance of communicating these strategies to prospective students and their families.

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