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THE EFFECTS OF TUITION DISCOUNTING AT PRIVATE, BACCALAUREATE-LEVEL INSTITUTIONS OF HIGHER EDUCATION

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THE EFFECTS OF TUITION DISCOUNTING AT PRIVATE, BACCALAUREATE-LEVEL INSTITUTIONS OF HIGHER EDUCATION

By

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ABSTRACT
THE EFFECTS OF TUITION DISCOUNTING
AT PRIVATE, BACCALAUREATE-LEVEL
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When colleges and universities use their own financial resources to award grants and scholarships to students it is referred to as tuition discounting. This practice allows institutions to charge lower than "sticker price" tuition rates to selected students. The concept of tuition discounting is not new; for years, institutions have offered discounted tuition rates to students in order to reward merit, to assist financially needy students, and to expand diversity. In recent years, however, a fourth reason for tuition discounting has emerged at some institutions. For these institutions, the main purpose of tuition discounting is to fill otherwise empty seats in classrooms and to enroll enough students to remain fiscally solvent.

The primary purpose of this study of private, baccalaureate level institutions of higher education was to explore the pattern of tuition discounting between 1990 and 2000, to analyze variations in tuition discounting by institutional type, and to determine the relationship between tuition discounting and institutional financial health. The findings of this study indicate that tuition discounting is on the rise for this sector of higher education. Between 1990 and 2000, tuition discounting rates rose by approximately 7 percentage points. Second, tuition discounting does vary based on institutional demographics such as religious affiliation, size, endowment, and expenditures. Finally, tuition discounting does appear to have an impact on the financial

health of institutions—it appears that tuition discounting is generally negatively related to institutional financial health.

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Introduction

In 2002, nearly $90 billion in financial assistance was awarded to college students in the United States. Over 8 million students benefited from this assistance at over 9000 post-secondary institutions (Trends in Student Aid, 2002). Financial assistance helps students defray part of the growing cost of higher education. Earning a college degree generates an estimated $1 million in extra lifetime earning when compared to high school graduates (Bureau of Labor Statistics, 2002).

The concept of awarding financial assistance to college students is not new. In fact, America's first scholarship dates to 1643, when a wealthy individual donated 100 pounds to start a scholarship fund at Harvard College (Wick, 1997, p. 1). Financial aid is important because, in different forms, it serves both to reward merit and to assist needy and deserving students—those capable of, but not able to afford, a higher education. Financial aid is an investment in human capital—an investment with a significant and positive rate of return for both student and society.

Student financial assistance comes from three primary sources: the federal government; state governments; and the colleges and universities. The federal government awards nearly 72% of the total available student financial aid. The major federal financial aid programs include Federal Pell Grants, Federal Work Study, and various federal student loan programs. Most state governments also award student financial assistance, which comprises about 5% of the total student aid awarded. Colleges and universities use their own resources to provide about 23% of all financial aid to students. This aid is usually referred to as institutional aid and can be *funded*

(meaning the aid is funded by the institution's endowment earnings or by gifts) or *unfunded* (meaning the institution has agreed to forego a portion of the posted tuition price). Either way, the student pays less than full tuition price. Regardless of whether the aid is funded or unfunded, the "reduction" in the student's price is called a grant or a scholarship. From the student's perspective, there is no distinction.

When colleges use their own institutional resources to offer grants and scholarships to students, it is referred to as tuition discounting. This practice allows institutions to charge lower than "sticker price" tuition rates to students who may be unwilling or unable to pay the full tuition price. The institutions can, through discounting, charge different prices to different students for the same educational service—a practice generally known as price discrimination. Price discrimination is a term used by economists to describe charging different prices to different customers for the same product or service. This is not an illegal or even an uncommon practice. Long distance carriers charge different prices based on the time of day in order to charge businesses (who make calls during normal business hours) a higher price than household consumers (who normally make calls in the evenings and weekends). Another common form of price discrimination involves airline fares. Individuals who book early, travel on weekends, or accept non-refundable tickets usually pay less for the same airline service than the less flexible air traveler.

Colleges and universities engage in tuition discounting for several reasons. The first reason is to help financially needy students and families. Historically, this is the major rationale for tuition discounting (Baum & Schwartz, 1988, p. 127). The earliest financial aid was intended to assist "poor and pious youth and indigent young men of

merit" (Princeton Weekly Bulletin, 2003, p. 1). Offering discounted tuition rates to lower and middle income families encourages attendance at institutions that would normally be out of their reach financially.

A second reason that institutions discount tuition is to attract high quality students (based on high grades and entrance test scores) because these students help to enhance the reputation of the institution. Financial assistance awarded to students based on "quality" are usually referred to as merit-based scholarships. Alfred MacKay (1992) reminds us that if the market fails to "provide sufficient talent to satisfy a college's educational aims [then it is] justified on educational grounds in spending a reasonable amount (i.e. providing financial aid) to achieve those aims" (p. 50).

A third reason that institutions discount tuition to selected students is to create ethnic diversity within their student bodies. As with merit based aid, "if the market does not, without prompting, provide sufficient diversity to satisfy a college's educational aims, then if it can afford to, a college is justified on educational grounds in spending a reasonable amount (i.e., providing financial aid) to achieve those aims" (MacKay, 1992. p. 50).

The concept of offering reduced tuition rates for these three reasons—financial need, merit, and diversity—is not new. In recent years, however, a fourth reason for tuition discounting has emerged at some institutions—a strictly *financial* reason. For these institutions, the main purpose for tuition discounting is to fill otherwise empty seats in classrooms, and to enroll enough students to remain fiscally solvent (Collison, 1992, p. A28). In other words, tuition discounting has become a means of extracting "the maximum revenue from every customer" (Graham, 1997, p. B1). As Lapovsky (1996)

notes, "[t]he price differences for many students aren't related to ability to pay but rather willingness to pay and the desire of the institution to enroll that student" (Lapovsky, 1996, p. 25). Recent research supports the claim that discounts are increasingly being used to entice students to enroll and not necessarily to assist financially needy students, to reward merit, or to expand diversity (Loomis-Hubbell, 1992). Additionally, the discount rate is invariably higher for incoming freshmen than for upperclass students, indicating a focus on enrollment rather than merit, diversity, or need ("Tuition Discounting Findings," 1997, p. 7).

By all measures, the discounting of tuition is a very common and growing practice, especially at private, non-profit, colleges and universities. Institutional student aid now represents the fastest growing portion of many institutional budgets (Loomis-Hubbell & Rush, 1992, p. 24). A 2000 survey administered by the National Association of College and University Business Officers (NACUBO) also confirms that tuition discounting is on the rise. In 1990, the average discount rate at small private colleges was 29.5%. This means that, on average, incoming freshmen were given institutional scholarships amounting to nearly 30% of the actual tuition rate. By 2000, that number had risen to 43% (Van Der Werf, 2002, p. A25). In 1990, private colleges awarded $3 billion in institutionally funded aid. Three years later that figure had risen to $5 billion (MacDowell, 1996, p. 24). Fewer than 10% of students at private colleges pay the stated tuition price. The other 90% receive some form of institutional grant or scholarship ("Tuition Discounting Findings," 1997, p. 6). Tuition discounts make the "tuition sticker price, for most, more symbolic than substantive" (Johnstone, 1999, pp. 1-2).

Confusion with Terminology

There is a great deal of confusion about terminology relating to tuition discounting. Specifically, four terms are particularly problematic: the tuition discount itself, tuition "price" (or cost), financial aid, and tuition revenue.

Tuition Discount

First, there is confusion about the way tuition discounting is defined, and what kind of aid is used when calculating the tuition discount rate. In a recent monograph, Ronald Allen (1999) articulated an important problem relating to tuition discounting:

> "Confusion permeates tuition discounting in both internal and external arenas. One source of confusion is that college administrators and policy analysts have different views of the subject and tend to talk past each other when discussing it. Some administrators focus narrowly on tuition revenue not collected while other focus on the tuition the students do not pay. These amounts are usually different because of the role played by institutional and outside grants in the student aid process. Different groups within higher education use different definitions of tuition discounting for different purposes, adding to the confusion" (p. 8).

This confusion can be avoided if administrators and researchers are clear about the definition of tuition discounting they are using. There are essentially three ways to measure tuition discounting: the simple tuition discount; the scholarship allowance; and the student tuition discount.

The first tuition discount definition is the *simple tuition discount* which "consists solely of the waiver of all or a portion due....It includes no funding from internal sources such as gifts and endowment, or from external sources such as Federal Pell Grants or

Federal Supplemental Educational Opportunity Grants" (Allen, 1999, p. 2). This definition only includes what is referred to as "unfunded" institutional aid—aid that is not really "funded" by any source, but simply represents an institution's willingness to allow a student to pay less than full price. The simple tuition discounting rate would be calculated as the ratio of unfunded institutional aid to gross tuition and fee revenue (the total amount of revenue the college would have collected if every student paid full tuition from their own pockets).

The second tuition discounting definition, the *scholarship allowance*, includes all institutionally funded aid, including unfunded institutional aid as well as funded institutional aid (funded by gifts and endowments). This definition is used in an annual survey administered by the National Association of College and University Business Officers, as well as most of the tuition discounting literature. Importantly, "[w]hen gift and endowment income that is restricted to financial aid is paid from the endowment fund to the operating fund, the college is able to spend operating fund money that would otherwise be spent on financial aid on other things" (Allen, 1999, p. 3). The scholarship allowance is measured as the ratio of unfunded plus funded institutional aid to gross tuition revenue.

Finally, the *student tuition discount* is the broadest measure of tuition discounting. It includes all tuition and fees that students do not have to pay out of their own pockets. It includes all institutional aid (as in the previous definition) as well as any federal, state or other aid (grants, loans, or work study) paid on the student's behalf. The student tuition discount is calculated as the ratio of all aid the student receives from any source to gross tuition revenue.

Tuition Price (Cost)

The definition of "price" in higher education can also cause confusion. There are actually four prices used in higher education. First, there is a base price—the published tuition and fee price. Second is the sticker price—the base price plus "options" such as room, board, and fees. Students essentially choose the level of the extras they wish to purchase for instance a single dorm room or a triple, or 10 meals per week versus 21. The third price is the discount price, which is essentially the net price—net of institutional discounts. Finally, the cash price is the actual amount that the student has to pay out of his or her pocket after *all* financial aid, including federal, state, and institutional aid is deducted.

Financial Aid

Two general forms of financial aid must be distinguished in order to understand tuition discounting: institutional aid and external aid. Institutional aid, not to be confused with external (federal, state, private) aid, is actually a reduction for the student in the stated tuition price at an institution. External aid (from sources other than the institution) is a subsidy from the government to the student, and represents a payment to the institution on the student's behalf (Loomis-Hubbell, 1992, p. 8). The following example illustrates the relationship between the tuition discount and other forms of financial aid. When a store has a sale, it gives a discount of the stated price. The store has agreed to forego a certain amount of revenue on the sale of that product. If the customer has a manufacturer's coupon (an external discount) in addition to the sale price, he or she is using an external source to pay a portion of the discounted price.

Tuition Revenue

The definition of tuition revenue can also be a bit confusing. *Gross* tuition revenue is the total amount of revenue the college would have collected if every student paid full tuition from his or her own pocket. *Net* tuition revenue is the actual amount of revenue the college collects either from students directly or from individuals or organizations—such as the federal government—paying the on the student's behalf. It is calculated as the difference between gross revenue and unfunded institutional aid.

The Shift and Growth in Tuition Discounting

The dramatic shift in tuition discounting and its growth can be explained by demographic, financial, and political forces that have influenced the private, baccalaureate sector of higher education. First, with regard to demographics, private colleges rely most heavily on the pool of traditional age students, and nationally, the traditional age cohort has declined in recent years. During the 1970's, the traditional age student pool actually grew from 25 million to 30 million. However, starting in 1980, the pool began to shrink, bottoming out at 23 million in the mid-1990's (Francis, 1991, p. 139). This decline in the applicant pool has created increased competition among institutions, and has had a substantial impact on enrollment. While the pool of *non-traditional* students increased significantly in the 1990's, this change has mainly affected public higher education—not private institutions.

Financial forces have also impacted private higher education. Institutional costs have risen significantly, which has led to increased tuition rates. Tuition increases have outpaced economic growth and the rate of inflation at both private and public institutions.

Between 1983 and 2000, the higher education price index doubled. In other words, even after adjusting for inflation, college was twice as expensive in 2000 than it was in 1983 (Research Associates, 1998, p.4) During the 1950's, 1960's, and 1970's, national median income grew at a rate that equaled or exceeded tuition at private institutions. During the 1980's and 1990's, however, tuition growth exceeded income growth. According to a 1995 study by the National Association of Independent Colleges and Universities (NAICU), the top three factors that contributed to tuition and fee growth were: technology updates (computers, networks, etc.); institutionally provided student aid; and faculty compensation increases ("A Commitment to Access," 1997, p. 2). Kirshstein (1991) adds physical plant maintenance, administrative costs affected by increased regulatory requirements, and inflation as additional factors (pp. 67-68).

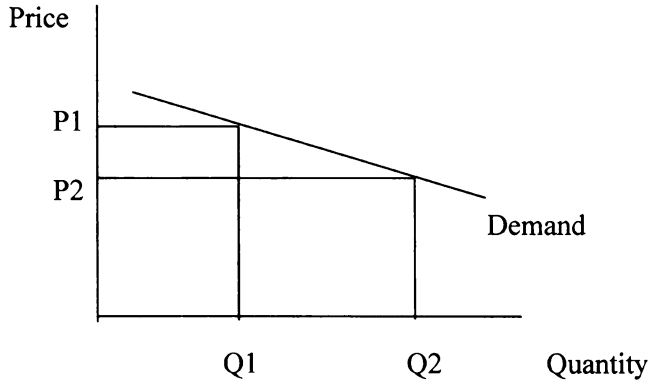
A political factor also has affected these institutions—specifically the slow rate of growth in government-funded (federal and state) grants for students. When adjusted for inflation, federal student aid was 5% lower in 1992 than in 1980 (Loomis-Hubbell & Rush, 1992, p. 24). In 1975 a federal Pell Grant covered, on average, 38% of tuition costs at 4 year institutions. By 2000, that percentage had dropped to 15% (Burd, 2001, p. A26). Not only has the growth in federal funding declined, the makeup of that aid has changed as well. Loans (as distinct from grants and scholarships) now make up the major portion of the federal aid budget. The level of student loan borrowing grew 40% in a one year period of the early 1990's (Loomis-Hubbell & Rush, 1992). The fear of large indebtedness also adversely affects enrollment at higher-priced private institutions.

Tuition Discounting Mechanics

Why did tuition discounting emerge as a potential solution to the problems of lagging enrollment and financial difficulty? Why would institutions be compelled to spend *more* money in times of economic hardship? The answer to this question is couched in economic theory.

Basic economic price theory portrays the "demand" for a particular product to be negatively related to price. In other words, at a higher price, fewer units of a product will be demanded than at a lower price. Figure 1 portrays the demand relationship for a normal good. Notice that at a high price, a relatively low quantity of the product is demanded (purchased). At a low price, the opposite is true; a higher quantity of the product is demanded. Similarly, price changes lead to considerably larger changes in quantities demanded.

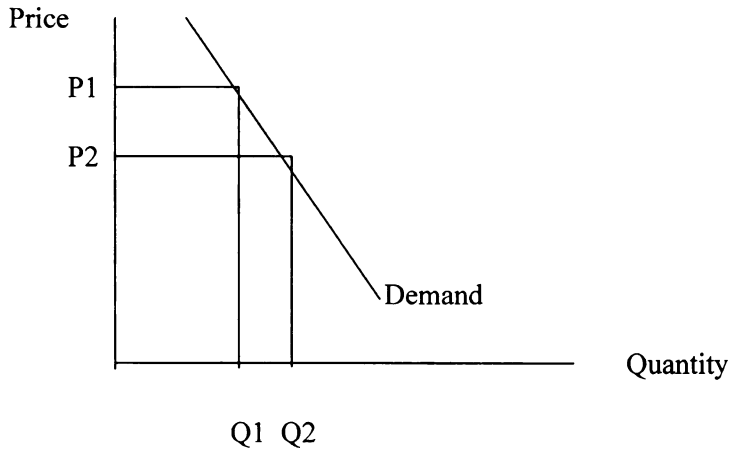
Figure 1. Elastic Demand



This relationship, however, does not always hold true. If a product has a special characteristic, demand may be "inelastic," and the relationship between price and quantity

may not be so pronounced. For instance, the demand for health care is considered to be inelastic because individuals are willing to purchase it at almost any price; whether $100 or $5000, the individual will, if able, "purchase" the life saving medical treatment. Figure 2 portrays the relationship between price and quantity demanded for a good considered to have inelastic demand. The curve illustrates that quantity demanded changes only a small amount with respect to price changes. Although no good is perfectly inelastic, it has been argued that demand for higher education at exclusive, highly competitive institutions, like Harvard or Princeton, is relatively inelastic because admission to these institutions is highly regarded, and there are few substitutes (Clotfelter, 1996, pp. 255-257).

Figure 2. Inelastic Demand



Most institutions of higher education face a normal price-demand relationship. Smaller, less prestigious institutions in which potential students feel there are many substitutes are good examples of this phenomenon. A recent survey by the Gallup Poll

(1995) indicates the following for three colleges of generally equivalent reputation, size, and offerings:

Table 1. Tuition and Enrollment Demand, 3 similar colleges

	Price of tuition for 1 year	% of respondents who would "consider that college"
College A	$22,000	17%
College B	$18,000	33%
College C	$14,000	50%

Source: The Gallup Poll, 1995.

These data demonstrate that for most individuals the demand for higher education is elastic—that is, their demand is responsive, or dependent, upon price. Graphically, we see a normal, downwardly sloping demand curve for this data set. When demand for a product exhibits normal behavior, as demonstrated by the numbers above, the product is considered to be a "normal" good.

The pricing of normal goods is a difficult process. For many institutions of higher education, particularly small private colleges, the strategy is to find the optimal price level—the level that creates the greatest net revenue. Table 2 shows a standard pricing analysis for a hypothetical private college. Column 1 represents possible tuition rates. Column 2 presents corresponding anticipated enrollment at each of those tuition levels. Column 3, total revenue, is the product of the tuition rate and the anticipated enrollment. Column 4 presents total fixed costs for the institution (which do not vary based on enrollment) and total variable costs (which increase as enrollment increases). Column 5

presents "after cost" revenue—the amount that remains from tuition revenue once the institution has met its costs. This money can be used to buy library books, improve lab etc. The strategy is to find the tuition level that maximizes after cost tuition revenue. I this example, the optimal tuition level is $16,000 because it produces after cost revenue of $9.2 million.

Table 2. Pricing Strategies (Hypothetical Data)

(1) Possible Tuition Levels	(2) Corresponding Anticipated Enrollment	(3) Total Revenue (Col 1 x Col 2)	(4) Total Costs*	(5) "After Cost" Tuition Revenue (Col 3 - Col 4)
$22,000	1,000	$22 million	$20 million	$2 million
$20,000	1,400	$28 million	$22 million	$6 million
$18,000	1,800	$32.4 million	$24 million	$8.4 million
$16,000	2,200	$35.2 million	$26 million	$9.2 million
$14,000	2,600	$36.4 million	$28 million	$8.4 million
$12,000	3,000	$36 million	$30 million	$6 million

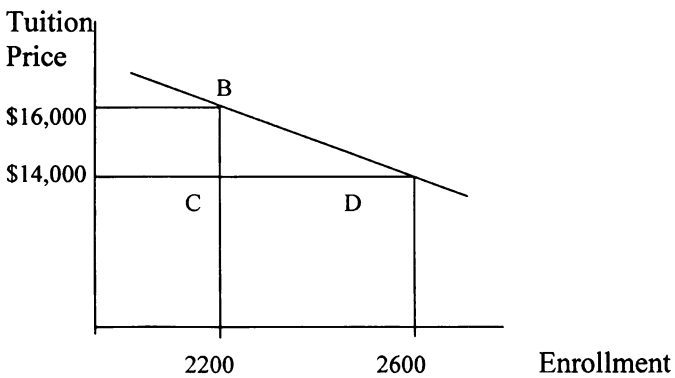
*Includes fixed costs (unrelated to the level of enrollment) + variable costs (increase as enrollment increases).

Suppose, however, the 400 students who would enroll if tuition were $14,000 (I not $16,000) could be identified. If each of these students were offered a scholarship (discount) to make up the difference between $16,000 and each individual's willingnes to pay, then he or she would enroll. Figure 3 is a graphical representation of this situation. At a $16,000 tuition rate, a total of 2200 students would enroll. An addition 400 students can be enticed to enroll only if offered lower tuition rates ranging from

$14,000 to $15,999. The amount of discounting required to enroll 2600 students at $16,000 is the area of the triangle formed by BCD. Here, that amount is $400,000.

In this scenario, the institution takes in gross tuition of $41.2 million ($16,000 x 2600 students minus $400,000 in discounts). Its total costs are $28 million (the level of cost for enrollment of 2600 students). However, after cost tuition revenue is now $13.2 million, a much better scenario than any of those offered in Table 2. Simply put, these 400 additional students contribute more to total revenue than to total cost, even at a lower tuition rate. As long as "the 'net revenue' contributed...exceeds the marginal cost of enrolling them, it is to the financial advantage of colleges to provide discounts in the form of scholarships" (Bowen & Breneman, 1993, p.4). Because the students getting the discounts are filling otherwise empty spaces in classrooms and residence halls, the additional cost of enrolling them is minimal ("Fact File," p. A28). This concept is defined by Glasser (1993) as "no-need" or "empty-seat" financial aid (p. 4).

Figure 3. Graphical Portrayal of Tuition Discounting



Adapted from: Breneman, D. (1994). Liberal arts colleges: Thriving, surviving, or endangered? Washington, The Brookings Institution.

It is easy to understand why private institutions engage in tuition discounting. If implemented properly, tuition discounting can be an effective tool in influencing an institution's financial health, enrollment, and the make-up of its student body. But has tuition discounting really been an effective practice? This study attempts to address this and other important questions.

Statement of Purpose/Research Questions

The purpose of this study was to examine tuition discounting at private, baccalaureate-level institutions of higher education between 1990 and 2000. Specifically, three main questions were addressed:

1. What is the pattern of tuition discounting for these institutions? Has tuition discounting increased, decreased, or stayed the same?
2. Are there variations in tuition discounting based on institutional demographics? For example, does discounting vary geographically, or by institution size or age?
3. Does tuition discounting improve the financial health of institutions? In other words, what is the relationship between tuition discounting and the financial health of the institutions?

Audience

The research presented in this study is potentially useful to many different individuals, institutions, and organizations. First, financial aid administrators at private institutions need to be aware of the current state of tuition discounting, including the financial effects. As key players in the administration of tuition discounting programs,

they need to understand how tuition discounting works, and how it affects other institutions.

Similarly, presidents of private institutions need to be aware of the current state o tuition discounting. Is tuition discounting working for most institutions? Do most institutions experience enrollment and net tuition growth as tuition discounting expands When does tuition discounting fail? The Board of Trustees will expect the President to know the answers to these important questions. In addition, business officers who are responsible for monitoring the financial status of institutions also have a need for this information. Business officers are keenly aware of the financial status of the institution, including the use of resources.

National organizations such as the National Association for Student Financial Ai Administrators (NASFAA) and the National Association for College and University Business Officers (NACUBO) have been very supportive of research in the area of tuitio discounting. Their missions require them to research and disseminate information abou emerging issues in higher education finance. Additionally, the donor community and investors are both interested in making sure their investments are being used wisely by the institution. If the practice proves effective, and can be attributed to growth and healt within the private sector, then donors and creditors may wish to continue their support. it proves detrimental, donors and creditors may reconsider their support of institutions in the private sector.

For many reasons, tuition discounting has been a topic of much interest over the past decade. Virtually all conferences for financial aid administrators or business office host a session on tuition discounting. It is emerging as one of the main issues in the arei

of higher education finance, with a growing body of literature. A comprehensive review of this literature, provided in Chapter Two, presents what is known about tuition discounting, and what is yet to be learned. Chapter Three details the research design and methodology utilized to answer the research questions. Chapter Four provides data analysis, and conclusions are presented in Chapter Five.

Chapter Two: Literature Review

Description of the Literature

Expectedly, as the practice of tuition discounting has increased over recent decades, so has the concomitant literature. Mentioned only sporadically in the literature of the 1960's and 1970's, the subject of tuition discounting grew to a steady and persistent dialogue by the 1980's. The tuition discounting literature can generally be classified into two categories. The first category includes literature that focuses on general aspects of tuition discounting including: (1)tuition discounting growth; (2)factors that have contributed to tuition discounting growth; and (3)institutional participation in tuition discounting. The second category of literature focuses on the outcomes of tuition discounting including (1)the impact of tuition discounting on enrollment; (2)the use of tuition discounting to address merit, need, and willingness to pay; and (3)the financial aspects of tuition discounting.

I. General Aspects of Tuition Discounting

Tuition Discounting Growth

According to published research, tuition discounting grew substantially at independent (private) institutions in the 1990's. Articles with titles such as "Tuition Discounting Continues to Grow" (Lapovsky & Loomis-Hubbell, 2003), and "Tuition Discounting May Rankle, but it Has Become Widespread" (Chronicle of Higher Education, 2000) are among many reports of the nationwide surge in tuition discounting over the past 10-15 years.

The most nationally recognized tuition discounting study is the annual NACUBO (National Association of College and University Business Officers) Tuition Discounting Study. According to this multi-year study of 350 independent institutions, fewer and fewer students are paying the published tuition price. In 2000, only 21% of students paid the full tuition price—79% received some form of institutional discount, up from 66% in 1990. Also, the average tuition discount for incoming freshmen rose from 28% to about 38% between 1990 and 2000 (Lapovsky & Loomis-Hubbell, 2000, p. 27). Students are being charged, on average, only 62% of the sticker price. (Recall that this study uses the scholarship allowance definition of tuition discounting—so the discount includes funded and unfunded institutional aid). According to Winston and Zimmerman (2000), more than 60% of private institutions are discounting to more than 80% of their students (p. 10). It seems quite evident that tuition discounting is on the rise. But why?

Factors that Have Contributed to Tuition Discounting Growth

Three factors are cited as major contributors to the rising levels of tuition discounting: increased competition among institutions for students, high tuition rates, and decreased federal student financial aid. The first factor is increased competition among institutions resulting from the declining pool of traditional college age students (Loomis-Hubbell & Rush, 1992, p. 4). Between 1978 and 1992, the number of 18 year olds in the U.S. dropped 25%. Although the number of 18 years olds started to rise again in 1994, the growth has been very slow, and the numbers are still significantly less than the 1970's when the baby-boomers were college age (Day, 1997, p. 2). Additionally, more of today's 18 year old students are from less wealthy families (MacDowell, 1996, p. 26).

A second factor contributing to increased tuition discounting is the growth in tuition rates. Tuition rates, on average, have risen substantially over the past 20 years, especially at private institutions. From 1981 to 2001, the average cost of tuition and fees at private, four-year colleges grew 122% in real terms ("Trends in College Pricing," 2002). Between 1981 and 1991, average annual tuition and fees at private, four-year colleges grew 62%, whereas family income grew only 16%. From 1991-2001, private tuition rates grew 37% while family income grew only 8%. The growth rate in private tuition and fees was nearly 4 times the growth in income over that 20 year period ("Trends in College Pricing," 2002). The percentage of median family income needed to pay private tuition costs started to rise sharply in 1981 when it increased to 21.7%, from a level of 16% that had held steady during much of the 1970's (Halstead, 1989, p. 91).

In 1990, a study revealed that 82% of Americans felt tuition prices were rising out of control—to the point where a college education might be out of reach for their children (McDuff, 1989-90, p. 21). Additional studies, however, seem to indicate that the average individual perceives that college costs are higher than they actually are (Loomis-Hubbell & Rush, 1991; "Straight Talk," 1998). A 1996 study revealed that individuals over-estimate the actual tuition price of higher education by about 30% (Loomis-Hubbell & Rush, 1991, p. 227).

This over-estimation might have been fueled by a series of widely circulated publications that warned of the increased tuition rates. Even mainstream media, such as Newsweek, warned of "Those Scary College Costs" (April, 1996). In 1996, Congress commissioned an inquiry into increasing college costs ("Tuition Increasing Faster then Household Income and Public Colleges' Cost"), which received wide media attention. In 1997, an independent advisory board was commissioned by the federal government to compile and extensive report about college affordability. The report, entitled "Straight Talk About Colleges Costs and Prices," was published in 1998. A major finding of this report was that "rising college tuitions are real" ("Straight Talk," 1998, p. 1). Whether there was an over-estimation on the part of families regarding college costs or not, families were becoming enlightened about the high and growing price of tuition—particularly at private colleges.

Coupled with rising tuition rates, families have historically saved very little to finance their children's educations. According to McDuff (1989-90), "only 50% of parents who are planning to send their children to college have actually begun to save. The average savings for these families is slightly over $500" (p. 20). A 1997 survey by

Sallie Mae indicates that the vast majority of families save less than 25% of the cost of higher education.

Even though tuition prices have risen significantly, so have *discounts*. According to Doti (1998): "My research indicates that tuition and fees have not increased significantly over the past decade when we consider discounting and the use of the appropriate price index" (p. B1). Most students at private institutions pay a discounted price. However many potential students and families—especially those with lower incomes—have "sticker shock." Being unaware of such things as discounts, these students are deterred from applying at all (Loomis-Hubbell & Rush, 1991, p. 26).

Although some claim that tuition has risen because of "waste," several substantial factors appear to explain increased tuition rates (St. John, 1994, p. iii). A 1997 survey of 425 independent institutions cited the following as the major reasons for tuition and fee growth ("Commitment," 1997, pp. 1-2):

- Technology (85% of respondents). Included in the category are academic computing equipment, administrative computing equipment, telecommunications upgrades, and wiring dormitories and libraries for internet access.
- Institutionally funded student aid (80% of respondents). Survey respondents indicated that they have to charge more in tuition since they have to discount to so many students.
- Faculty salaries (79% of respondents).
- Decreased federal student financial aid (66% of respondents)
- Administrative salaries (62% of respondents)
- Increased student recruitment expenditures (57% of respondents)

- Increases facilities maintenance (52% of respondents)

Halstead (1989) offers the following as contributors of increased college tuition costs:

- Growing input costs. Unlike a firm, however, a college cannot "step up production" to decrease per unit costs and counteract the increased input costs.
- Educational quality. Colleges are not willing to sacrifice educational quality by having inadequate library or laboratory resources.
- Competition for faculty. "Colleges are continually attempting to maintain and improve their faculty" (pp. 59-61).

The higher education price index (HEPI)—a measure of inflation in the prices of the goods and services that colleges and universities purchase (such as salaries, benefits, services, supplies, equipment, library acquisitions, and utilities)—grew 131% between 1981 and 2000. In contrast, the Consumer Price Index (CPI)—a measure of the inflation in the prices of goods and services that consumers buy—grew 89% over that time period. The largest areas of inflation for colleges and universities were library acquisitions and fringe benefits, which tripled between 1981 and 2000 (Research Associates, 1989, p. 27; Research Associates, 2001, p. 1).

Many colleges and universities have tried to control costs to keep tuition increases low. These cost-cutting measures include: institution-wide budget cuts, increasing the efficiency of the physical plant, restructuring institutional debt, deferring plant maintenance, and not filling open faculty positions ("Commitment," 1997, p. 93). However, cutting costs is difficult because it can increase the faculty-student ratio, the

"personal relationship between students and instructors, which is essential to learning" (Halstead, 1991, p. 79).

Decreased real values of federal financial aid for students also have increased the need for tuition discounting. The federal Pell Grant per recipient decreased 12.6% in real terms between 1987 and 1997. Other federal student grants fell 25.7% in real terms during that period ("Straight Talk," 1998, p. 299). The federal Pell Grant now covers only about 10% of the cost of attending a private college (Kurz, 1995, p. 28). Private institutions now provide more grant aid to their students than does the federal government (Glasser, 1993, p. 2).

Since 1980, there has been a shifting of the financial aid burden away from the government toward institutions. The reductions in federal student aid have been very costly to students who have consequently faced limitations in terms of access and choice. The reductions have also been costly for institutions who have had to increase institutional aid to offset the decrease in financial aid. Many institutions have sacrificed services and deferred maintenance in order to meet the increased demand for financial assistance (Green, 1988, p. 58). While federal grants have declined, there has been significant growth in federal student loans. There also is a growing perception that federal grants should be "earned by students through national service, rather than as an entitlement that supports the societal good produced by participation in higher education" (Kurz, 1995, p. 27).

Institutional Participation in Tuition Discounting

Only a few studies have analyzed tuition discounting based on institutional characteristics. According to Basch (1996), "...while discounting has been well documented overall, fewer efforts have been made to describe and explain tuition discounting differences. An understanding of such differences is important if one is to gain a full picture of how colleges differ in the average amount they collect from students" (p. 41).

In general, the literature reveals five institutional characteristics as related to tuition discounting: selectivity, price, size, endowment level, and geography. Selectivity may influence the extent of tuition discounting in several ways. First, selectivity is likely to affect the types of students that apply. Typically, students from higher income families are more likely to apply at more selective institutions. Similarly, lower income students are more likely to attend less selective colleges and universities (Redd, 2000, p. 15): "Available evidence points to a positive correlation between a family's wealth and the student's academic qualifications...and unless more selective colleges make extraordinary offsetting recruiting efforts, they are apt to attract a less needy population" (Basch, 1996, p. 48). Prestigious institutions would not need to discount (at least for a financial need purposes) to the same extent as their less prestigious counterparts. Additionally, the declining number of 18 year olds is unlikely to affect applications to the most selective institutions. These institutions can easily achieve their desired class size by simply dipping deeper into their applicant pools (Basch, 1996, p. 48). For example, an institution that normally accepts 20% of its applicants can fill the freshman class by

raising that percentage to 30% . The less selective colleges, in contrast, will be most affected by the declining numbers of high schools graduates (Basch, 1996, p. 48). Increased competition among the less selective institutions drives up their discount rates. Finally, selectivity affects perception of value and willingness to pay. Selective institutions do not need to discount for competitive/enrollment reasons. They can fill their freshman classes without discounting at all.

In 2000, Kenneth Redd used the NACUBO database to study tuition discounting based on institutional selectivity. The study covered the years 1990-1996. Redd grouped the institutions into 3 categories:

- Highly selective. Only 30% of applicants are admitted. (7% of the institutions)
- Selective. Up to 60% of applications are admitted. (18% of the institutions)
- Less-than-selective. 60% or more applications are admitted. (75% of the institutions)

Table 3 presents some of the results of Redd's study. Although tuition discount rates increased for all selectivity types, the less-than-selective institutions had noticeably larger increases in institutional aid per student, and in the average award amount. From this study it is apparent that discounting is growing faster at less-than-selective institutions—in terms of tuition discount rates over time, award amounts, and the percentages of students awarded.

Table 3. Tuition Discounting Rates, Redd's Study, 2000

Selectivity Type	Tuition Discounting Rate, 1990	Tuition Discounting Rate, 1996	% change in institutional aid per student, 1990-1996	% change in average award amount, 1990-1996
Highly	21%	24%	37%	17.5%

Selective				
Selective	22%	31%	47%	16.1%
Less than Selective	21%	31%	96%	31.7%

Another study that analyzed discounts based on selectivity (Basch, 1996) used the Peterson's Freshman Financial Aid Database. Basch's study utilized multi-variate regression analysis with the discount rate as the dependent variable, and admissions selectivity, endowment-per-student, tuition prices, and geographic region as independent variables. This study yielded results similar to Redd's findings about selectivity. When compared to their less competitive counterparts, the most competitive institutions had lower discount rates, gave smaller institutional awards, and had fewer needy students (p. 54).

Tuition price is another factor that may influence the amount of discounting among institutions. Higher nominal sticker prices are likely to attract a more wealthy applicant pool, thus reducing the necessity of discounting based on need. Higher prices may also be associated with better quality, which would influence the mix toward higher quality applicants who are generally less needy. In contrast, higher tuition prices lead to higher student financial need. For example a student with a $10,000 family contribution attending an institution with a $20,000 tuition price would have financial need of $10,000. That same student at a $30,000 institution would have a $20,000 need. "...[T]he amount of need, and presumably aid will be higher at the higher price college. If self-help expectations [work-study and loans] and externally-funded grants are not sufficiently higher at the higher price college, it will tend to have a higher amount of college-funded grants" (Basch, 1996, p. 49).

Basch's 1996 study found that "higher price is associated with a higher average college-funded grant, a higher discount rate, and a lower percentage of students judged needy" (p. 50). Even though these institutions attract wealthier students, the price is relatively high. This situation creates financial need for many students including those from families whose income is well the above national average. Meeting this need via discounting is likely to drive up discount rates at these higher priced institutions.

The NACUBO study, as summarized by Lapovsky and Loomis-Hubbell (2000), categorizes institutions based on size ("small" means entering freshman class of less than 850) and by tuition cost ("low" means less than $18,000 per year). According to the NACUBO study, at small colleges with "low" tuition and fees the average incoming freshman discount grew from 28.5% to 40% between 1991 and 2000. At these colleges, the percentage of students receiving "some institutional aid" rose from 76% in 1991 to 90% in 2000. For small colleges with "high" tuition the average discount grew from 29.5% to 39% during that same time period. The percentage of students receiving institutional aid rose from 57% to 70%. For large colleges and universities, the average discount grew from 21% to 30%. The percentage of students receiving institutional aid remained steady at 61% between 1991 and 2000. It appears that at the smaller institutions discounting has increased the most, particularly the small colleges with "low" tuition (Lapovsky & Loomis-Hubbell, 2000).

Another variable that could influence discounting is endowment size. In theory, institutions with high endowment-per-student ratios have more resources to provide discounts. In other words, these institutions could use their endowment earnings to provide tuition discounts (Mac Dowell, 1996, p. 25). It seems logical that the most well

endowed institutions would have higher tuition discounting rates (if using the scholarship allowance definition) because they could discount tuition with little effect on net tuition revenue. Basch's 1996 study seems to confirm this hypothesis: "Apparently reflecting the higher resources available to a college for financial aid, higher endowment per student has a statistically significant positive effect on average college funded grants and on discount rates" (p. 50).

Lapovsky and Loomis-Hubbell's 2000 analysis of the NACUBO study, however, did not find a relationship between tuition discounting levels and endowment levels: "Relative institutional wealth or poverty does not sharply affect the level of financial aid. Institutional aid is an enrollment management tool. The granting of aid to a significant percentage of the class is a necessary tool to fill the class with the necessary number and quality of students" (Lapovsky & Loomis-Hubbell, 2000, p. 29). The "source" of the discount varies by the institution's endowment level. Well-endowed institutions can use "restricted" dollars to replace some of the unrestricted dollars being used on discounts:

> The "...better endowed institution has more resources to spend on programmatic areas of the college and can compete longer and more deeply in the discounting/pricing game. Does this indicate a downward spiral that weakens the less well-endowed institution and continues to reduce competitiveness? Current levels of tuition discounting have persisted for much longer than many thought they could be sustained. It may mean that the very wealthy institutions tend to be among the most competitive to gain entrance and thus they are not truly in the same market

with many of the less well-endowed institutions" (Loomis-Hubbell, 2001, p. 30).

Geographic location may also influence tuition discounting. Regional characteristics such as family income and wealth, the number of other colleges in the area, and the number of 18-year olds may influence tuition discounting rates among institutions. Very little research exists regarding tuition discounting variations by region. Wick's 1997 study of no-need/merit awards indicates that institutions in the Midwest award 39% of the total no-need/merit awards being awarded nationwide, followed by the Mid-Atlantic region (24%), the South (17%), the West (10%), the Southwest (6%), and the Northeast (5%) (pp. 21-22).

Although there are many reasons that institutions discount, the "...reasons for using tuition discounting vary by institution. Smaller, less-selective colleges use it as a tool to achieve enrollment goals. Highly selective colleges that can reach their enrollment goals with students whose families are in a position to pay full tuition (admittedly a very small number of institutions) use tuition discounts to enhance the quality and diversity of their student bodies" (Allen, 1999, p. 9). Recently, these smaller, less-selective institutions have been the focus of considerable dialogue and debate. Practitioners and researchers alike have described the private, less prestigious institutions as endangered, challenged, or threatened. These institutions have been affected by the general decrease in the numbers of high school graduates as well as competition from lower priced educational alternatives (McPherson & Schapiro, 1995, p. 19). It is evident that this private sector of higher education has faced adversity over the past fifty years. In 1950, private institutions made up 66% of all institutions, and 50% of college enrollment. By

1976, the percentages had fallen to 52% and 24% respectively (Breneman & Finn, 1978, p. 21-22). By the year 2005, enrollment at private institutions is estimated to be only 20% of total college enrollment ("Fact File," 1995, p. 38). MacDowell (1996) predicts that "many [private] colleges which typically operate close to the margin, will go out of business; already 170 private institutions have closed their doors and more will follow" (p. 26).

This sector of higher education is very important to society. It "is an integral and major component of our education system. Its diversity vastly expands the choices available. Its leadership demonstrates the nature of academic excellence, the ideal of liberal learning, the necessity of academic freedom and the challenge of innovative and experimental programs" (Halstead, 1989, p. 48).

II. Outcomes Literature

Tuition discounting is practiced with many outcomes in mind—helping needy students, increasing student quality, expanding diversity, increasing enrollment, and improving the financial state of the institution. Tuition discounting does not guarantee success.

> "For most administrators at four-year independent colleges and universities, achieving student enrollment goals through tuition discounting requires the skills of an expert juggler. On one hand, campus officials must balance enrollment targets with their need to increase net tuition revenue. Spend too much on discounting and you risk losing precious revenue. Spend too little, and you may not meet your enrollment

goals. On the other hand, administrators must decide continually whether to use discounting dollars to assist low-income families or to attract more academically gifted students" (Redd, 2001, p. 34).

The Impact of Tuition Discounting on Enrollment

According to Leslie & Brinkman (1987), there is a significant positive relationship between aid offered and enrollment. Institutional financial aid is an important factor in the numbers and the composition of the student body. Loomis-Hubbell & Rush (1992) agree: "Institutionally funded financial aid has supported the participation in higher education of many students, particularly minority students who may not otherwise have had access" (p. 4).

An underlying assumption of the theory of tuition discounting is that students are sensitive and responsive to tuition prices. Numerous studies confirm that price, scholarship offers, and net price are all important factors in enrollment decisions (Seneca & Taussig, 1987; St. John, 1993; Litten, 1986). An extensive study by Somers and St. John (1995) assessed the impact of scholarship offers on enrollment decisions. Students perceive a scholarship as a reward, and an act of good faith on the part of the institution. The power of scholarship money is demonstrated in the Somers and St. John study. Applicants who were awarded scholarships were 23.5% more likely to attend for each $1000 awarded. They found that students were responsive to scholarship offers; even partial scholarships may influence attendance. The Gallup Poll data presented in Table 1 provides a clear indication that demand for higher education is price sensitive. This poll indicates that a $4000 tuition discount (from $18,000 to $14,000) would have a

significant impact on most families' college choice decisions. Sixty-one percent said this would increase their level of interest in the college. More than 80% believed it was a wise marketing move, and 93% viewed it as a positive action.

Substantial research confirms that both gross and net price affect a student's college choice. The size of the tuition discount is reflected in the net price. In a 1993 study it was determined that "students increasingly base their choice of a college or university on economic considerations...The survey found that 30% selected their institution on the basis of low tuition, up from 27.7% in 1991. Other factors were the financial assistance offered, cited by 28.3% of respondents, an increase from 27.8%" (Burd, year, p. 10). St. John (1993) shows that the tuition discount is the largest factor in a student's college choice. Cost has "eclipsed location, academic reputation, and social life as the #1 factor in choosing a college" (NY Times Higher Education Supplement, 1996, p. 7). A 1997 study of 3500 high school seniors indicated that cost (particularly net cost) is now more significant to students than location, academic reputation, or social life (Marcus, 1997). Another important study found that at mid-selective private colleges, the percentage change in enrollment dropped .6% for every $100 increase in tuition price (Brinkman & Leslie, 1987, p. 199).

The effect of price and tuition discounting on retention and graduation only recently has received attention. The short-term goal of filling a freshman class may outweigh the long-term goals of retention and graduation. Redd's 2000 study is the only one to study the effects of tuition discounting on these outcomes. Redd's study indicates that "dramatic discounting may negatively impact graduation rates" (p. 1)

Need, Merit, and Willingness

According to Baum (1998), the historical role of tuition discounting has been to expand educational opportunities for financially needy students (p. 12). Much of the literature acknowledges that discounts based on need allows lower income students to enroll at institutions in which they could not otherwise afford. Loomis-Hubbell & Rush (1991) state that tuition discounts have made private higher education a possibility for lower and middle class students who would not have been able to attend otherwise (p. 25). Similarly, according to Doti (1998), "the use of discounting has made independent higher education more affordable for lower-income students" (p. B7). A 2000 study by Redd analyzed the attendance of Pell Grant recipients at institutions that discount. Pell grant recipients are the students with the greatest financial need. The percentage of students receiving Pell Grants "grew by 20 percent at institutions with the largest increases in discounting rates, and by 16 percent at college and universities with the smallest increases in discounting. These results suggest that tuition discounting was...successful at helping institutions achieve their goals of providing access to higher education for low income students..." (p. 3).

Tuition discounts, when based on need, represent a transfer of wealth from higher-income to lower-income students (Loomis-Hubbell & Rush, 1991, p. 28. According to Winston, "a tuition policy that makes wealthier families pay more and less wealthy families pay less for the same education is what's fashionably called 'Robin-Hooding'—using tuitions to steal from the rich and give to the poor" (1988, p. B1). But charging different customers different prices based on certain personal characteristics (such as age,

or timing of the purchase) is not uncommon. As detailed in Chapter One, airlines, phone companies, and movie theaters all engage in this practice. Usually their purpose is to maximize profit. In contrast, "colleges charge different prices to ensure that able students can have access to an excellent education, regardless of their families' incomes" (Winston, 1998, p. B1). In question here is the concept of income redistribution—"colleges participate in price discrimination for the social objective of making the best education available to the best students" (Winston, 1988, p. B1). Winston also points out that unlike Robin Hood, the colleges and universities are not 'stealing' from the wealthier families—those families are expressing their demand (willingness and ability) to pay for the education at the full price.

Indeed, "part of what those students who pay full tuition are getting when they choose to buy a high-quality private education is association with other excellent students, as well as a breadth and diversity of classmates. Both the quality of the students and their diversity would be lower if all students had to pay the same price. And quality and diversity are part of the appeal of these institutions, part of what makes them educationally excellent and desirable" (Winston, 1988, p. B1). In short, making education accessible, regardless of ability to pay, should be part of an institution's mission.

Jenkins (1991) wonders whether income redistribution in higher education should be the responsibility of all of society, rather than just the middle and higher income families that are already paying for college. She predicts that

> "as middle- and upper-middle income families become more sophisticated in their assessment of educational value (price/outcome), they will be less

willing to subsidize lower income students at higher priced private institutions. There already exists much evidence that many middle-inco families are selecting high quality public institutions rather that their mo expensive private counterparts. While access and choice in higher education are important societal goals, the economics of the marketplac are such that, over the long term, they can only be achieved if institution costs moderate so that federal financial aid programs can bear the major of cost subsidy" (p. 7).

Winston and Zimmerman (2000) voice concern over the future of need-based institutional aid, arguing that it "faces an uncertain future, as, more generally, does all college pricing that serves, idealistically, to redistribute income. It won't matter, at the top, where students stipends will be paid all around, but it may seriously reduce low income students' access everywhere else" (p. 12). Breneman (1996) argues that with respect to awarding institutional aid based on need... "[e]quity is only the occasional—and incidental—result" (p. 16). Delbanco (1996) predicts that the concept of funding based on need is "ancient history" (p. 39).

The future of need-based discounts appears rather tenuous. Much has been written about the trend of discounting based on merit rather than discounting based on need. According to Baum (1998) fewer and fewer colleges are focusing on access for l income students when awarding institutional aid, and the percentage of merit based aid growing relative to institutional aid based on financial need (p. 12). A 1999 study by Mulugetta analyzed the growth in institutional need based aid versus growth in institutional merit based aid. The results of this study indicate that the growth in merit

based aid offers was three times the growth in need based aid offers over a 6 year period in the 1990's (p. 11). In 1997, Wick synthesized a series of studies that analyzed the growth in non-need-based institutional aid. The studies included a 1974 study by Robert Huff, then Director of Financial Aid at Stanford, a 1978 study by the College Board, 1976 and 1984 studies by the American Council on Education (ACE), a 1983 study by the National Association of College Admissions Counselors (NACAC), and more recent studies by the College Scholarship Service and the National Association of Student Financial Aid Administrators (NASFAA). The scope of Wick's project was to "determine if there has been a significant increase in institutional gift aid being targeted towards awards not based on need" (p. 28). He concluded that there definitely has been a shift toward non-need based aid that has come at the expense of need-based student aid (p. 28). Discounting based on merit more than need has traditionally been more prominent at less prestigious institutions. However, the increasing use of merit aid is now becoming apparent even among more prestigious institutions (McPherson & Schapiro, 1995, p. 27).

The trend away from need based discounts to discounts based on student quality (SAT scores or high school grade point average) is "part of an ambitious strategy to create a virtuous circle, providing irresistible bargains to high achievers in the expectation that they will, in turn, attract better students and faculty" (Passell, 1997, p. B10). Many institutions are using no-need scholarships as a mechanism to upgrade student quality, academic reputation, and status (Sidar, 1976, p. 5).

In addition, what seems to be emerging is the use of tuition discounting as a marketing device or bargaining tool (Baum, 1998). As Lapovsky and Loomis-Hubbe (2001) found:

> "more and more institutions are creatively packaging financial aid based on su marketing devices as familial perceived need, special institutional programs (s as service scholars or economics scholars) or well defined cohorts.... These structures deviating in part or in whole from any measurement of need, reach to families unwilling to pay for education without getting some kind of 'deal' the competitive battleground among institutions for the top student scholars contribute to the pressures on the tuition discount at most independent 4-year colleges and universities" (p. 31).

At some institutions, econometric models are utilized to estimate "willingness pay"—based on characteristics such as anticipated major, whether the student partici in a campus visits, or race—rather than "ability to pay." Many colleges are even hiri consulting firms to help them understand how to use demographics, credit records, an other "predictive modeling techniques" to estimate willingness to pay (Gose, 1999, p A49). In many cases, any indication of eagerness is taken as an indication of willingn to pay (Delbanco, 1996, p. 39). The measurement of the responsiveness of consumer price changes is called price elasticity of demand. Whereas historically institutions h tried to "determine which students [had] elastic demand and [would] be unable to enr because of limited financial resources...under the new enrollment management strate institutions attempt to identify applicants whose demand is elastic because they are

unwilling to pay a higher price, even though the resources might be available" (Baum, 1998, p. 14).

At many institutions, administrators realize that they may underestimate willingness to pay. This realization has lead to an unprecedented willingness on the part of institutions to reconsider financial aid awards—"bargaining" or "negotiating." Colleges report a barrage of phone calls, after award letters are sent, from parents hoping to negotiate a better "deal." According to Michael Wisniewski, Director of Financial Ai at Chestnut Hill College in Pennsylvania, "we will match an offer from any other college (Asinof, 1997, p. C1). He admits, however, that bargaining is unfair to those who aren't aware that their award is negotiable. A highly controversial, yet potentially more fair approach, is ascertaining a family's willingness to pay. In 1999, a website (www.ecollegebid.com) was developed that allows families to do just that: "offer to pay given amount to attend college, then sit back and see whether any colleges are willing to accept that bid' (Gose, 1999, p. A49). According to the ecollegebid website, it serves as "brokerage agent between colleges and students...that [matches] (1) the family's ability or willingness to pay for a college education with (2) the college's willingness to offer tuition discounts." The institutions pay $2,000 annually to participate in ecollegebid. The list of participating institutions, however, is not made public.

Is it appropriate for colleges to be haggling over price, like used car dealers? According to Gaudiani (2000), "...colleges and universities are not car dealers. As our non-profit status attests, we have a higher social purpose. Certainly we can learn from th for-profit sector about efficient management of resources. But if we focus too closely on

the bottom line we lose sight of our reason for existence: to educate productive, compassionate, effective citizens, who will make society a better place" (p. 19).

Rewarding merit, or simply "unwillingness" to pay, rather than need has concerned many scholars. Generally, the argument is that it "give[s] financial aid students who would have gone to college anyway, and [takes] those dollars from students who might not be able to attend" (p. 127). Mulugetta's 1999 study offer following conclusion: "recycled tuition revenue—in the form of merit aid—may tremendous benefit to a handful of winners," although the end result is societal in (pp. 11-12). Baum and Schwartz point out that "to the extent that any new merit programs replace need-based programs, there may well be a decline in enrollmen that implied by demographic trends. Merit aid will have little effect on whether meritorious students enroll, but declining need-based aid will increase the price o to college for those with the highest demand elasticity—those from low-income f (p. 133). Institutions that have focused on need rather than merit "...fear that the attention to the strategic use of financial aid will negate years of working toward equitable distribution of need based aid..." (Baum, 1998, p. 12).

Baum (1998) wonders if this "strategic" use of financial aid can be "comp with the goals of equity in higher education, or must we choose between abandon goals of diversity and educational opportunity and risking institutional solvency" Gaudiani (2000) points out that institutions must make difficult decision about w students to award. They could award $30,000 per year (the entire cost of attenda one highly qualified yet needy applicant. Or, for the same total dollar amount, th award $5000 per year each to six students with no financial need. These six stud

would still contribute $25,000 per year for four years, whereas the one needy student contributes no revenue for four years. Many institutions will make the choice to maximize net tuition revenue—that is, to assist the six no-need students rather than the one needy student. Therefore, claims Gaudiani (2000), "[i]t is not difficult to see why strategic use of financial aid might conflict with the goals of equity and access in highe education" (p. 14).

Financial Aspects of Tuition Discounting

The potential positive effects of tuition discounting are quite clear. First, tuitio discounting, at least to some degree, encourages the participation of lower income students as well as minority students at private institutions of higher education. Additionally, discounting can serve to "safeguard the flow of net tuition revenues to th institution" (McPherson & Schapiro, 1995, p. 18). However, as articulated by Loomis-Hubbell and Rush in a 1991 article, tuition discounting can be a "double edged sword." In addition to its many positive aspects, there are less desirable results including possib losses in net tuition revenue (if institutions maximize gross tuition revenue rather than tuition revenue) and excessive increases in gross tuition rates (sticker prices) (p. 25).

As early as the 1960's, researchers were expressing concerns about the potentia negative side-effects of tuition discounting. A 1960 study of 60 private colleges report the following "alarming phenomenon:" one of the colleges in the study was diverting 3 percent of its tuition income to student aid (McPherson & Schapiro, 1998, p. 25). The high levels of tuition discounting continues to be a source of concern. According to David Breneman (1994):

"the sharp increase in student aid provided by the institution itself, referred to as unfunded student aid, or as institutionally provided st aid, is among the most troubling economic problems confronting lib arts colleges. It is not unusual to find a college currently devoting 2 more of its budget to unfunded student aid, at the same time that ou on instruction constitute no more than 40% of the budget. One can understand why Presidents worry when, for every dollar spent on instruction, 50 cents goes for student aid" (p. 36). Nathan Dickmey (1993) added that there persists a "gnawing fear that something is w with uncontrolled growth of the financial aid ratio" (p. 26). Loren Loomis-Hubbell (1995) argued that "as tuition discounting grows, t fundamental strength and reliability of institutions' main revenue st erode" (p. 31).

There is some evidence that tuition is beginning to erode the financial healt some institutions. According to researchers at the University of Pennsylvania's In for Research on Higher Education, many institutions that are discounting heavily w experience down-graded debt ratings, and consequently will have a more difficult borrowing funds ("Discounting and Its Discontents," 1994, p. 34).

There are concerns that tuition discounting can actually be dangerous if institutions administer it improperly. Improper use of financial aid most often is a of institutions failing to understand the important inter-relationship between publis price, enrollment, and discounts.

The first piece of this inter-relationship is price. Institutions must choose a "published" price—even if very few students are actually required to pay the full price. Generally, the college has to set a price that generates at least enough revenue to cover expenses (Hoke, 1993, p. 6), and to "guarantee educational quality" (Shaman & Zemsky, 1984, p. 17).

Some institutions utilize what is referred to as a "prestige/quality" pricing policy. Under this approach, institutions will often raise their tuition prices to improve image or reputation. In higher education, particularly private higher education, price is generally regarded as an indicator of quality. A similar pricing policy, "peer" pricing, is an approach in which an institution sets its tuition price and tuition increases in a manner that "keeps it comparable with...prices at peer institutions" (Shaman & Zemsky, 984, p. 14). These policies, however, are not strategic and fail to recognize the important inter-relations between price, enrollment, and discounts.

Strategic pricing requires a keen understanding of the inner workings of price, gross tuition revenue, and net tuition revenue. Recall that gross tuition represents the amount of tuition revenue that an institution would receive if every student paid the full published price out of his or her own pocket. Net tuition revenue is the gross tuition revenue minus institutionally funded aid. Many institutions raise price in order to raise gross tuition revenue, even though *net* tuition revenue is more important (Cohen, 1982). It is entirely possible for gross tuition revenue to increase while net tuition revenue declines. For example, an institution that raises gross tuition rates 6 percent but "discounts away" more than the 6 percent increase could face a substantial decrease in net tuition revenue (Loomis-Hubbell, 1992, p. 17). In other words, if colleges increase their

financial aid budgets faster than their tuition rates, their average price per student actually falls ("Discounting and Its Discontents," 1994, p. 33).

With this important inter-relationship in mind, some colleges have adopted a "high-tuition, high-aid" strategy. In 1987, Eamon Kelly, President of Tulane University, admitted that "[w]e put our tuition as high as possible then put most of the extra money into financial aid" (Fiske, 1987, p. B13). Others have adopted more of a "low-tuition, low-aid" strategy. Muskingum College cut its tuition rate with much fanfare in 1995, and also lowered its discount rate. This approach seems to have worked well for Muskingum: enrollment increased 31% over 5 years, and both gross and net tuition grew substantially (Irving, 2001, p. 3).

Bowen and Breneman (1993) distinguish between the use of institutional aid as a "price discount" and as an "educational investment." They argue that institutional aid offered by prestigious schools usually represents an educational investment on the part of the institution. Institutions such as Harvard and Yale could enroll more than enough students without offering any institutional aid at all. It is likely that they could double or triple their tuition rates and still enroll all the students they could want. Yet these schools do offer institutional scholarships. Why? According to Bowen and Breneman (1993):

> "For MIT and similarly situated institutions, student aid enables the college to attract qualified students who could not come otherwise, including students who will contribute to the diversity of the student population and, ultimately, to the needs of the nation for more well educated students from racial minorities and disadvantaged backgrounds. Decisions to spend some of the college's own resources in this way are analogous to decisions to increase spending on the

library, on faculty positions, on scientific equipment, or on any number of other worthwhile activities" (p. 5).

At the other end of the spectrum, however, some colleges cannot get enough full pay students to fill an entering class. Many students are willing to attend only if they get a tuition discount; they are not willing to pay full price. Institutional aid, in this sense, is functioning as a price discount, not an educational investment.

Bowen and Breneman recommend that institutional leaders answer the following question to help determine if institutional aid is an investment or a discount: "Does providing student aid increase or decrease the net resources available to the college to spend on other purposes?" (Bowen & Breneman, 1993, p. 5). When institutional aid is being used as a means to create a large enough entering class, it is functioning as a price discount, and technically, *creating* net resources for the college. (Recall from the example using the data in Table 2 that the implementation of tuition discounting actually increases resources for the institution.) When aid is functioning as an educational investment, the college could have enrolled enough students without offering any institutional aid, and the aid represents a decision to use institutional funds instead of some other use of that money.

It is important that institutions have a clear understanding about being "discount" schools or "investment" schools. This assessment may require some honest reflection on the part of administrators, many of whom might be reluctant to admit that their aid policy is a discount as opposed to an investment. If an institution mis-categorizes its use of aid, the consequences could be ruinous (Jenny, 1997). For example, institutions that use aid as an investment should set a predetermined spending cap on the amount of resources

devoted to student scholarships. These institutions are assured of a full entering freshmen class and a definite total tuition revenue amount. Based on these figures, an institution should set aside a certain dollar amount of expected tuition revenue for scholarships. However, if an institution that uses aid as a discount set a self-imposed cap (as if it were an investment school) it may end up with an inappropriate amount of tuition discounting. In other words, this institutionally imposed level may produce a small level of net tuition revenue, whereas some other level of awarding may result in a much better financial picture for the institution. If an institution is not careful about analyzing its position on the continuum of discount to investment it may create a weak financial situation.

The following table is useful to assess an institution's institutional student aid:

Table 4. Institutional Aid Policy

	Tuition Discount	Educational Investment
Freshman Class	Would not be full without offering aid	Would be full even if aid not offered
Demand for product	Elastic (sensitive to price)	Inelastic (Less sensitive to price)
During economic downturns the use of institutional aid	Increases	Decreases
Resources	Creates Economic Resources	Uses up Economic Resources
Purpose	Generally: to promote ethnic diversity, increase enrollment, improve financial health, enroll more students with need, encourage retention, and enhance prestige	Diversity, Financial Need
How it should be treated on balance sheet	As a deduction from gross tuition revenue	As an expenditure like other types of spending with which it competes for resources

Whether discounting should be treated as a "deduction from revenue" or as an "expense" is no longer in question. In 1997, new accounting practices were developed by

the Financial Accounting Standards Board (FASB 116 and 117) that mandated institutions treat discounts as a deduction from revenue—not an expense, like expenditures on salaries, library books, or electricity (Allen, 2001, p. 56). Prior to the implementation of these new accounting practices, institutions included "[r]evenue that never existed [tuition funded by institutional grants]...in gross tuition while the bottom line was kept honest by reporting the same dollars as a financial aid expense, a procedure that accountants call 'grossing up the accounts.' Thus, higher education executives were led to believe that their institutions were generating much more revenue than was the case" (Allen, 2001, p. 56). The new accounting standards require institutions to deduct institutional aid when reporting tuition and fee revenue. The "old" rules instructed institutions to: "report all tuition and fees...assessed against students for educational purposes. Include tuition and fee remissions or exemptions even though there is no intention of collecting from the student" (IPEDS Finance Survey, 1994). The "new" rules instruct institutions to report tuition and educational fees "net of any allowances," where allowances are defined as: "the difference between the stated charge for goods and services provided by the institution and the amount which is billed to students and/or third parties making payments on behalf of students" (IPEDS Finance Survey, 1999).

Some researchers argue that institutions have gone too far in awarding institutional aid. According to Jenny (1997) "once an institution discounts its prices to more than 50% of its students, a trend toward a point of no return is set in motion. At 75% or more, the self-defeating process is now well underway" (p. 5). A process that may have worked at one time may backfire if carried to the extreme.

The airline industry is widely known for carrying a discounting pricing strategy to an extreme in an attempt to "milk its demand curve" (Riggs, 1994, p. 43). However, it is also known for the massive loss it faced in the 1980's. Riggs argues that the dysfunctional pricing is probably the main reason for the financial troubles facing the airline industry (p. 41). Actually, in many ways airlines and higher education are similar. Both are fixed-cost based so additional customers (passengers or students) add very little to operating costs, particularly if a plane or a classroom has empty seats. Both scenarios portray lost revenue and invite the concept of strategic pricing. Riggs (1994) warns that: "If competition requires all colleges to 'buy' their best students with merit scholarships, that is, if academically able students, even those financially quite able to pay, come to expect discounted tuition—private higher education is headed down the road defined by the airlines: price inequities among its 'customers,' and increased cynicism" (p. 43).

Another concern about tuition discounting focuses on finance. Jenkins (1991) warns of the cyclical effect of tuition discounting. She argues that tuition discounting can tend to spiral—where increases in discounts lead to the necessity for tuition increases, which leads to further discounting. Tuition discounting needs to be carefully monitored by an institution's administrators so as to not spiral out of control (p.6).

For some institutions, tuition discounting decreases the amount of funds available for student services and other needs (Loomis-Hubbell & Rush, 1992). A 1995 NAICU study of independent colleges and universities indicates that in response to financial shortfalls 45% cut their budgets, 37% eliminated administrative positions, and 35% left faculty positions unfilled ("A Commitment to Affordability," 1997, p.3). Yet virtually all of these institutions increased institutionally funded student aid during the same period. It

appears that "institutions have been forced to put increasing amounts of their unrestricted funds into student aid instead of academic programs" (Dunn, 1993, p. 9). It also seems that an increased portion of cost "is not for instruction, but for everything else" (Werth, 1988, p. 25). At many colleges and universities, spending on institutional aid exceeds spending on the entire educational program (O'Keefe, 1987, p. 7).

The current body of literature on tuition discounting provides a fairly clear idea about the history of tuition discounting, the growth in the levels of discounting, reasons for this growth, and where the growth has mainly taking place. There is also research regarding the outcomes of discounting. It is easy to understand *why* institutions have resorted to tuition discounting. However many questions still remain.

Chapter Three: Design and Methodology

Research Questions

The purpose of this study was to examine tuition discounting at private, baccalaureate-level institutions of higher education between 1990 and 2000. Specifically, three main questions were addressed:

1. What is the pattern of tuition discounting for these institutions? Has tuition discounting increased, decreased, or stayed the same?
2. Are there variations in tuition discounting based on institutional demographics? For example, does discounting vary geographically, or by institution size or age?

3. Does tuition discounting improve the financial health of institutions? In other words, what is the relationship between tuition discounting and the financial health of the institutions?

Data Sources

The study included data from three sources: (1) the Integrated Postsecondary Education Data System (IPEDS); (2) the Peterson's Guide to 4-year Colleges; and (3) the U.S. News and World Report college rankings report.

Integrated Postsecondary Education Data Analysis

Each year, institutions of higher education in the United States are required to complete a federal survey called the Integrated Postsecondary Data Analysis System (IPEDS) survey. Completion of the form is mandatory for institutions that participate in any of the federal financial assistance programs authorized by Title IV of the Higher Education Act of 1965 (Pell grants, Federal Student Loans, etc). Each year, over 12,000 postsecondary institutions complete the survey. The survey is quite comprehensive and contains eight survey components: institutional characteristics and activity; completions; occupationally specific enrollment; finance; staff; libraries; fall enrollment by race, age, and residence; and faculty salaries. IPEDS represents the single most comprehensive source of postsecondary educational data in the United States, and is referred to as the "cornerstone of national postsecondary education data" (Peng & Korb, 1989, p. 76). Much of the data for this study came from the finance component of the IPEDS survey, which provides detail about all aspects of an institution's financial situation. Institutions

typically use their annual general purpose financial statements to complete the IPEDS survey. An institution's financial statements are considered highly reliable. The law requires an annual audit by an independent accounting firm for consistency and accuracy. Recently, the IPEDS data has been made conveniently accessible to researchers via the Internet.

Starting in 1997, the finance portion of the IPEDS form was significantly changed for private institutions. This change was primarily because of tuition discounting. The "new" form (1997-present) treats institutional financial aid as contra-revenue—that is, a deduction from tuition and fee revenue, not as an expense. The IPEDS instructions indicate that institutions should not include "allowances" when reporting tuition and fees, where an allowance is defined as "the difference between the stated charge for goods and services provided by the institution and the amount which is billed to students and/or third parties making payments on behalf of students." (This definition would include funded and unfunded institutional aid). Thus, "tuition and fees" on the new IPEDS form really means net tuition and fees. To obtain gross tuition and fees (the amount of tuition and fees the institution would receive if every student paid the full tuition price out of his or her own pocket), allowances must be added to the tuition and fees figure. On the "old" IPEDS form, "tuition and fees" would reflect gross tuition and fees and the "allowances" would appear as expenses against that revenue.

This change in the IPEDS form came about after considerable debate in the early 1990's regarding the reporting of institutional aid. According to Allen (1999), the focus on gross tuition revenue rather than net tuition revenue was misleading to the users of institutional financial statements—both within and outside the institution. Institutional

leaders were focused on gross tuition revenue rather than the more important figure of net tuition revenue. Gross tuition revenue overstates the flow of income to the institution (p. 13).

Peterson's Guide to Four-Year Colleges

The Peterson's Guide to Four Year Colleges, published annually since 1970, provides detailed data about an institution's students, faculty, facilities, and programs. The information contained in the Peterson's Guide is furnished annually by the colleges to the publisher of the Guide, Thompson Learning.

U.S. News and World Report: America's Best Colleges

The third data source was the special college rankings issue of U.S. News and World Report, which is published annually. Essentially, the quality of each institution is analyzed based on indicators purportedly measuring institutional quality. The editors of this publication recognize that "the college experience consists of a host of intangibles that cannot be reduced to mere numbers. But [they] believe that it is possible to objectively compare schools on one key attribute: academic excellence" (Morse & Flanagan, 2001, p. 28).

Selection of Institutions

In 1970, researchers at the Carnegie Foundation for the Advancement of Teaching developed a classification system for American institutions of higher education. The system is intended to group or cluster institutions based on characteristics. Although

some modifications have been made to the classification system since its inception, the general principle has not changed; it is a system designed to group institutions (generally by the highest degree they offer), but not to rank institutions. The classification includes Research Universities I and II, Doctoral Universities I and II, Masters Colleges I and II, Baccalaureate Colleges I and II, and Associate of Arts Colleges (Boyer, 1994, p. 1).

The group of institutions analyzed in this study were those private, non-profit institutions classified by the Carnegie Foundation classification system as Baccalaureate (Liberal Arts) I or II. The Baccalaureate I (BAI) category includes institutions that focus on undergraduate liberal arts education and award 40% or more of their degrees in liberal arts. They tend to be more restrictive in admissions. The Baccalaureate II (BAII) category includes institutions that also focus on undergraduate education, but award less than 40% of their degrees in liberal arts. They are less restrictive in admissions than the BAI institutions (Carnegie Foundation for the Advancement of Teaching, 1994). I selected this population for study for two reasons: their importance in the American system of higher education, and the vulnerability of these institutions to economic and demographic fluctuations. Baccalaureate institutions contribute to maintaining diversity and variety in American higher education. The U.S. system of higher education is special because of this variety (MacKay, 1992). The small private colleges provide an educational environment unlike any other type of American college. As Breneman (1994) states, "...one can almost view these colleges as standard bearers, holding out the promise and the reality of education for education's sake. Without them, American higher education would lose far more than simply places for 260,000 undergraduates, a

miniscule 2 percent of total enrollments. Ten new universities could absorb that population, but at the cost of a great loss of diversity in our educational system" (p. 3).

These institutions are unique in their single mission: to provide excellent undergraduate education. Unlike larger institutions, the baccalaureate institutions do not place emphasis on research, public service or graduate education. They exist for the sole purpose of educating undergraduate students (Breneman, 1994, p. 94). A study by Alexander Astin (1977), showed that these institutions excel at providing opportunities for students to grow intellectually and socially. Students at private institutions tend to interact more with faculty, tend to be more active on campus, and tend to participate more in classes. These students also report a great deal of satisfaction with their overall campus experience (Astin, 1977, p. 230).

Although these institutions play an important role in American higher education, they are also among the most vulnerable to economic fluctuations (including inflation), competition for students, and demographic changes. John Nelson, a Senior Vice President for Moody's, argues that small institutions (generally, institutions with less than $20 million in annual revenue) are the most at-risk (Townsley, 2002, p. 25). In sum, the combination of importance and vulnerability makes this population the ideal focus of a study of tuition discounting.

I selected institutions for this study if their response to the IPEDS survey question "institutional control" was "private, non-profit" and if their Carnegie classification was 31 (Baccalaureate I) or 32 (Baccalaureate II) (www.nces.ed.gov/ipeds). This selection produced a population of 503 institutions, including 157 Baccalaureate I and 346 Baccalaureate II institutions. I analyzed the BAI and BAII institutions separately because

of their differences with respect to prestige and admissions restrictiveness, as detailed previously.

Unfortunately, many institutions made errors in completing the revised version of the IPEDS form in 1997 and beyond. The new method of reporting institutional aid as an allowance instead of an expense created a great deal of confusion among business officers. Institutions that reported $0 allowances clearly misunderstood the new reporting system. (A $0 allowance means the institution awarded no funded or unfunded institutional aid.) I excluded institutions that reported a $0 allowance in 1997 from the analysis, resulting in a useable sample of 120 BAI's and 167 BAII's. I performed a series of statistical tests (T-tests and Analysis of Variance) on several key variables to ensure that the resulting samples were statistically representative of their populations. As seen in Table 5, the sample means for most of the variables were not significantly different from the corresponding population means for these key variables. For the BAI institutions, there does not appear to be any significant differences between the sample and the population. For the BAII institutions, six of the nine variables show no differences between the sample and the population. Respondents in the sample do appear to be slightly more selective, with higher reputations, and fewer minority students than the population at large.

Table 5. Population vs. Sample

	BAI			**BAII**		
T-Tests	Population Mean	Sample Mean	Sig.	Population Mean	Sample Mean	Sig.
Average Enrollment	1465	1561	0.115	1299	1367	0.319
Percent Minority	0.0827	0.0842	0.1111	0.192	0.11	.001

Age	140	141	0.73	102	104	0.622
Academic Reputation Score	3.5924	3.63	0.482	2.78	2.87	0.004
Faculty-Student Ratio	13.8086	13.75	0.83	23.28	22.79	0.578
Retention	84.81	85.83	0.443	70.76	71.68	0.236
Average Total Ed and General Expenditures	33883028	3600000	0.206	14056062	15000000	0.108
Average Endowment	3669965	3847511	0.82	487115	486524	0.998
Analysis of Variance	F-Score	Significance		F-Score	Significance	
Religious Affiliation	2.164	0.143		0.14	0.708	
Gender Affiliation	0.053	0.819		0.891	0.346	
Admissions Competitiveness Rating	3.167	0.077		34.58	.001	
Locale	3.056	0.083		0.288	0.592	

I downloaded the institutional-level data from the online IPEDS database into Excel. I calculated the study variables from the raw data (see next section). The tuition discounting rates, (calculated as the ratio of unfunded institutional aid to total tuition and fees assessed), for example, required the use of 3 separate IPEDS variables—the institution's unfunded institutional aid, total tuition and fee revenue, and total allowances applied to tuition and fees. The Operating Income Ratio calculations required 9 separate IPEDS variables (which are detailed in the next section). Net tuition revenue per students was also calculated (net tuition revenue divided by enrollment), as well as Total General and Educational Expenditures per student. To ensure accuracy in these calculations, charts were developed to coordinate the calculation process. These charts are included in

Appendix A. Once the relevant variables were created, the Excel file was imported into SPSS for statistical analysis.

Conceptual Framework

In order to develop the conceptual framework for this study, I conducted a series of interviews with administrators at small private colleges and universities, and also reviewed models of financial health presented in the research over the past 20 years. Additionally, I drew upon my decade of experience as a financial aid administrator and my experiences in that capacity. I spoke with three chief administrators at small private colleges—Susan Bolt, Vice President for Administration and Finance at Kettering University in Flint, Michigan, Bob Nichols, Vice President for Enrollment Management at the same institution, and Sharon Maher, VP for Finance at Siena Heights University in Adrian, Michigan. From these sources I created a conceptual framework—essentially a model of institutional financial health and the role that tuition discounting plays in influencing financial health. I included in this framework five basic kinds of measures: an outcome variable; a set of variables that describe and institution's general characteristics; a set of variables that describe student quality; a set of variables that describe institutional quality; and finally the predictor variable of most interest—the tuition discount rate. Each of these five measures (and the rationale for their inclusion in a study of tuition discounting and financial health) are discussed in detail in the following section.

Outcome Variables: Institutional Financial Health

The main outcome analyzed in this study was financial health. After all, if tuiti discounting is effective it should serve to bolster an institution's financial situation. Th financial health of private colleges is often measured using financial ratios which meas many aspects of an institution's financial soundness, including the effectiveness in its u of resources, ability to live within its means, and ability to provide and maintain quality educational services and facilities ("Ratios," 1982, p. v). For this study I had originally intended to use the Operating Income Ratio (OIR), to measures an institution's financia health. The OIR is calculated as:

$$\frac{\text{(Gross Tuition and Fees-Institutional Student Aid+State/Federal/Local Grants and Gifts+Other Revenue+Auxiliary Revenue-Auxiliary Expenses)}}{\text{(Total Educational and General Expenditures-Auxiliary Expenses-Institutional Stude Aid)}}$$

The numerator includes gross tuition and fee revenue (net of institutional aid) plus gran and gifts from federal, state and local sources, plus net auxiliary revenue. The denominator essentially measures net total expenses of the institution ("Ratios," 1982, 16). Unfortunately, after the OIR's were calculated it became apparent that a pre and p 1996 anomaly existed—likely due to the change of the IPEDS form and the confusion surrounding that change. Therefore I turned to other sources to find an appropriate measure of financial health.

Moody's Investor Services uses an array of financial ratios to measure the financial performance of private institutions. These ratios are specifically designed to measure the institution's ability to "meet debt obligations and are indicative of financia viability" (Townsley, 2002, p. 142). Two measures used by Moody's are net tuition

revenue and net tuition revenue per student (net tuition revenue/enrollment). These two measures are important because they analyze both the financial position and the market position of institutions—both critical factors in overall financial health. Both measures were utilized in this study as indicators of financial health.

Institutional Descriptors

To examine tuition discounting by different types of BAI and BAII institutions, and to control for possible intervening influences on the relationship between tuition discounting and financial health, I included several institutional descriptors: religious affiliation; enrollment; minority enrollment; locale; gender affiliation; and age of the institution.

The first of the institutional descriptors was religious affiliation. Many U.S. colleges and universities, especially liberal arts colleges, are affiliated with a particular religion or denomination. There is some evidence to suggest that institutions with religious affiliations have experienced recent enrollment growth. One reason for this increase may be the growth of enrollment at Christian high schools in the U.S., which has increased the recruiting base for religious affiliated institutions. It appears that many young people are seeking a college that will provide "moral rigor" and a religious context in which to learn (Savoye, 2002, p.1). This increase in the demand for religious based higher education may be related to changes in institutional financial health.

The second institutional descriptor was size (as measured by enrollment). There is some evidence that size may affect financial health. Smaller colleges may not be able

to realize economies of scale—essentially lower per student costs—than larger institutions. As a result, donors may view the institutions as inefficient, and may be less likely to assist them . Further, the smallest colleges typically face extreme financial conditions and must rely on a "trickle" of students to supply revenue. Fewer students means fewer alumni from which to draw donations. John Nelson, Sr. Vice President for Moody's Investor Services cites enrollment as a major indicator of financial viability, and voices concern that small institutions may experience "long term financial strain" (Townsley, 2002, p. 202). Size definitely appears to be a factor that influences financial health, and was therefore included in this study.

The third institutional descriptor—the ethnic make-up of the student body—was measured for this study as the percentage of the student body that was African American, Hispanic, or Native American. These specific groups were included because they are under-represented in higher education. Much has been written about the personal, institutional, and societal benefits of racial diversity on college campuses (for example Rudenstine, 2001; Kurlaender & Yun, 2001; Chang, 2001; Hurtado, 2001). A recent study, entitled "Does Diversity Make a Difference" (2000) by the American Council on Higher Education and the American Association of University Professors indicates that all students, not just minorities, benefit from diversity and that these benefits cannot be duplicated in a homogeneous environment (p. 1). Clearly, diversity is desirable in many ways. An institution that commits to investing in diversity is likely to experience enrollment growth, and therefore, improved financial health. However, diversity can be financially costly. According to Bowen and Bok (1998), "...blacks and Hispanics are much more heavily represented among the poor than they are in the population as a

whole...Admitting genuinely poor students is very costly since such students have very few resources of their own" (p. 270). In this sense, diversity may affect financial health and tuition discounting.

Location, the fourth institutional descriptor, was based on the state in which the institution was located. The four geographic locations were: North, South, West, and Midwest. Appendix C provides detail about which states are included in each of the locations. Geographic location may be affect financial health because of populations shifts between regions and its implication for enrollment. According to Kodrzycki's 1999 study three main factors have contributed to geographic shifts in higher education. First, while the number of public high school graduates declined nationally by 13% between 1972 and 1997, the decline has not been equally distributed geographically. Parts of the Northeast and Midwest experienced declines as much as 26%, while parts of the Sunbelt region actually experienced growth in the number of high school graduates. Second, the qualifications of high school graduates varies demographically. Some areas of the country are experiencing vast increases in the percentage of high school graduates going on to college, whereas this percentage has decreased in other parts of the country. Finally, differences in tuition rates among regions has impacted enrollment as well (p. 28). Many studies of college financial health and tuition discounting include geographic location as an independent variable (Basch, 1996; Weiler, 1994; Savoca, 1990; Day, 1995; Townsley, 2002).

Gender affiliation was the fifth control variable. There is some evidence of a waning interest in gender-specific institutions, particularly female-only institutions. Only about 70 of the 300 women's colleges that were in existence 100 years ago have persisted

(Langdon, 2001, p. 5). According to Breneman (1994), "[t]he problem with many women's colleges lies in the changing values of young women and the shortcoming of extracurricular life" (p. 125). Although students at women's colleges are typically very vocal about the commitment to remain single-sex, the enrollment at these institutions is, in general, declining, which clearly impacts financial health.

The final institutional descriptor included in this study was the age of the institution. Older institutions generally have established histories, secure reputations, and larger alumni bases from which to draw donations. Therefore, they may have larger endowments from which to fund discounts, thus reducing the reliance on unfunded institutional discounts.

Indicators of Student Quality

Many measures of student quality exist. Among them are the test scores, grades, and high school rank of incoming students. One variable, the admissions competitiveness rating, as reported by the Peterson's Guide, indicates the difficulty of entry into the institution (Petersons, 2000, p. 7) and serves as a proxy for these individual measures of student quality. The admissions competitiveness rating measures several elements of entrance difficulty and has 5 values:

- Most Difficult: "More than 75% of the freshmen were in the top 10% of their high school classes and scored over 1310 on the SAT I (verbal and mathematical combined) or over 29 on the ACT (composite); about 30% or fewer of the applicants were accepted"

- Very Difficult: "More than 50% of the freshmen were in the top 10% of their high school class and scored over 1230 on the SAT I or over 26 on the ACT; about 60% or fewer applicants were accepted"
- Moderately Difficult: "More than 75% of the freshmen were in the top half of their high school classes and scored over 1010 on the SAT I or over 18 on the ACT; about 85% or fewer of the applicants were accepted"
- Minimally Difficult: "Most freshmen were not in the top half of their high school class and scored below 1010 on the ACT or below 19 on the ACT; up to 95% of the applicants were accepted"
- Noncompetitive: "Virtually all applicants were accepted regardless of high school rank or test scores" (Peterson's Guide, 2000, pp. 943-949).

Much of the research related to tuition discounting and institutional financial health recognizes the impact of student quality (or, admissions selectivity) as a factor that explains institutional variations in tuition discounting and health among institutions. Basch's 1996 study found a positive relationship between student preparation for college and the socioeconomic status of the family (p. 48). Therefore, more selective institutions are likely to attract more wealthy students, and would not need to discount to the extent of less selective institutions. Further, institutions that are more selective are more likely to charge a higher price. There tuition revenue tends to be higher and allows institutions to offer more administrative and student services, which helps the college to remain attractive to potential students (Basch, 1996, p. 48).

Indicators of Institutional Quality

Institutional quality can also be measured with a variety of variables including: (1) academic reputation; (2) the faculty-student ratio; (3) retention rate; (4) total educational and general expenditures; and (5) endowment value.

Academic reputation (prestige) is a key driver of institutional financial health. Many studies confirm that students consider prestige a top determinant of their college choice, and they specifically seek prestigious colleges. They do so for a number of reasons. First, they believe that "prestigious colleges generally have all and more of the characteristics that constitute good quality. Second, students do believe the networking among alumni at prestigious colleges is an added advantage. Third, external forces [such as parental or peer influence] convince them to aim for prestige" (Dehne, 1996, p. 23). Therefore, institutions with prestigious reputations are more likely to have large pools of applicants from which to select an incoming class, and they are less likely to experience financial difficulties than less prestigious institutions. For this study, reputation was measured by the U.S. News and World Report's academic reputation score. This score is based on a survey administered to college presidents, provosts, and deans of admission. Respondents are asked to rate their peer schools' academic reputation on a 5 point scale (1=marginal; 5=distinguished).

The faculty-student ratio is another indicator of institutional quality. Many institutions have made efforts to improve this ratio—that is, they have attempted to reduce average classroom enrollment as a strategic measure (Breneman, 1994, p. 38). Institutions often use the faculty-student ratio as a marketing device to promote small class sizes and individualized interaction with faculty members. According to Townsley

(2002), while small class sizes are appealing to students and lead to a "more intimate scholarly environment," they are costly for institutions to maintain. Small class sizes can negatively impact the financial situation of an institution because they reduce the flow of revenue to the institution (p. 105).

An institution's retention rate is another important variable that with a potential impact on institutional health. The retention rate is measured as the percentage of freshmen students returning to the institution for their second year. Generally, it can be thought of as a measure of the institution's success in offering the educational and other programs that students need in order to succeed at the institution (Townsley, 2002, p. 103).

An institution's endowment level is also likely to be a very important factor in its health. Large endowments allow institutions to endure periods of declining enrollment and decreasing revenue, and to preserve resources for these periods of decline. Endowments serve as a safety net or buffer for periods of financial distress (Townsley, 2002, p. 64). Equally important, a larger endowment allows for the awarding of more funded scholarships (and therefore less reliance on unfunded scholarships), and financial stability for the institution.

Total educational and general expenditures, the final control variable, measures institutional quality in that greater spending typically means more and better resources for students (i.e. student services, library, technology, etc.). These resources not only attract new students but encourage existing students to return. The level of resources available to students is a "selling and retention feature" and is likely to influence the outcome of this study—institutional financial health (O'Keefe, 1987, p. 33).

The Tuition Discount Rate

The tuition discounting rate, which is the predictor variable of most interest in this study, is a policy variable. It is a ratio that institutions can alter, as a matter of policy, to influence enrollment and financial health. Recall that there are three ways to measure the tuition discounting rate. The most basic of these measures is the *simple tuition discount* which represents the percentage of gross tuition and fees that the institution agrees to forego—essentially, the percentage of gross tuition and fees waived by the college. It is measured as:

$$\frac{\text{\$ of tuition and fee revenue waived (unfunded institutional aid)}}{\text{Gross Tuition and Fee Revenue}}$$

The *scholarship allowance* is the second tuition discount measure. It differs from the simple discount in that the numerator includes unfunded institutional aid as well as funded institutional aid (from gifts and endowments). The final tuition discount rate, the *student tuition discount*, includes all student aid (institutional, federal, state, etc.) in the numerator.

These various tuition discount measures have varying degrees of relevance to different constituencies. Students, parents, and admissions officers are most interested in the student tuition discount because it represents out-of-pocket cost to the student. Auditors and analysts are generally most interested in the scholarship allowance because it provides a measure of institutional resources—whether funded or unfunded—being used for financial aid. It is an important measure because it represents the opportunity cost of using funded dollars for financial aid rather than some other purpose. Business officers, financial aid officers, presidents, and board of directors, however, often focus on

the simple tuition discount (Allen, 1999, p. 4). This is because "the institution loses the cash represented by unfunded aid" (Townsley, 2002, p. 31). Funded institutional aid (as well as external aid such as federal and state aid) represents a discount to the student, but not a loss in revenue to the institution. When tuition revenue is the major source of income (which it is for most private colleges), it is easy to understand why the simple tuition discount is of greatest interest to administrators. For purposes of this study, the scholarship allowance or the simple tuition discount would have been appropriate measures. However due to the limitations of the IPEDS data, the simple tuition discount was the only measure that could be calculated. Therefore, this study uses the simple tuition discount as the tuition discount measure.

Appendix B contains a full description of all variables used in this study, along with a complete definition of each, and the source of the data.

Data Analysis Methods

Each of the three research questions were analyzed using statistical techniques as described below.

Research Question 1: What is the pattern of tuition discounting for these institutions? Has tuition discounting increased, decreased, or stayed the same?

In order to answer this question, I used SPSS to calculate the means and standard deviations for each individual year's tuition discounting rate (1990-2000). I also calculated the mean and standard deviation for the 11 year average tuition discount rate and the 11 year change in the tuition discount rate (the 2000 tuition discount rate minus

the 1990 rate). I then analyzed these means and standard deviations over time. I conducted the same analysis for the financial health variables (net tuition revenue per student and expenditures per student). The calculations were performed for the BAI institutions and then the BAII institutions.

Research Question 2: Are there variations in tuition discounting based on institutional demographics? For example, does discounting vary geographically, or by institution size or age?

Analyses of variance was performed to answer this research question. Starting with the BAI institutions, I divided the institutions into quartiles for each variable (for example, with the enrollment variable, I divided the institutions into 4 quartiles: up to 1118 students, 1119 to 1488 students, 1489 to 1933 students; and 1934 or more students). For each quartile, I found the mean of the 11-year tuition discounting average for the institutions in that quartile. I then compared quartiles to look for significant mean differences. This analysis was performed on the following variables: enrollment, age, admissions competitiveness rating, academic reputation score, total general and educational expenditures, endowment, gender affiliation, retention, minority enrollment and the faculty student ratio. After completing this process for the BAI institutions, I conducted the same analyses for the BAIIs.

Research Question 3: Does tuition discounting improve the financial health of institutions? In other words, what is the relationship between tuition discounting and the financial health of institutions?

In order to analyze tuition discounting and its impact on institutional financial health, I regressed net tuition revenue per student and net tuition revenue (the "health" measures) on all of the institutional descriptors: religious affiliation; enrollment; minority enrollment; location; gender affiliation; and the student quality variable (admissions competitiveness rating). The general form of the regression equations was:

$NTRPS_x$= a +b(RELIG) +c(ENROLL) +d(MINORITY) +e(SOUTH) + f(MIDWEST) +g(WEST) +h(GENDER) +i(AGE) +j(ACR) +k(ENDOW) +l($TDRATE_x$) +e

and

NTR_x= a +b(RELIG) +c(ENROLL) +d(MINORITY) +e(SOUTH) + f(MIDWEST) +g(WEST) +h(GENDER) +i(AGE) +j(ACR) +k(ENDOW) +l($TDRATE_x$) +e

(where NTRPS is net tuition revenue per student and NTR is total net tuition revenue).

I looked at regression results for 3 separate years (x= 1990, x= 1995, x=2000) for the BAI and BAII institutions separately, to examine the changes in the impact of tuition discounting on financial health over time. The results of these statistical tests are provided in the next chapter.

Chapter Four: Analysis of the Data

This chapter provides the results of the statistical tests described at the end of the previous chapter. I start with a rationale for analyzing the BAI and BAII institutions separately, followed by a general description of the samples (basic descriptive statistics), and then the results for each of the three research questions.

Rationale for Separate Analysis of BAI and BAII Institutions

My original intention for this study was to analyze the BAI and BAII institutions together and to draw conclusions about tuition discounting and financial health for the entire population. However, upon analysis, I found that the differences between the two groups were too great to treat them as a whole. Table 6 provides the means for the descriptor variables for the BAI and BAII institutions. Differences were very notable for nearly every variable, especially the financial and academic quality variables.

Table 6. Comparison of BAI and BAII Institutions

Mean	BAI	BAII	Significance
Age	141	104	.001
Percent Religious	48	84	.001
Percent Co-ed	85	91	.069
Percent in Midwest	28	40	.006
Percent in North	43	28	.002
Percent in South	18	20	.474
Percent in West	12	12	.910
Size (enrollment)	1561	1367	.002
Admissions Competitiveness Rating:	3.63	2.87	.001
Percent Most Difficult	10	0	.001
Percent Very Difficult	42	0	.001
Percent Moderately Difficult	48	90	.001
Percent Minimally Difficult	0	9	.001
Percent Non-Competitive	0	1.8	.001
Academic Reputation Score	3.07	2.87	.004

Table 6 (cont'd).

Faculty-Student Ratio	13.75	22.8	.001
Retention Rate	85	72	.001
Total Educational and General Expenditures	36,000,000	15,000,000	.001
Endowment	3,700,000	486,524	.001

General Description of the BAI Sample

Appendix C provides descriptive statistics (minimums, maximums, means, and standard deviations) for all of the variables included in this study. The following section is a brief overview of those statistics.

BAI Institutional Descriptors (General Institutional Characteristics)

The BAI sample included 120 institutions ranging in age from 35 to 258 years. The "youngest" institution in the population was Hampshire College in Massachusetts, founded in 1975. The oldest, The Moravian College and Theological Seminary, in Pennsylvania, was founded in 1742. The mean institution age was 141 years.

Slightly more than one-half (52%) of the institutions indicated no religious affiliation, 48% had a religious affiliation. Among these religious affiliations were Roman Catholic, Southern Baptist, Presbyterian, United Methodist, Mennonite, Evangelical Lutheran, and Inter-denominational.

Of the 120 institutions, 102 (or, 85%) were co-ed. Female-only institutions comprised 11.7% of the sample, and male-only institutions comprised about 3%. There were 3 male-only institutions, and 14 female-only institutions in the sample.

The institutions were geographically diverse with 28% of the institutions in the Midwest, 43% in the North, 18% in the South, and 12% in the West. (Appendix C contains a description of these geographic classifications).

Institutional size, as measured by enrollment, averaged 1,561 students with a minimum of 279 students (Marlboro College in Vermont) and a maximum of 3,414 students (at Bucknell University in Pennsylvania). The average percentage minority students was 8.43% with a range of 1% (several colleges) to 98% (Morehouse College in Georgia).

BAI Indicators of Student Quality

All of the 120 institutions had admissions competitiveness ratings (ACR) of 3 (moderately difficult), 4 (very difficult) or 5 (most difficult). Ten percent were considered most difficult, 42% very difficult, and 48% moderately difficult.

BAI Indicators of Institutional Quality

Indicators of institutional quality included reputation, the faculty student ratio, student retention, educational and general expenditures, and endowment. Reputation was measured by the U.S. News and World Report Academic Reputation Score (ARS). The Academic Reputation Score is a general rating of the institution's reputation, as measured by a 5 point scale where 5 is the highest. The average ARS for the institutions was 3.07 (on a 5 point scale). The range for this variable was 2.0 to 4.8. Three colleges in the sample had a 4.8 ARS: Williams College in Massachusetts, Swarthmore College in Pennsylvania, and Amherst College in Massachusetts.

The average faculty-student ratio was 13.75 indicating about 14 faculty members per student. The lowest faculty student ratio was 8-to-1 (several colleges) and the highest was 25-to-1 (Ursinus College in Pennsylvania).

The average percentage of students returning for their second year was 85%. The high was 98% (at Williams College in Massachusetts, Ponoma College in California, and Colgate University in New York), and the lowest was 40% (St. Andrews Presbyterian in North Carolina).

The average educational and general expenditures was $36 million with a low of $6.7 million (Marlboro College in Vermont) and a high of $98 million (Smith College in Massachusetts). The average expenditures per student was $23,350 with a high of $42,568 at Swarthmore College in Pennsylvania and a low of $10,578 at Nebraska Wesleyan.

The average endowment for the 120 institutions (for 1990-1996) was $3.7 million, with a range from $51,000 (Simon's Rock College of Bard, Virginia) to $22 million (Wellesley College in Massachusetts). Endowment data are only available for the 1990-1996 time period because the IPEDS form changed in 1997, combining the reporting of "endowment" value with other assets such as real estate.

General Description of the BAII Sample

BAII Institutional Descriptors (General Institutional Characteristics)

The BAII sample included 167 institutions ranging in age from 27 to 213 years. The "youngest" institution in the population was Wisconsin Lutheran College, founded in

1973. The oldest, York College in Pennsylvania, was founded in 1787. The mean institution age was 104 years.

Only 16% of the institutions indicated no religious affiliation, with the remaining 84% having a religious affiliation. Among these religious affiliations were Roman Catholic, Southern Baptist, Presbyterian, United Methodist, Mennonite, Evangelical Lutheran, and Inter-denominational.

Of the 167 institutions, 152 (or, 91%) were co-ed. There were 12 female-only institutions (about 7% of the sample). There were no male-only institutions in the sample.

The sample was geographically diverse as well with 40% of the institutions in the Midwest, 28% in the North, 20% in the South, and 12% in the West. (Appendix C contains a description of these geographic classifications).

Institutional size, as measured by enrollment, averaged 1,367 students with a minimum of 347 students (Northwest Christian College in Oregon) and a maximum of 6,449 students (at Columbia College in Missouri). The average percentage of the student body that was minority was 11% with a range of 0% (Dordt College in Iowa) to 100% (Morris College in South Carolina).

BAII Indicators of Student Quality

All of the 167 institutions had admissions competitiveness ratings (ACR) of 1 (non-competitive), 2 (minimally difficult), or 3 (moderately difficult). Only 1.8% of the institutions were classified as non-competitive, with 9% considered minimally difficult, and the vast majority (90%) considered moderately difficult in terms of admittance.

BAII Indicators of Institutional Quality

Indicators of institutional quality include reputation, the faculty student ratio, student retention, educational and general expenditures, and endowment.

Reputation was measured by the U.S. News and World Report Academic Reputation Score (ARS). The average ARS for the institutions was 2.87 (on a 5 point scale). The range for this variable was 2.0 to 3.9. Two colleges in the sample had a 3.9 ARS: Susquehanna College in Pennsylvania and George Fox University in Oregon.

The average faculty-student ratio was 22.8 indicating about 23 faculty members per student. The lowest faculty student ratio was 12-to-1 (several colleges) and the highest was 125-to-1 (Columbia College in Missouri).

The average percentage of students returning for their second year was 72%. The high was 94% (at Mt. Ida College in Massachusetts) and the minimum was 44% (Shaw University in North Carolina).

The average educational and general expenditures was $15 million with a low of $3.2 million (William Tyndale College in Michigan) and a high of $82 million (Tuoro College in New York). The average expenditures per student was $11,683 with a high of $20,975 at Ottawa University in Kansas, and a low of $3,095 at Columbia College in Missouri.

The average endowment for the 167 institutions (for 1990-1996) was $486,524, with a range from $0 (several colleges) to $2.7 million (John Brown University in Arkansas). (Recall that endowment data is only available for the 1990-1996 time period,

because the IPEDS form changed in 1997, combining the reporting of "endowment" value with other assets such as real estate).

Research Question 1: Patterns of Tuition Discounting and Financial Health

Tuition Discount Rate, BA I

Consistent with national trends, tuition discounting did rise, in general, for this group of institutions. In 1990, the mean tuition discount rate for the BAI institutions was 17.53%. By 1996, the mean tuition discount rate had risen to 27.85, however it jumped back down to 23.32% in 1997 and increased only slightly by 2000. Table 7 provides the mean tuition discounting rates and standard deviations for each of the years from 1990 to 2000, as well as the 11-year average and the 11-year change in the tuition discount rate (as measured by the 2000 tuition discount rate minus the 1990 tuition discount rate).

Table 7. Tuition Discount Rates, BAI Institutions

Year	Mean Tuition Discount Rates	Standard Deviation
1990	17.53%	7.1
1991	19.23%	7.1
1992	21.39%	7.7
1993	23.82%	8.4
1994	24.29%	9.3
1995	26.29%	9.5
1996	27.85%	10.0
1997	23.32%	14.7
1998	22.84%	14.2
1999	24.62%	13.1

Table 7 (cont'd).

2000	24.63%	12.7
11 year avg	23.32%	8.5
11 year change	7.1 percentage points	11.7

Financial Health Variables, BAI

Table 8 provides means and standard deviations for the BAI institutions for the two financial health variables used in this study—net tuition revenue per student and expenditures per student. For the BAI institutions, the mean net tuition revenue per student grew from $9297 in 1990 to $13,529 in 2000—a 46% increase. The average net tuition revenue per student over the 11 year period (1990-2000) was $11,442. The 11 year change in net tuition revenue per student was also calculated for each institution (the 2000 figure minus the 1990 figure) and the mean of that variable was $4332.

The mean net tuition revenue grew from about $14.6 million in 1990 to $21.9 million in 2000. The average net tuition revenue for the 11 year period was $18.2 million and the mean of the 11 year change was $5.8 million.

Table 8. Financial Health Variables, BAI Institutions

	Net Tuition Revenue Per Student		Net Tuition Revenue	
	Mean	Standard Dev	Mean	Standard Dev
1990	9297	3199	14633405	8195215
1991	9948	3739	15687349	8852257
1992	10259	3341	16273593	9504969
1993	10516	3421	16801083	9946772

Table 8 (cont'd).

1994	11115	4054	17678953	10556817
1995	11324	3716	18413716	10852991
1996	11583	3840	19084985	11437255
1997	11861	4416	19028585	11335678
1998	12285	4683	19885462	11860399
1999	12795	4741	20837781	12274896
2000	13529	6509	21893577	12766533
11 Yr Avg	11442	3834	18201682	10532231
11 Yr Change	4232	4075	7260172	5766870

Tuition Discount Rate, BA II

As with the BAI institutions, tuition discounting rose, in general, for the BAII institutions. In 1990, the mean tuition discount rate for the institutions in the study was 16.31%. By 2000, the mean tuition discount rate had risen to 23.34%. Table 9 provides the mean tuition discounting rates and standard deviations for each of the years from 1990 to 2000, as well as the 11-year average and the 11-year change (as measured by the 2000 tuition discount rate minus the 1990 tuition discount rate). It is interesting to note that for 1990 and 2000, the tuition discount rates for the BAI and BAII institutions were becoming quite similar in contrast to years prior when BAI institutions were discounting significantly more than the BAII institutions.

Table 9. Tuition Discount Rates, BAII Institutions

Year	Mean Tuition Discount Rates	Standard Deviation
1990	16.31%	8.6
1991	17.09%	8.9

Table 9 (cont'd).

1992	18.11%	9.8
1993	19.39%	9.7
1994	20.08%	9.9
1995	21.53%	9.7
1996	21.58%	11.0
1997	19.47%	15.1
1998	20.50%	14.2
1999	23.17%	14.6
2000	23.34%	12.3
11 year avg	20.05%	8.9
11 year change	7.02 percentage points	12.0

Financial Health Variables, BAII

Table 10 provides means and standard deviations for the BAII institutions for the two financial health variables used in this study—net tuition revenue and net tuition revenue per student. For the BAII institutions, the mean net tuition revenue per student grew from $4657 in 1990 to $7686 in 2000—a 65% increase. The average net tuition revenue per student over the 11 year period (1990-2000) was $6219. The 11 year change in net tuition revenue per student was also calculated for each institution (the 2000 figure minus the 1990 figure) and the mean of that variable was $3030.

The mean net tuition revenue grew from about $5.8 million to $11.2 million between 1990 and 2000. The average net tuition revenue for the 11 year period was about $8.5 million and the mean of the 11 year change was about $5.5 million.

Table 10. Financial Health Variables, BAII Institutions

	Net Tuition Revenue Per Student		Net Tuition Revenue	
	Mean	Standard Dev	Mean	Standard Dev
1990	4657	1646	5760878	415056
1991	5059	1809	6343124	4452471
1992	5357	1906	7018255	5120299
1993	5669	1973	7597373	5712425
1994	6012	1955	8146992	5708209
1995	6348	2088	8642696	6690733
1996	6694	2022	9173855	6414723
1997	6664	2250	9253421	6580126
1998	6934	2332	9835253	6950584
1999	7261	2403	10451317	7330203
2000	7686	2649	11223272	7945332
11 Yr Avg	6219	1868	8495130	5912612
11 Yr Change	3030	2113	5462395	4885494

Research Question 2: Variations in Tuition Discounting, BAI Institutions

To examine differences in the (11 year) mean tuition discounting rates among institutions based on the institutional descriptors, student quality, and institutional quality, I used an Analysis of Variance (ANOVA) test for mean differences. For overall significant mean differences, I carried out a Bonferroni post-hoc test to determine the nature of the variation. Religious-affiliated institutions had a higher discount rate than non-religious-affiliated institutions ($F=5.365$, $p<.03$, $d.f.=118$). The 11 year mean tuition discount rate for the religious-affiliated institutions was 25%. For the non-religious-affiliated institutions it was 22%, indicating that among the BAI institutions, the

religious-affiliated institutions discounted significantly more than the non-religious affiliated institutions.

Tuition discounting also varied significantly by institutional enrollment ($F=6.520$, $p<.0001$, d.f. = 3, 116). The institutions were divided into quartiles based on enrollment (with the first quartile being the smallest institutions), and then analyzed for variations in mean tuition discount rates among those quartiles. Table 11 provides the quartile break-down and the statistical results. Significant mean differences appeared between institutions in the highest quartile (the largest institutions) and the institutions in the two lowest quartiles. The smaller institutions appeared to be discounting, on average, at a higher rate than the larger schools. When compared to the largest schools (fourth quartile), the institutions in the lowest quartile discounted nearly 9 percentage points more. Institutions in the second quartile discounted about 5.6 percentage points more than the largest institutions. There was no mean difference in tuition discounting rates between the third and fourth quartiles.

Table 11. Mean Difference in Tuition Discount Rates, 1990-2000, Based on Enrollment, BAI Institutions

Enrollment (# of students)		Mean Difference (in percentage points)	Significance
Column 1	Column 2	[Col 1 – Col 2]	
Up to 1118 students	1119-1488 students	3.12	.800
	1489-1933 students	5.80*	.035
	1934 or more students	8.72*	.000
1119-1488 students	Up to 1118 students	-3.12	.800
	1489-1933 students	2.68	1.00
	1934 or more students	-.5.60*	.046

Table 11 (cont'd).

1489-1933 students	Up to 1118 students	-5.80*	.035
	1119-1488 students	-2.68	1.00
	1934 or more students	2.91	.959
1934 or more students	Up to 1118 students	-8.72*	.000
	1119-1488 students	-5.60*	.046
	1489-1933 students	-2.92	.959

*The mean difference is significant at a minimum of the .05 level.

Mean tuition discounting varied by geographic location (F=5.066, p<.003, d.f.=3, 116) primarily because Midwest institutions discounted more heavily than those in the South. Institutions in the Midwest had an average tuition discount rate 7.5 percentage points higher than institutions in the South, and 7.79 percentage point higher than institutions in the West. Table 12 provides the results of the geographic analysis.

Table 12. Mean Tuition Discount Rates, 1990-2000, Based on Geographic Location

Geographic Location		Mean Difference (in percentage points)	Significance
Column 1	Column 2	[Col 1 - Col 2]	
North	South	3.82	.431
	Midwest	-3.68	.259
	West	4.11	.575
South	North	-3.82	.431
	Midwest	-7.50*	.007
	West	2.90	1.00
Midwest	North	3.68	.259
	South	7.50*	.007
	West	7.79	.019
West	North	-4.11	.575
	South	-2.90	1.00
	Midwest	-7.79	.019

Mean tuition discounting also varied by age of the institution (F=5.284, p< .003, d.f. = 3, 116). Table 13 provides the Bonferroni results for the age variable (again with the institutions divided into quartiles). Although the reason is not readily apparent, institutions in the third quartile (146 to 168 years of age) discounted more than the other three groups.

Table 13. Mean Tuition Discount Rates, 1990-2000, Based on Institutional Age, BAI

Age (in years)		Mean Difference (in percentage points)	Significance
Column 1	Column 2	[Col 1 - Col 2]	
Up to 117 years	118-145 years	1.01	1.00
	146-168 years	-5.63*	.043
	169 or more years	1.74	1.00
118-145 years	Up to 117 years	-1.01	1.00
	146-168 years	-6.64*	.009
	169 or more years	7.30	1.00
146-168 years	Up to 117 years	5.63*	.043
	118-145 years	6.64*	.009
	169 or more years	7.37*	.004
169 or more years	Up to 117 years	-1.74	1.00
	118-145 years	-7.30	1.00
	146-168 years	-7.37*	.004

*The mean difference is significant at a minimum of the .05 level.

For two of the institutional descriptor variables, no mean differences in tuition discounting were significant. The first was gender/co-ed (F=1.511, p<.211, d.f.=1, 118) and the second was percent minority enrollment (F=.714, p<.546, d.f.=3, 116). Therefore, tuition discounting does not vary among institutions by co-ed status or percentage of minority enrollment.

Tuition discounting varies by the Admissions Competitiveness Rating—the general measure of student quality (F=11.161, p < .0001, d.f = 2, 117). Recall that there are 5 values for this variable ranging from non-competitive (1) to most difficult (5). All

of the BAI institutions fell into categories 3, 4, or 5. Table 14 provides the results of the Bonferroni test for the Admissions Competitiveness Rating variable. Institutions rated as moderately difficult (3) and very difficult (4) do not appear to vary in tuition discounting rates. However, there does appear to be a significant difference between tuition discounting rates for the most competitive institutions (5) and the other two types of institutions (3 and 4). The mean tuition discount rate for the moderately difficult institutions was 11 percentage points higher than the mean for the most difficult institutions. Similarly, the very difficult institutions appear to have discounted, on average, 7 percentage points more than the most difficult institutions.

Table 14. Mean Differences in Average Tuition Discount Rates, 1990-2000, Based on Admissions Competitiveness Rating, BAI Institutions

Admissions Competitiveness Rating		Mean Difference (in percentage points)	Significance
Column 1	Column 2	[Col 1 - Col 2]	
Moderately Difficult (3)	Very Difficult (4)	3.7	.053
	Most Difficult (5)	11.1*	.000
Very Difficult (4)	Moderately Difficult (3)	-3.7	.053
	Most Difficult (5)	7.4*	.009
Most Difficult (5)	Moderately Difficult (3)	-11.1*	.000
	Very Difficult (4)	-7.4*	.009

*The mean difference is significant at a minimum of the .05 level.

Mean tuition discounting rates also varied by academic reputation score (ARS) ($F=12.114$, $p<.0001$, d.f.=3, 116). Again, institutions were divided into quartiles based on their ARS. Table 15 presents the results. When looking at the last row of this table it is apparent that the institutions in the lowest three quartiles were discounting at a higher rate than the institutions with the highest ARS. When compared to the highest quartile, institutions in the lowest quartile were discounting at a rate over 10 percentage points higher. There appears to be a diminishing of the mean difference, however, with 8.68

percentage points separating quartiles 2 and 4, but only 5.48 percentage points separating quartiles 3 and 4.

Table 15. Mean Tuition Discount Rates, 1990-2000, Based on Academic Reputation Score, BAI

Academic Reputation Score (Scale of 1-5; 1 is lowest)		Mean Difference (in percentage points)	Significance
Column 1	Column 2	[Col 1 - Col 2]	
Up to 2.5	2.51 to 2.95	2.08	1.00
	2.96 to 3.58	5.28*	.033
	3.59 or higher	10.76*	.000
2.51 to 2.95	Up to 2.5	-2.08	1.00
	2.96 to 3.58	3.20	.745
	3.59 or higher	8.68*	.000
2.96 to 3.58	Up to 2.5	-5.28*	.033
	2.51 to 2.95	-3.20	.745
	3.59 or higher	5.49*	.034
3.59 or higher	Up to 2.5	-10.76*	.000
	2.51 to 2.95	-8.68*	.000
	2.96 to 3.58	-5.48*	.034

*The mean difference is significant at a minimum of the .05 level.

Mean tuition discounting varied by total educational and general expenditures ($F=8.300$, $p<.0001$, d.f. = 3, 116). When separated by quartiles, the institutions with the highest expenditures discounted less than the institutions with smaller expenditures (Table 16).

Table 16. Mean Tuition Discount Rates, 1990-2000, Based on Total Educational and General Expenditures, BAI

Educational and General Expenditures		Mean Difference (in percentage points)	Signifi-cance
Column 1	Column 2	[Col 1 - Col 2]	
Up to $20.8 million	$20.8 million -$33.3 million	1.55	1.00
	$33.3-$49 million	4.82	.113
	More than $49 million	9.31*	.000
$20.8 million -$33.3 million	Up to $20.8 million	-1.55	1.000
	$33.3 million -$49 million	3.28	.649
	More than $49 million	7.78*	.001

Table 16 (cont'd).

$33.3 million-$49 million	Up to $20.8 million	-4.82	.113
	$20.8 million-$33.3 million	-3.28	.649
	More than $49 million	4.50	.169
More than $49 million	Up to $20.8 million	-9.32*	.000
	$20.8 million- $33.3 million	-7.77*	.001
	$33.3 -$49 million	-4.50*	.169

*The mean difference is significant at a minimum of the .05 level.

Mean tuition discounting varied by endowment ($F=4.762$, $p<.005$, d.f. = 3, 116). Institutions in the lowest two quartiles had significantly higher tuition discounting rates than the more well-endowed institutions (see Table 17). The more well-endowed institutions are able to fund discounts with endowments rather than simply waiving the tuition. The *simple* tuition discount is analyzed here (i.e., the percentage of gross tuition that is waived for students), so it is not surprising that institutions with higher endowments would have lower simple tuition discount rates. Simply put, they can still offer plenty of "discounts" to students, but the discounts are funded by endowment rather than unfunded.

Table 17. Mean Tuition Discount Rates, 1990-2000, Based on Endowment, BAI

Endowment		Mean Difference (in percentage points) [Col 1 - Col 2]	Signifi-cance
Column 1	Column 2		
Up to $1.27 million	$1.27 million - $2.47 million	1.63	1.00
	$2.48 million - $4.74 million	2.42	1.00
	More than $4.74 million	7.52*	.003
$1.27 million - $2.47 million	Up to $1.27 million	-1.62	1.00
	$2.48 million - $4.74 million	.788	1.00
	More than $4.74 million	5.89*	.036
$2.48 million - $4.74 million	Up to $1.27 million	-2.42	1.00
	$1.27 million - $2.47 million	-.788	1.00
	More than $4.74 million	5.11*	.101

Table 17 (cont'd).

More than $4.74 million	Up to $1.27 million	-7.52*	.003
	$1.27 million - $2.47 million	-5.89*	.036
	$2.48 million - $4.74 million	-5.11	.101

*The mean difference is significant at a minimum of the .05 level.

For two of the institutional quality variables, no mean differences in tuition discounting were significant. The first was the faculty-student ratio ($F=2.132$, $p<.100$, d.f.=3, 114) and the second was retention ($F=2.125$, $p<.101$, d.f.=3, 115). Therefore, tuition discounting does not vary among the BAI institutions by retention rates or faculty-student ratios.

Variations in Tuition Discounting, BAII Institutions

Unlike the BAI institutions, mean tuition discounting rates for the BAII institutions varied by minority student enrollment ($F=5.345$, $p<.003$, d.f. =3, 161). Using quartiles based on the percentage of minority students, institutions with the highest minority percentage had lower mean tuition discount rates than the institutions in the other quartiles. Institutions in the highest quartile (those with the highest percentages of minority students) appear to have discounted about 6 percentage points less that the other institutions. Table 18 provides the results of this statistical test.

Table 18. Mean Tuition Discount Rates, 1990-2000, Based on Minority Enrollment, BAII

Minority Student Percentage		Mean Difference (in percentage points) [Col 1 - Col 2]	Signifi-cance
Column 1	Column 2		

Table 18 (cont'd).

Up to 3.57% minority	3.58% to 6.96% minority	.77	1.00
	6.97% to 13.54% minority	.12	1.00
	13.55% or higher minority	6.47*	.005
3.58% to 6.96% minority	Up to 3.57% minority	-.77	1.00
	6.97% to 13.54% minority	-.65	1.00
	13.55% or higher minority	5.70*	.033
6.97% to 13.54% minority	Up to 3.57% minority	-.12	1.00
	3.58% to 6.96% minority	.065	1.00
	13.55% or higher minority	6.35*	.004
13.55% or higher minority	Up to 3.57% minority	-6.47*	.005
	3.58% to 6.96% minority	-5.70*	.033
	6.97% to 13.54% minority	-6.35*	.004

*The mean difference is significant at a minimum of the .05 level.

Tuition discounting also varied among the BAII institutions by geographic location (F 2.972 $p<.034$, d.f.=3,163). In particular, the Midwest institutions discounted 6 percentage points more than the institutions in the West. No other mean differences were apparent. The results are presented in Table 19.

Table 19. Mean Tuition Discount Rates, 1990-2000 Based on Geographic Location

Geographic Location		Mean Difference (in percentage points)	Significance
Column 1	Column 2	[Col 1 - Col 2]	
North	South	-1.48	1.00
	Midwest	-3.05	.424
	West	3.13	1.00
South	North	1.48	1.00
	Midwest	-1.57	1.00
	West	4.61	.373
Midwest	North	3.05	.424
	South	1.57	1.00
	West	6.18*	.034
West	North	-3.13	1.00
	South	-4.61	.373
	Midwest	-6.18*	.034

Mean tuition discounting also varied by institutional age (F=4.282, p<.007, d.f. 3, 160). The oldest institutions (those in the highest quartile) discounted significantly less that the youngest institutions (those in the lowest two quartiles) by about 6 percentage points. No significant mean difference was evident in discounting between institutions in the top 2 quartiles. Table 20 provides the statistical results for this variable.

Table 20. Mean Tuition Discount Rates, 1990-2000, Based on Institutional Age, BAII

Age (in years)		Mean Difference (in percentage points)	Significance
Column 1	Column 2	[Col 1 - Col 2]	
Up to 73 Years	74-107 Years	-.94	1.00
	108-133 Years	-2.81	.840
	134+ Years	-6.47*	.006
74-107 Years	Up to 73 Years	.94	1.00
	108-133 Years	-1.87	1.00
	134+ Years	-5.53*	.033
108-133 Years	Up to 73 Years	2.81	.840
	74-107 Years	1.86	1.00
	134+ Years	-3.66	.358
134+ Years	Up to 73 Years	6.47*	.006
	74-107 Years	5.53*	.033
	108-133 Years	3.66*	.358

*The mean difference is significant at a minimum of the .05 level.

For three of the institutional descriptor variables, no mean differences in tuition discounting were significant. The first was religious affiliation (F=1.785, p<.183, d.f.=1, 163), the second was co-ed/gender (F=.935, p<.335, d.f.=1, 164), and the third was size/enrollment (F=.774, p<.510, d.f.=3, 162). Therefore, tuition discounting does not vary among the BAII institutions by co-ed status, religious affiliation, or size.

Mean tuition discounting differed by academic reputation score (ARS) (F=4.445, p<.006, d.f.=3, 163). Most notable was the mean difference between the institutions in

the highest 2 quartiles versus the institutions in the lowest quartile (Table 21). The institutions with the lowest academic reputation scores discounted about 6 percentage points less than those with the highest scores.

Table 21. Mean Tuition Discount Rates, 1990-2000, Based on Academic Reputation Score, BAII

Academic Reputation Score		Mean Difference (in percentage points)	Significance
Column 1	Column 2	[Col 1 - Col 2]	
Up to 2.60	2.61 to 2.80	-4.29	.121
	2.81 to 3.10	-5.77*	.014
	3.11 and higher	-5.98*	.014
2.61 to 2.80	Up to 2.60	4.30	.121
	2.81 to 3.10	-1.47	1.00
	3.11 and higher	-1.68	1.00
2.81 to 3.10	Up to 2.60	5.77*	.014
	2.60 to 2.80	1.47	1.00
	3.11 and higher	-.21	1.00
3.11 and higher	Up to 2.60	5.98*	.014
	2.61 to 2.80	1.68	1.00
	2.81 to 3.10	.21	1.00

*The mean difference is significant at a minimum of the .05 level.

All of the BAII institutions fell into either the noncompetitive(1), minimally difficult(2), or moderately difficult(3) categories of the admissions competitiveness rating. Large, significant mean differences in tuition discounting were evident as shown in Table 22 ($F=10.771$, $p<.0001$, d.f.=2, 164). Noncompetitive institutions discounted, on average, over 17 percentage points less than the moderately difficult institutions. The minimally difficult institutions appear to have discounted over 7 percentage points less than their moderately difficult counterparts.

Table 22. Mean Tuition Discount Rates, 1990-2000, Based on Admissions Competitiveness Rating, BAII Institutions

Admissions Competitiveness Rating		Mean Difference (in percentage points)	Signifi-cance
Column 1	Column 2	[Col 1 - Col 2]	

Table 22 (cont'd).

Noncompetitive (1)	Minimally Difficult (2) Moderately Difficult (3)	-9.67 -17.09*	.217 .002
Minimally Difficult (2)	Noncompetitive (1) Moderately Difficult (3)	9.67 -7.41*	.217 .004
Moderately Difficult (3)	Noncompetitive (1) Minimally Difficult(2)	17.09* 7.41*	.002 .004

*The mean difference is significant at a minimum of the .05 level.

Tuition discounting rates varied by the faculty-student ratio ($F=9.138$, $p<.0001$, d.f.= 3, 162). As shown in Table 23, the lowest quartile institutions had the *lowest* number of students per faculty member. (Quartile 1 included institutions in which the ratio was 17.03 faculty per student or less). The institutions with the lowest faculty-student ratios (i.e. smaller class sizes) discounted less than the institutions with higher faculty-student ratios. Table 23 provides the statistical analysis for the faculty-student ratio.

Table 23. Mean Tuition Discount Rates, 1990-2000, Based on Faculty-Student Ratio, BAII

Faculty-Student Ratio (# of faculty members per student) Column 1	 Column 2	Mean Difference (in percentage points) [Col 1 - Col 2]	Significance
Up to 17.03	17.04 to 20.25 20.26 to 24.71 24.72 and higher	4.68 5.19* 9.45*	.063 .027 .000
17.04 to 20.25	Up to 17.03 20.26 to 24.71 24.72 and higher	-4.68 .510 4.77	.063 1.00 .058
20.26 to 24.71	Up to 17.03 17.04 to 20.25 24.72 and higher	-5.19* -5.10 4.26	.027 1.00 .118
24.72 and higher	Up to 17.03 17.04 to 20.25 20.26 to 24.71	-9.45* -4.77 -4.26	.000 .058 .118

*The mean difference is significant at a minimum of the .05 level.

Unlike BAI institutions, the more well endowed BAII institutions discounted more than the BAII institutions with lower endowments (F=9.031, p<.0001, d.f.=3,163). The mean tuition discounting rates for the highest quartile was approximately 7 percentage points higher than the mean tuition discounting rates for the lowest 2 quartiles (see Table 24).

Table 24. Mean Tuition Discount Rates, 1990-2000, Based on Endowment, BAII

Endowment		Mean Difference (in percentage points) [Col 1 - Col 2]	Signifi-cance
Column 1	Column 2		
Up to $117,714	$117,715 to $307, 658	-.86	1.00
	$307,659 to $699,829	-6.43*	.004
	$699,830 and higher	-7.72*	.000
$117,715 to $307,658	Up to $117,714	.86	.000
	$307,659 to $699,829	-5.57*	.016
	$699,830 and higher	-6.86*	.001
$307,659 to $699,829	Up to $117,714	6.43*	.004
	$117,715 to $307,658	5.57*	.016
	$699,830 and higher	-1.29	1.00
$699,830 and higher	Up to $117,714	7.72*	.000
	$117,715 to $307, 658	6.86*	.001
	$307, 659 to $699,829	1.29	1.00

*The mean difference is significant at a minimum of the .05 level.

For two of the institutional quality variables, no mean differences in tuition discounting were significant. The first was retention (F=2.199, p<.09, d.f.=3, 163) and the second was total educational and general expenditures (F=1.210, p<.308, d.f.=3, 163). Therefore, tuition discounting does not vary among the BAII institutions by retention rates or by total educational and general expenditures.

In summary, there are several key differences in tuition discounting based on institutional characteristics, student quality, and institutional quality. In general, among

BAI institutions, the less prestigious, smaller, older institutions discount more. Among the BAII institutions it is the younger, more prestigious, higher endowed institutions that discount more. These results suggest a blurring of the distinction between the lower status BAIs and the higher status BAIIs, which I will explore in the final regression model in this chapter.

Research Question 3: Tuition Discounting and Institutional Financial Health

To analyze the influence of tuition discounting on institutional financial health, I regressed Net Tuition Revenue per Student *and* Net Tuition Revenue—the institutional financial health measures—on the institutional descriptors (religious affiliation, enrollment, minority enrollment, locale, gender affiliation, and institutional age) and the student quality variable (the admissions competitiveness rating). Because the institutional quality variables were all very highly correlated (see Appendix E), I only used one of them, endowment, because of its importance in the descriptive analyses.

The general form of the regression equation was:

- $NTRPS_x$= a +b(RELIG) +c(ENROLL) +d(MINORITY) +e(SOUTH) + f(MIDWEST) +g(WEST) +h(GENDER) +i(AGE) +j(ACR) +k(ENDOW) +l($TDRATE_x$) +e.

- NTR_x= a +b(RELIG) +c(ENROLL) +d(MINORITY) +e(SOUTH) + f(MIDWEST) +g(WEST) +h(GENDER) +i(AGE) +j(ACR) +k(ENDOW) +l($TDRATE_x$) +e.

Both equations were run for the BAI institutions and then the BAII institutions for each of the years 1990, 1995, and 2000, for a total of 12 regression equations.

Tuition Discounting and Institutional Health, BAI Institutions

Table 25 provides the results of the 1990 regression equation for the BAI institutions with net tuition revenue per student as the dependent variable. The R-squared for this model was .509 indicating that the independent variables in the model account for just half the variation in net tuition revenue per student. The coefficient for the 1990 tuition discounting rate was statistically significant and indicates that for every 1 percentage point increase in the tuition discounting rate, net tuition revenue per student declined by $143. For these institutions in 1990, it appears that higher tuition discount rates lower net tuition revenue per student. Religious affiliation, and percent minority students were also significantly negatively related to net tuition revenue per student.

Table 25. Regression Coefficients, 1990, Net Tuition Revenue Per Student as Dependent Variable, BAI Institutions

R^2=.509 N=120	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	11660.927	2090.446		5.578	.000		
Religious Affiliation	-2968.332	566.791	-.466	-5.237	.000	.576	1.737
Average Enrollment, 1990-2000	-.733	.423	-.153	-1.733	.086	.587	1.704
Minority Percentage Avg	-4720.150	2042.142	-.184	-2.311	.023	.715	1.398
Institution Located in South	-1084.242	735.260	-.129	-1.475	.143	.592	1.690
Institution Located in Midwest	-38.681	604.450	-.005	-.064	.949	.622	1.606

Table 25 (cont'd).

Institution Located in West	194.035	746.376	.020	.260	.795	.804	1.243
Coed	598.892	696.357	.067	.860	.392	.747	1.339
Age	.893	5.383	.012	.166	.869	.826	1.210
Admissions Competitiveness Rating	766.987	460.150	.161	1.667	.098	.486	2.058
Avg Endowment 1990-1996	1.428E-04	.000	.172	1.726	.087	.460	2.176
Tuition Discount Rate 1990	-14271.403	3485.495	-.349	-4.095	.000	.627	1.595

Table 26 provides the results of the regression equation for the BAI institutions for 1995 with net tuition revenue per student as the dependent variable. The R-squared for this model was .691. The coefficient for the 1995 tuition discounting rate indicates that for every 1 percentage point increase in tuition discounting, net tuition revenue per student fell by $158. This result is similar to the 1990 result, with a slightly higher decline in net tuition revenue per student associated with each 1 percentage point increase in the tuition discounting rate. Just as in 1990, religious affiliation and percent minority students were significantly negatively related to net tuition revenue per student. Co-ed and average endowment, however, were significantly positively related to net tuition revenue per student. It is not surprising that endowment and net tuition revenue per student would be positively related—higher endowments allow institutions to discount from funded sources, thus essentially increasing net tuition revenue per student.

Table 26. Regression Coefficients, 1995, Net Tuition Revenue Per Student as Dependent Variable, BAI Institutions

R^2=.691 N=120	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF

Table 26 (cont'd).

(Constant)	12842.918	2169.336		5.920	.000		
Religious Affiliation	-2561.130	529.323	-.346	-4.839	.000	.592	1.689
Average Enrollment, 1990-2000	-.107	.398	-.019	-.270	.788	.589	1.698
Minority Percentage Avg	-4870.563	1901.784	-.168	-2.561	.012	.707	1.415
Institution Located in South	-1043.662	677.084	-.107	-1.541	.126	.625	1.599
Institution Located in Midwest	-1022.790	553.006	-.126	-1.850	.067	.648	1.543
Institution Located in West	863.858	722.480	.077	1.196	.235	.738	1.356
Coed	1338.268	667.906	.129	2.004	.048	.733	1.365
Age	2.760	5.379	.032	.513	.609	.797	1.255
Admissions Competitiveness Rating	921.088	472.368	.160	1.950	.054	.449	2.229
Avg Endowment 1990-1996	2.186E-04	.000	.230	2.816	.006	.452	2.211
Tuition Discount Rate 1995	-15774.908	2652.406	-.402	-5.947	.000	.662	1.511

Table 27 provides the results of the 2000 regression equation for the BAI institutions with net tuition revenue per student as the dependent variable. The R-squared for this model was .565. This 2000 tuition discounting rate variable proved to be a significant predictor of financial health with net tuition revenue per student declining by $359 for every 1 percentage point increase in the tuition discounting rate. Two variables—religious affiliation and enrollment were also significantly negatively related to net tuition revenue per student.

Table 27. Regression Coefficients, 2000, Net Tuition Revenue Per Student as Dependent Variable, BAI Institutions

R^2=.565 N=120	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	26927.486	4128.504		6.522	.000		
Religious Affiliation	-3627.920	1104.231	-.280	-3.285	.001	.556	1.798
Average Enrollment, 1990-2000	-1.607	.726	-.164	-2.214	.029	.730	1.369
Minority Percentage Avg	-5014.548	3905.321	-.096	-1.284	.202	.717	1.395
Institution Located in South	-1016.111	1387.995	-.060	-.732	.466	.609	1.643
Institution Located in Midwest	416.117	1152.166	.029	.361	.719	.628	1.592
Institution Located in West	317.480	1429.374	.016	.222	.825	.804	1.244
Coed	2224.192	1323.423	.123	1.681	.096	.758	1.319
Age	12.295	10.371	.083	1.186	.238	.816	1.225
Admissions Competitiveness Rating	226.609	902.925	.023	.251	.802	.463	2.162
Avg Endowment 1990-1996	1.135E-04	.000	.067	.733	.465	.481	2.081
Tuition Discount Rate 2000	-38640.658	5038.278	-.592	-7.669	.000	.675	1.481

Table 28 provides the results of the 1990 regression equation for the BAI institutions, with net tuition revenue as the dependent variable measuring financial health. The R-squared was .855, indicating that the independent variables in the model account for nearly 86% of the variation in net tuition revenue. The tuition discount rate for 1990 proved to be a significant predictor of financial health with net tuition revenue declining by $118,573 for every 1 percentage point increase in the tuition discounting rate. Enrollment and endowment were significantly positively related to net tuition revenue

and religious affiliation and minority enrollment were significantly negatively related to net tuition revenue.

Table 28. Regression Coefficients, 1990, Net Tuition Revenue as Dependent Variable, BAI Institutions

N=120 R^2=.855	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1292081.729	2909224.354		.444	.658
Religious Affiliation	-4404887.797	788788.884	-.270	-5.584	.000
Average Enrollment, 1990-2000	8838.483	588.791	.718	15.011	.000
Minority Percentage Avg	-13299213.505	2842000.657	-.203	-4.680	.000
Institution Located in South	-1111724.978	1023244.351	-.052	-1.086	.280
Institution Located in Midwest	-1074166.959	841199.378	-.059	-1.277	.204
Institution Located in West	240771.976	1038714.319	.009	.232	.817
Coed	771475.690	969102.922	.034	.796	.428
Age	4002.619	7491.186	.022	.534	.594
Admissions Competitiveness Rating	973770.034	640380.483	.080	1.521	.131
Avg Endowment 1990-1996	.302	.115	.142	2.622	.010
Tuition Discount Rate 1990	-11857307.181	4850680.396	-.113	-2.444	.016

Table 29 provides the results of the 1995 regression equation for the BAI institutions with net tuition revenue as the dependent variable. The R-squared was .876. The tuition discounting variable was significantly related to net tuition revenue with net tuition revenue declining by $176,606 for each 1 percentage point increase in the tuition

discounting rate. As with the 1990 equation, enrollment and endowment were significantly positively related to net tuition revenue, and religious affiliation and enrollment were significantly negatively related to net tuition revenue.

Table 29. Regression Coefficients, 1995, Net Tuition Revenue as Dependent Variable, BAI Institutions

N=120 R^2=.876	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	788488.634	3848708.893		.205	.838
Religious Affiliation	-4381424.040	956874.226	-.203	-4.579	.000
Average Enrollment, 1990-2000	11411.503	706.124	.700	16.161	.000
Minority Percentage Avg	-13732040.930	3469402.266	-.158	-3.958	.000
Institution Located in South	-514927.835	1227351.651	-.018	-.420	.676
Institution Located in Midwest	-2152289.555	1013224.266	-.090	-2.124	.036
Institution Located in West	1313006.687	1286368.146	.039	1.021	.310
Coed	1674649.484	1180003.344	.055	1.419	.159
Age	5359.691	9124.380	.022	.587	.558
Admissions Competitiveness Rating	1432239.300	797376.259	.089	1.796	.075
Avg Endowment 1990-1996	.461	.138	.164	3.343	.001
Tuition Discount Rate 1995	-17660580.855	4759232.768	-.153	-3.711	.000

Table 30 provides the results of the regression equation for 2000 for the BAI institutions with net tuition revenue as the dependent variable. The R-squared for this

model was .824. Again, the tuition discounting rate proved to be a significant predictor of net tuition revenue with net tuition revenue declining by $397,841 for every 1 percentage point increase in the tuition discount rate. As with the 1990 and 1995 equations, enrollment and endowment were significantly positively related to net tuition revenue and religious affiliation and minority enrollment were significantly negatively related to net tuition revenue.

Table 30. Regression Coefficients, 2000, Net Tuition Revenue as Dependent Variable, BAI Institutions

N=120 R^2=.824	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	9621794.557	5155106.713		1.866	.065
Religious Affiliation	-5036272.272	1378811.457	-.198	-3.653	.000
Average Enrollment, 1990-2000	11781.193	906.683	.614	12.994	.000
Minority Percentage Avg	-15256403.045	4876427.630	-.149	-3.129	.002
Institution Located in South	-862453.544	1733137.521	-.026	-.498	.620
Institution Located in Midwest	-1710088.310	1438666.779	-.061	-1.189	.237
Institution Located in West	348174.293	1784805.943	.009	.195	.846
Coed	3100212.535	1652508.550	.087	1.876	.063
Age	18684.548	12949.817	.065	1.443	.152
Admissions Competitiveness Rating	1612006.073	1127448.838	.085	1.430	.156
Avg Endowment 1990-1996	.274	.193	.082	1.415	.160
Tuition Discount Rate 2000	-39784111.523	6291107.806	-.311	-6.324	.000

Table 31 provides the results of the 1990 regression equation for the BAII institutions with net tuition revenue per student as the dependent variable. The R-squared for this model was .261 indicating that many factors other than those captured in this model influence net tuition revenue per student. For this equation, the tuition discounting rate was not a significant predictor of financial health as measured by net tuition revenue per student. However two variables—"South" location and "West" location—were significantly negatively related to net tuition revenue per student. The admissions competitiveness rating and average endowment were both significantly positively related to net tuition revenue per student.

Table 31. Regression Coefficients, 1990, Net Tuition Revenue Per Student as Dependent Variable, BAII Institutions

R^2=.261 N=167	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	2201.888	1122.305		1.962	.052		
Religious Affiliation	-473.118	347.565	-.105	-1.361	.175	.819	1.221
Average Enrollment, 1990-2000	-.159	.144	-.085	-1.104	.271	.825	1.212
Minority Percentage Avg	-93.757	879.150	-.008	-.107	.915	.884	1.132
Institution Located in South	-1575.153	391.263	-.383	-4.026	.000	.536	1.864
Institution Located in Midwest	-653.270	322.519	-.194	-2.026	.045	.528	1.895
Institution Located in West	-1449.169	452.931	-.281	-3.200	.002	.628	1.592
Coed	604.432	462.030	.095	1.308	.193	.912	1.097
Age	7.374	3.179	.178	2.319	.022	.829	1.207
Admissions Competitiveness Rating	843.442	332.147	.194	2.539	.012	.833	1.201

Table 31 (cont'd).

Avg Endowment 1990-1996	4.894E-04	.000	.155	1.984	.049	.800	1.251
Tuition Discount Rate 1990	-759.496	1425.179	-.043	-.533	.595	.742	1.348

Table 32 provides the results of the 1995 regression equation for the BAII institutions with net tuition revenue per student as the dependent variable. The R-squared was .242. The tuition discounting rate was significant in this model and was negatively related to net tuition revenue per student. Specifically, every 1 percentage point increase in tuition discounting was associated with a decrease in net tuition revenue per student of $47. Two variables, enrollment and "South" location, were significantly negatively related to net tuition revenue per student and two others, age and admissions competitiveness rating, were positively associated with net tuition revenue per student.

Table 32. Regression Coefficients, 1995, Net Tuition Revenue Per Student as Dependent Variable, BAII Institutions

R^2=.242 N=167	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	3473.438	1442.419		2.408	.017		
Religious Affiliation	-599.864	449.839	-.105	-1.334	.184	.812	1.231
Average Enrollment, 1990-2000	-.576	.187	-.241	-3.089	.002	.823	1.216
Minority Percentage Avg	-1058.472	1149.240	-.070	-.921	.359	.861	1.162
Institution Located in South	-1784.414	508.215	-.342	-3.511	.001	.528	1.892
Institution Located in Midwest	-516.680	416.983	-.121	-1.239	.217	.526	1.901
Institution Located in West	-1107.772	571.123	-.170	-1.940	.054	.656	1.524
Coed	1326.853	597.465	.165	2.221	.028	.905	1.105

Table 32 (cont'd).

Age	8.549	4.123	.162	2.073	.040	.818	1.223
Admissions Competitiveness Rating	1289.002	425.804	.234	3.027	.003	.841	1.188
Avg Endowment 1990-1996	6.172E-04	.000	.154	1.908	.058	.773	1.294
Tuition Discount Rate 1995	-4669.914	1793.367	-.223	-2.604	.010	.687	1.457

Table 33 provides the results of the 2000 regression equation for the BAII institutions with net tuition revenue per student as the dependent variable. The R-squared was .153. Similar to 1995, a significantly negative relationship was evident between financial health (as measured by net tuition revenue per student) and the tuition discounting rate. For every 1 percentage point increase in the tuition discounting rate, net tuition revenue per student drops by $41. Two other variables were also significantly negatively related to net tuition revenue per student—"South" location and "Midwest" location.

Table 33. Regression Coefficients, 2000, Net Tuition Revenue Per Student as Dependent Variable, BAII Institutions

R^2=.153 N=167	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	8912.857	1943.350		4.586	.000		
Religious Affiliation	-684.395	601.097	-.094	-1.139	.257	.818	1.223
Average Enrollment, 1990-2000	-.377	.253	-.124	-1.490	.138	.801	1.248
Minority Percentage Avg	-1564.800	1559.068	-.082	-1.004	.317	.839	1.192
Institution Located in South	-1961.348	663.183	-.296	-2.957	.004	.558	1.794

Table 33 (cont'd).

Institution Located in Midwest	-1385.601	542.670	-.256	-2.553	.012	.557	1.797
Institution Located in West	-903.288	763.444	-.109	-1.183	.239	.660	1.515
Coed	-438.981	799.695	-.043	-.549	.584	.909	1.100
Age	1.209E-02	5.573	.000	.002	.998	.805	1.242
Admissions Competitiveness Rating	800.672	561.721	.114	1.425	.156	.869	1.150
Avg Endowment 1990-1996	7.943E-04	.000	.156	1.827	.070	.769	1.300
Tuition Discount Rate 2000	-4065.247	1946.190	-.185	-2.089	.038	.708	1.412

Table 34 provides the results of the 1990 regression equation for the BAII institutions with net tuition revenue as the dependent variable. The R-squared was .628. In this case, the tuition discounting rate was not significantly related to net tuition revenue. However, enrollment and endowment were significantly positively related to net tuition revenue and Southern location and Western location were significantly negatively related to net tuition revenue.

Table 34. Regression Coefficients, 1990, Net Tuition Revenue as Dependent Variable, BAII Institutions

N=167 R^2=.628	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	510279.508	2000139.241		.255	.799
Religious Affiliation	-412553.477	619420.160	-.036	-.666	.506
Average Enrollment, 1990-2000	2932.972	257.239	.621	11.402	.000
Minority Percentage Avg	-1847608.540	1566795.347	-.062	-1.179	.240
Institution Located in South	-2110936.517	697297.630	-.204	-3.027	.003

Table 34 (cont'd).

Institution Located in Midwest	-1084287.482	574784.373	-.128	-1.886	.061
Institution Located in West	-2861453.564	807200.508	-.221	-3.545	.001
Coed	450857.931	823415.916	.028	.548	.585
Age	461.360	5666.372	.004	.081	.935
Admissions Competitiveness Rating	718074.088	591943.430	.066	1.213	.227
Avg Endowment 1990-1996	1.573	.440	.198	3.577	.000
Tuition Discount Rate 1990	-1582149.677	2539912.427	-.036	-.623	.534

Table 35 provides the results of the regression equation for 1995 for the BAII institutions with net tuition revenue as the dependent variable. The R-squared for the model was .686. As with the previous model, the tuition discounting rate does not appear to be significantly related to net tuition revenue. Similar to the 1990 results, enrollment was significantly positively related to net tuition revenue and both Southern and Western location were significantly negatively related to net tuition revenue.

Table 35. Regression Coefficients, 1995, Net Tuition Revenue as Dependent Variable, BAII Institutions

N=167 R^2=.686	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-345938.978	2694031.669		-.128	.898
Religious Affiliation	-708063.345	836124.170	-.043	-.847	.398
Average Enrollment, 1990-2000	5103.404	347.367	.735	14.692	.000
Minority Percentage Avg	-1194273.063	2146008.840	-.027	-.557	.579

Table 35 (cont'd).

Institution Located in South	-2869538.072	940155.773	-.189	-3.052	.003
Institution Located in Midwest	-1444276.810	767229.488	-.116	-1.882	.062
Institution Located in West	-2233449.200	1061932.039	-.117	-2.103	.037
Coed	1001340.662	1115744.311	.043	.897	.371
Age	-5274.480	7698.232	-.034	-.685	.494
Admissions Competitiveness Rating	1051997.499	794040.317	.066	1.325	.187
Avg Endowment 1990-1996	.841	.602	.072	1.397	.164
Tuition Discount Rage 1995	1488229.851	3310182.059	.025	.450	.654

Table 36 provides the results of the 2000 regression equation for the BAII institutions with net tuition revenue as the dependent variable. The R-squared, .706, represents a substantial increase from the models for previous years. Again, the tuition discounting rate was not a significant predictor of net tuition revenue. Enrollment, however, was significantly positively related to net tuition revenue and both Southern location and Midwestern location were significantly negatively related to net tuition revenue.

Table 36. Regression Coefficients, 2000, Net Tuition Revenue as Dependent Variable, BAII Institutions

N=167 R^2=.706	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-2221863.006	3419292.188		-.650	.517
Religious Affiliation	-419754.490	1057619.771	-.019	-.397	.692
Average Enrollment, 1990-2000	6733.120	445.370	.743	15.118	.000

Table 36 (cont'd).

Minority Percentage Avg	-2549394.342	2743153.849	-.045	-.929	.354
Institution Located in South	-3132239.895	1166860.108	-.158	-2.684	.008
Institution Located in Midwest	-2344823.916	954819.571	-.145	-2.456	.015
Institution Located in West	-1925540.691	1343266.730	-.078	-1.433	.154
Coed	2209749.895	1407050.767	.072	1.570	.118
Age	-12264.165	9806.172	-.061	-1.251	.213
Admissions Competitiveness Rating	2068836.925	988338.275	.099	2.093	.038
Avg Endowment 1990-1996	1.215	.765	.080	1.589	.114
Tuition Discount Rate 2000	-2226233.705	3424288.372	-.034	-.650	.517

Finally, Table 37 provides a summary of all of the statistically significant regression coefficients for the 3 year longitudinal analysis for both the BAI and BAII institutions.

Table 37. Summary of Statistically Significant Regression Coefficients. BAI and BAII Institutions

BAI Institutions	The change in Net Tuition Revenue Per Student associated with a 1 percentage point increase in Tuition Discounting*:	The change in Net Tuition Revenue associated with a 1 percentage point increase in Tuition Discounting*:
1990	$-143	$-118,573
1995	$-158	$-116,606
2000	$-386	$-397,841

Table 37 (cont'd).

BAII Institutions	The change in Net Tuition Revenue Per Student associated with a 1 percentage point increase in Tuition Discounting*:	The change in Net Tuition Revenue associated with a 1 percentage point increase in Tuition Discounting*:
1990	Not Significant	Not Significant
1995	-$47	Not Significant
2000	-$41	Not Significant

*Significant at a minimum of the .05 level

Regressions with Grouped Data

Table 38 provides a summary of the regression results for the BAI and BAII institutions grouped. (Appendix F provides detailed statistical results for the regressions). The rationale for this analysis was that based on the T-tests, it appeared that the lower quality (selectivity) BAI institutions and the higher quality BAII institutions were beginning to exhibit the same behaviors in terms of tuition discounting. Therefore, it seemed logical to analyze regression results for the BAI and BAII institutions together while recognizing that overall the two groups of institutions remain quite distinct. It is interesting to note that for the grouped data there is a notable and significant negative relationship between financial health (as measured by net tuition revenue and net tuition revenue per student) and tuition discounting. It does appear that this relationship is becoming more pronounced over time, with financial health declining by increasing amounts over the 1990's.

Table 38. Regression Results, BAI and BAII Institutions, Grouped*.

	The change in Net Tuition Revenue Per Student associated with a 1 percentage point increase in Tuition Discounting Rate	The change in Net Tuition Revenue associated with a 1 percentage point increase in Tuition Discounting Rate
1990	-$38	-$85,280
1995	-$61	-$84,164
2000	-$122	-$137,661

*Significant at a minimum of the .05 level.

Chapter Five: Discussion and Conclusions

This chapter begins with a summary and discussion of the findings of this study, followed by a discussion of the implications of tuition discounting for stakeholders such as administrators, trustees, and students (together with parents and counselors). I conclude with ideas for future research.

Summary and Discussion of Findings

Finding #1: Tuition Discounting is on the Rise

Tuition discounting is on the rise at private, baccalaureate level institutions of higher education. Between 1990 and 2000, tuition discounting among the BAI institutions rose from 17.53% to 24.63%, with an average 11-year change of +7.1 percentage points. Among the BAII institutions, tuition discounting rose from 16.31% to 20.05%, with an average 11-year change of +7.02 percentage points. On average, both types of institutions increased their levels of tuition discounting over the 11-year period. Students at BAI and BAII institutions saw larger percentages of their tuitions "waived" through unfunded institutional scholarships (discounts) over that period of time.

Finding #2: Tuition Discounting Does Vary Based on Institutional Type

There were significant differences among the tuition discounting practices at the different types of institutions. These significant differences are summarized in Table 39.

Table 39. Significant Mean Differences Among Institutional Types

Variable	BAI Tuition Discount Rate Comparisons	BAII Tuition Discount Rate Comparisons
Religious Affiliation	Religious>Non-religious	NA
Enrollment	Small>Large	NA
Location	Midwest>South, West	Midwest>West
Age	3rd quartile>others	Youngest>Oldest
Admissions Competitiveness Rating	Moderate, Very competitive>Most competitive	Moderately competitive>Minimally or Non-competitive
Academic Reputation Score	Lower>Higher	Higher>Lower
Total Educational and General Expenditures	Lower>Higher	NA
Endowment	Lower>Higher	Higher>Lower
Gender	NA	NA
Retention	NA	NA
Minority Enrollment	NA	Lowest percentage minority>highest percentage minority
Faculty-Student Ratio	NA	Higher>Lower

Some interesting differences are notable among the BAI institutions. First, the institutions that appear to be discounting the most can generally be categorized as small and less prestigious based on the following variables: admissions competitiveness, academic reputation score, total expenditures, and enrollment. It may be that institutions with higher levels of prestige may not need to discount as much to attract students. Additionally, higher prestige institutions generally attract wealthier students who may not need a discount in order to enroll. The more prestigious institutions generally have larger endowments and do not need to rely on unfunded (simple) discounts—they can give students aid funded by their endowment. This is supported by the finding that, in this study, institutions with smaller endowments appear to have significantly higher tuition discounting rates than do institutions with larger endowments.

There were also significant mean differences among the BAI institutions based on religious affiliation. Overall, the religious affiliated institutions discounted more than the non-religious institutions. This result may be related to a set of circumstances that has affected religious-based instruction—particularly small religious-affiliated institutions. Townsley (2002) indicates that "this set of micro colleges hangs on by a thread," and faces a great deal of competition (p. 210). Additionally, the financial support from the churches on which these institutions have historically relied very heavily has declined significantly. This set of circumstances may force them to rely more heavily on tuition discounting than their non-religious based counterparts.

Among the BAI institutions there also appeared to be significant mean differences based on geographic location with Midwest institutions discounting more than other geographic areas. This result is likely due to the decline in the number of graduating high school seniors in the Midwest. Between 1972 and 1997, parts of the Midwest experienced declines in the number of high school graduates as high as 26% (Kodrzycki, 1999, p. 28). With fierce competition for students, Midwest institutions appear to have discounted more than other geographic areas.

Finally, older institutions (specifically those in the 3rd quartile—146 to 168 years) discounted more than institutions in the other age groups. This finding seems to be somewhat inconsistent with the prestige findings. One would assume that the younger, less established institutions would discount more than the older institutions. This expectation is not born out in this study.

There were also significant mean differences among the BAII institutions (see Table 38). Although the BAII institutions generally would not be considered prestigious

(none had admissions competitiveness ratings higher that "moderately competitive"), the institutions with higher admissions competitiveness ratings within this institutional category discounted more than those with lower admissions competitiveness ratings. In contrast to the BAI institutions, the more "prestigious" BAII institutions discounted more than the less prestigious. Similarly, the more well endowed BAII institutions discounted more than the smaller endowed BAII institutions. One explanation for higher discounting among more prestigious BAII's is that the upper tier institutions within the BAII category may be attempting to compete with the lower tier of the BAI college category, and to do so must offer significant discounts. The minimally competitive and non-competitive institutions may not feel as much pressure to compete with the BAI institutions and may not feel inclined to discount on the basis of competition.

There were also significant mean differences in tuition discounting rates among the BAII institutions based on geographic location. As with the BAI institutions, the BAII institutions in the Midwest discounted more than those in the West, apparently for the same reason—demographic shifts related to the number of high school graduates.

Among the BAII institutions there were significant mean differences based on minority enrollment. Institutions with lower percentages of minority students discounted more than those with higher percentages of minority students. This result is difficult to explain as one would expect that institutions committed to expanding diversity would be doing so via discounting. A similar interesting finding is that BAII institutions with higher faculty student ratios discounted more than those with lower faculty student ratios. This finding generally means that institutions with larger average class sizes discounted more than institutions with smaller average class sizes.

Finding #3: Tuition Discounting Impacts Financial Health

Table 32 in the previous chapter summarizes the findings for the regression equations, which measured the relationship between tuition discounting and institutional financial health. Recall that tuition discounting can and should actually serve to protect net tuition revenue. That is, net tuition revenue should either increase or remain unchanged when regressed against tuition discounting. For the BAI institutions, however, tuition discounting appears to be significantly *negatively* related to financial health (with financial health defined as net tuition revenue per student). Tuition discounting is associated with declining net tuition revenue per student and this pattern has intensified over time. For the 1990 equation, each 1 percentage point increase in tuition discounting was associated with a $143 decrease in net tuition revenue per student. By 1995 the decrease in net tuition revenue per students was $158, and by 2000 it was $386. With net tuition revenue (total) as the independent (financial health) variable, a significantly negative relationship also exists between tuition discounting and financial health with a decrease in net tuition revenue of approximately $119,000, $177,000 and $398,000 related to each 1 percentage point increase in the tuition discounting rate for 1990, 1995, and 2000 respectively.

The BAII institutions had similar results. The decrease in net tuition revenue associated with a 1 percentage point increase in tuition discounting was $47 in 1995 and $41 in 1991. When net tuition revenue (total) is used as the independent variable, however, the relationship between tuition discounting and financial health was not significant.

Because the negative relationship exists, at least to some degree, between tuition discounting and financial health, institutions need to carefully examine their tuition discounting policies. There are several strategies to help institutions discount more effectively, or to reduce their levels of tuition discounting.

Implications for Stakeholders

The results of this study indicate that for private, baccalaureate level institutions of higher education, tuition discounting *is* on the rise, *does* vary based on institutional type, and *does* impact financial health negatively. These conclusions provide evidence that tuition discounting is a growing, dynamic practice that can have serious implications for the financial health of institutions.

Of special interest is the apparent efforts of higher tier BAII colleges to place themselves through tuition discounting into a higher prestige category. This trend may mean that efforts to pursue prestige and status at these institutions may be stronger factors in affecting policy than financial health. It may be that a more complex institutional typology is needed, one with distinct markets for the top tier of BAI colleges, and a second market for lower-tier BAIs and top tier BAIIs, and a third market for the least competitive BAII colleges. Further, the consequences of tuition discounting may vary by these distinct markets with the most financially vulnerable offering the highest tuition discount rates.

These results suggest that academic administrators need to carefully analyze their tuition discounting programs and be prepared to initiate strategic measures ranging from minor adjustments to major policy changes. First, administrators must start by evaluating

the effectiveness of their tuition discounting programs by looking at net tuition revenue (not gross tuition revenue) longitudinally. Too many institutions focus on gross tuition revenue, which does not give an accurate picture of the real flow of tuition dollars into the institution. For tuition discounting to be effective, net tuition revenue should increase over time. Many institutions set enrollment goals (for example 700 incoming freshmen students). However, these goals need to be set in conjunction with net tuition revenue goals (for example 700 new students paying an average of $15,000 each).

If institutions find that their tuition discounting programs are not producing increases in net tuition revenue, they must work diligently to increase the effectiveness of their awarding strategy—that is, the determination of which students get discounts, and how much they get. This strategy requires an extensive analysis of historical data to determine appropriate award amounts (discounts) based on various student factors such as financial need, test scores, ethnicity, etc. A careful analysis of previous awarding practices and yields can illuminate the probability of a specific type of student enrolling at the institution if awarded a specific discount. In The Effect of Financial Aid Policies on Admission and Enrollment, Scannell describes a method of creating yield tables (see Table 40) that display historical data for the institution. The percentages in the body of the table refer to the percentage of admitted students that actually enrolled at the institution for a specific year. For example, the first percentage (34%) represents the number of students in this particular need category ($6000-$7000) that had an ACT score of less than 20, received no discount, yet still enrolled. The 60% in the bottom right cell of the table means 60% of students with a 26 or 27 ACT and a $5000-$6000 discount enrolled at the institution. Table 40 is an example of yield data based on quality (ACT

score), but similar tables can be created based on gender, ethnicity, and a host of other demographic characteristics. Institutions can use this data to help determine discount amounts that have a high probability of influencing the student to enroll. These tables are particularly helpful because they "give the institution the opportunity to react strategically in the use of financial aid" (Scannell, 1992, p. 58).

Table 40. Yield Table-Admitted Applicants with Financial Need of $6000-$7000 (Hypothetical Data).

Discount→ ACT Score ↓	$0	$1-$1000	$1001-$2000	$2001-$3000	$3001-$4000	$4001-$5000	$5001-$6000
<20	34%	41%	42%	56%	61%	70%	77%
20-21	31%	41%	41%	55%	66%	61%	77%
22-23	30%	44%	42%	50%	58%	62%	79%
24-25	28%	29%	31%	41%	50%	51%	70%
26-27	29%	21%	29%	47%	49%	50%	60%
Etc.							

In addition to increasing the effectiveness of tuition discounting, institutions can reduce their reliance on, or use of, tuition discounting by incorporating some strategic measures such as increasing their endowments, containing costs, improving marketing and recruiting, and collaborating.

Ideally, institutions would like to have endowments large enough to support their entire financial aid budgets. However, only a few institutions (such as Oberlin or Macalester) are actually able to achieve this goal. "By not dipping into tuition to pay for financial aid...[institutions] can escape what [some call] a slippery slope in higher education: raising tuition in order to generate more revenue to support more financial aid" (Strosnider, 1998, p. A37).

Although many of the institutions in this study had sizeable endowments (creating large pools of funded scholarships), most had relatively low endowments. The average endowment for the BAII institutions was about $500,000, which generates only about $25,000 in scholarships annually. As institutions generate higher endowments, they will be able to replace unfunded discounts with discounts funded by endowment earnings. It is essential, therefore, that institutions work diligently to increase endowment levels. Too many institutions have a shortage of donated assets, particularly small, private institutions. According to Halstead (1991), "[t]here is no shortage of prospective wealthy donors and alumni in the country, so the blame must be in part of private institutions for failing to fully tap this potential" (pp. 23, 26).

Several institutions have been very successful in building large endowments dedicated to student financial aid. Washington and Lee University, for example, worked diligently to build an endowment large enough so that virtually all discounts were funded. Other institutions have undertaken an aggressive approach to building endowment dollars specifically designated to student aid although many of them are larger research universities such as Duke and Johns Hopkins (Strosnider, 1998, p. A37). In addition, institutions can seek annual gifts and donations intended to support financial aid programs.

Institutions can also work to contain costs. When costs are controlled, tuition rates can also be controlled. When the tuition rate is under control, the level of tuition discounting can be decreased or at least not increased. If an institution is unable to control costs, tuition increases will be large, and so will the need for discounts.

Additionally, if costs are growing, institutions become even more reliant on tuition revenue—making enrollment instability a serious financial issue.

Restructuring is a popular cost cutting measure at universities. Often, academic programs can be redesigned or restructured. Institutions can also look for ways to lower unit costs, to increase the productivity of individuals and departments. Although cost cutting measures may be appropriate at many institutions, they must ensure that they do not compromise quality.

According to Jenkins (1991), "institutions should begin to develop marketing strategies...based on cost containment and educational value rather than manipulating price and calling it financial aid if they are to successfully meet consumer demand and public policy expectations" (p. 4). One way to accomplish this goal is to stress the positive aspects of the college, or factors that differentiate the college such as quality, high retention rates, successful programs, low faculty-student ratios, high graduation rates, or co-op programs, for example. This approach is particularly important for institutions trying to get away from competition based on price. Institutions need to focus on the aspects that make it unique and convey those attributes to potential students. They must market strategically in order to ensure that they do not lose market share.

There is increasing conversation in the admissions arena regarding student "fit"—specifically the fit between a student's needs and desires and the offerings of a college or university (Hooker-Haring, 1998, p. 32). There is much diversity in higher education with respect of religious affiliation, gender affiliation, size, scope, and mission. Many students are lured into enrolling at institutions that are not a good fit simply because of the tuition discount offered. Parents and students are being encouraged to shift their

focus from getting into a college to finding the best fit and staying there. Colleges can assist by providing accurate information to students and by creating a profile of their successful students and recruiting students that fit that profile. Many institutions (such as Baylor University) have developed models based on current student demographics that predict the probability that a specific type of potential student will enroll and be successful at the university. This approach improves retention and minimizes recruiting and financial aid costs (Gose, 1999, p. A49).

Institutions also need to explore the possibility of expanding programs to non-traditional markets, for example, adult learners. This effort might be achieved by offering night or weekend programs. This approach is particularly strategic because it uses unoccupied facilities (Lapovsky & Loomis-Hubbell, 2001, p. 29). If non-traditional students can be successfully recruited they could fill empty seats and potentially "generate sufficient tuition income without resorting to a new round of discounting" (Discounting and its Discontents, 1994, p. 36).

A final strategy that institutions can explore is that of collaboration. Some experts believe that for many small colleges and universities, "collaboration is key to survival." Under this scenario, institutions that are geographically close, "overcome their natural impulse to complete, and work together" (Van der Worf, 1999, p. A33). Essentially, the colleges create a consortium in which students can take courses at any of the member institutions. This widely expands the number of programs and degrees available to students at each institution, which enhances enrollment and retention. In central Kansas, six institutions—Bethany, Bethel, McPherson, Sterling, Tabor, and Kansas Wesleyan—

have had great success in creating a consortium knows as the "Associated Colleges of Central Kansas."

In addition to college administrators, trustees play an important role in tuition discounting as well. The trustee's role in tuition discounting is largely centered around tuition price. As price-setters, trustees determine half of the institution's revenue picture—the other half being enrollment. If the price is too high, enrollment lags and must be bolstered by discounts thus reducing *net* tuition revenue. At a lower price, enrollment will be higher. Trustees must walk that fine line between a tuition rate that turns students away and a price that is so low that tuition revenue falls short of institutional needs.

Some institutions have reduced tuition rates in an effort to enroll more students. Westminster College in Fulton, Missouri, cut tuition by 20% in 2003. Muskingum and Eureka Colleges have undertaken similar tuition reductions. In a sense, cutting price is essentially tuition discounting—just in an "across the board" fashion in which every student gets the same discount. Some institutions may find that a tuition cut with a reduction (or elimination) of tuition discounting may be preferable to having an artificially high tuition rate, coupled with deep discounts.

My advice to students, parents, and high school counselors is quite simple: be aware of the practice of tuition discounting. Students need to understand that tuition discounting has become quite prevalent among many of the small, private, baccalaureate level institutions. Students and their parents will want to compare the net prices of the colleges that they are considering. If the tuition rate at College X is $30,000 and the "scholarship" (discount) being offered is $10,000, then the net price is $20,000. If the

tuition rate at College Y is $20,000 and the discount is $5,000, then the net price is $15,000. While College Y is ultimately less expensive, many families are more impressed with College X's $10,000 "reward," and may select College X on those grounds. That said, students should avoid selecting a college based simply on price, and focus on "fit."

Students need to also consider attempting to negotiate their awards. While this may seem distasteful to many, the majority of institutions *do* negotiate. In many cases, the student's high school counselor may be willing to negotiate on the student's behalf. Either way, students need to be prepared to document award amounts from other institutions as a basis for their award appeal.

Future Research

Future research related to tuition discounting is vital in order to help improve the financial health and maintain the presence of the private baccalaureate sector of higher education in America. I would suggest the following four directions for future research.

First, an in-depth analysis of the small private institutions that have closed over the past 20 years might provide important insights. Among these are Mt. Senario College in Wisconsin, Aquinas Colleges in Massachusetts, Westmar University in Iowa, and Notre Dame College in Missouri. It would be interesting to study these institutions to determine whether tuition discounting was a factor in their closing. There is some speculation that pricing and discounting problems have led to, or at least significantly contributed to, the demise of several small institutions.

Second, it would be helpful to study tuition discounting under the broader scope of the scholarship allowance discount as opposed to the simple tuition discount used in this study. Although the data needed to calculate the scholarship allowance are not available via IPEDS, a smaller study of institutions could be undertaken to analyze this alternative measure of tuition discounting. The results could be significantly different if this alternative measure were used.

Third, while this study focused primarily on the financial impact of tuition discounting, a study of the ethics of tuition discounting is also warranted. Researchers and stakeholders need to be addressing whether it is appropriate for students and university officials to be haggling over the price of a university education the way one would for a used car. Is the process fair, since not all students know about discounts, and may not be savvy in negotiating an award amount?

Finally, it would be interesting to determine whether tuition discounting is actually serving to expand diversity and/or allow more needy students to enroll. If not, researchers must start a dialogue about whether the practice makes sense. If tuition discounting does not improve financial health, expand diversity, or allow more needy students to enroll, one must wonder about the usefulness of this practice in small colleges and universities.

Appendix A: Variable Calculation Grids

1990-1996 IPEDS				
Current Funds Revenue by Source	Excel Col	IPEDS Row	IPEDS Column	Calculated as
Tuition and Fees assessed to students	C	A01	3	
Federal grants, contracts	D	A06	3	
State grants, contracts	E	A07	3	
Local grants, contracts	F	A08	3	
Private gifts, grants, contracts	G	A09	3	
Sales/Services of Educational Activities	H	A11	3	
Aux Enterprises	I	A12	3	
Other Sources-Total	J	A14	3	
Independent Operations	K	A15	3	
Current Funds Expenditures by Function				
Total Educational General Expenditures Transfers (excluding auxiliary)	L	B12	3	
Aux Enterprises	M	B13	3	
Scholarships and Fellowships by Source				
Unrestricted Institutional	N	E06	1	
Restricted Institutional	O	E06	2	
Calculated Variables				
Tuition Discount Rate	R			N/C
Operating Income Ratio	S			(C-N-O-+D+E+F+H+I-M+J+K)/(L-N-O)
Enrollment	T			
Net Tuition Revenue	U			C-N
Net Tuition Revenue Per Student	V			U/T
Expenditures Per Student	W			(L+M)/T

1997 IPEDS				
Private, Non-Profit, Revenue and Investment Return and Student Aid	Excel Col	IPEDS Row	IPEDS Column	Calculated as:
Tuition and Fees, assessed to students	C	A01	3	
Federal Grants and Contracts	D	A06	3	
State Grants and Contracts	E	A07	3	
Local Grants and Contracts	F	A08	3	
Private Gifts, Grants, Contr, Cont from Affil	G	A09+A10	3	
Sales/Services of Educational Activities	H	A12	3	
Sales/Services of Auxiliary Enterprises (net of allowances to T and F)	I	A13	3	
Revenue from hospital, indep ops, other source	J	A15+A14+ A16	3	
Student Aid: Pell Grants	K	AA01	NA	
Student Aid: Other Federal Grants	L	AA02	NA	
Student Aid: State Grants	M	AA03	NA	
Student Aid: Local Grants	N	AA04	NA	
Institutional Grants, Funded	O	AA05	NA	
Institutional Grants, Unfunded	P	AA06	1+2+3	
Student Aid: Portion of Total Stu Aid applied to tuition and fees	Q	AA08	1	
Student Aid: Portion of Total Stud Aid applied to Aux Enterprises	R	AA09	1	
Private, Non-Profit, Expenses by Function				
Auxiliary Enterprises	S	B07	1	
Hospital Services and Independent Operation	T	B10 and B9	1	
Total Expenses	U	B12	1	includes aux
Total Expenses-Depreciation	V	NA	5	
Calculated Variables				
Tuition Discount Rate	X			P/(C+Q)
Operating Income Ratio	Y			(C+Q-P-O+D+E+F+I+R-S+J)/(U-S-P-O)
Enrollment	Z			
Net Tuition Revenue Per Student	AA			C/Z
Expenditures Per Student	AB			U/Z

1998 IPEDS				
Private, Non-Profit, Revenue and Investment Return	Excel Col	IPEDS Row	IPEDS Column	Calculated as:
Total Tuition and Fees, Assessed to students	C	A01	3	
Total Federal Grants and Contracts	D	A06	3	
Total State Grants and Contracts	E	A07	3	
Total Local Grants and Contracts	F	A08	3	
Total Private Gifts, Grants, Contracts	G	A09	3	
Total Contributions from Affiliated Entities	H	A10	3	
Total Sales/Services of Educational Activities	I	A12	3	
Total Sales/Services of Auxiliary Enterprises	J	A13	3	
Total Independent Operations Revenue	K	A15	3	
Total Other Revenue	L	A16	3	
Total Pell Grants	M	AA01	NA	
Total Other Federal Grants	N	AA02	NA	
Total State Grants	O	AA03	NA	
Total Local Grants	P	AA04	NA	
Total Institutional Grants, Funded	Q	AA05	NA	
Total Institutional Grants, Unfunded	R	AA06	1+2+3	
Total Allowances Applied to Tuition and Fees	S	AA09	NA	
Total Allowances Applied to Aux Enterprises	T	AA10*	NA	
Private, Non-Profit, Expenses by Function				
Auxiliary Enterprises-Total	U	B07	1	
Independent Operation Expenditures	V	B10	1	
Total Expenses-Total (includes auxiliary)	W	B12	1	
Total Expenses-Depreciation	X	B12	5	
Calculated Variables				
Tuition Discount Rate	AB			R/(C+S)
Operating Income Ratio	AC			(C+S-R-Q+D+E+F+I+K+L+J+T-U)/(W-U-R-Q)
Enrollment	AD			
Net Tuition Revenue Per Student	AE			C/AD
Expenditures Per Student	AF			W/AD

1999 IPEDS				
Private, Non-Profit, Revenue and Investment Return	Excel Col	IPEDS Row	IPEDS Column	Calculated as:
Total Tuition and Fees	C	A01	3	
Total Federal Grants and Contracts	D	A06	3	
Total State Grants and Contracts	E	A07	3	
Total Local Grants and Contracts	F	A08	3	
Total Private Gifts, Grants, Contracts	G	A09	3	
Total Contributions from Affiliated Entities	H	A10	3	
Total Sales/Services of Educational Activities	I	A12	3	
Total Sales/Services of Auxiliary Enterprises	J	A13	3	
Total Independent Operations Revenue	K	A15	3	
Total Other Revenue	L	A16	3	
Total Pell Grants	M	AA01	NA	
Total Other Federal Grants	N	AA02	NA	
Total State Grants	O	AA03	NA	
Total Local Grants	P	AA04	NA	
Total Institutional Grants, Funded	Q	AA05	NA	
Total Institutional Grants, Unfunded	R	AA06	1+2+3	
Total Allowances Applied to Tuition and Fees	S	AA08	NA	
Total Allowances Applied to Aux Enterprises	T	AA09	NA	
Private, Non-Profit, Expenses				
Auxiliary Enterprises-Total	U	B07	1	
Independent Operation Expenditures	V	B10	1	
Total Expenses-Total (includes auxiliary)	W	B12	1	
Total Expenses-Depreciation	X	B12	5	
Calculated Variables				
Tuition Discount Rate	AB			R/(C+S)
Operating Income Ratio	AC			(C+S-R-Q+ D+E+ F+I+K+ L+J+T-U) / (W-U-R-Q)
Enrollment	AD			
Net Tuition Revenue Per Student	AE			C/AD
Expenditures Per Student	AF			W/AD

2000 IPEDS			
Private, Non-Profit, Revenue and Investment Return	Excel Col	IPEDS Row	Calculated as:
Total Tuition and Fees	C	D01	
Total Federal Grants and Contracts	D	D05	
Total State Grants and Contracts	E	D06	
Total Local Grants and Contracts	F	D07	
Total Private Gifts, Grants, Contracts	G	D08	
Total Contributions from Affiliated Entities	H	D09	
Total Sales/Services of Educational Activities	I	D11	
Total Sales/Services of Auxiliary Enterprises	J	D12	
Total Independent Operations Revenue	K	D14	
Total Other Revenue	L	D15	
Student Grants			
Total Pell Grants	M	C01	
Total Other Federal Grants	N	C02	
Total State Grants	O	C03	
Total Local Grants	P	C04	
Total Institutional Grants, Funded	Q	C05	
Total Institutional Grants, Unfunded	R	C06	
Total Allowances Applied to Tuition and Fees	S	C08	
Total Allowances Applied to Aux Enterprises	T	C09	
Private, Non-Profit, Expenses by Function			
. Auxiliary Enterprises-Total	U	E07	
Independent Operation Expenditures (excluding auxiliary)	V	E10	
Total Expenses-Total	W	E12	
Total Expenses-Depreciation	X	E15	
Calculated Variables			
Tuition Discount Rate	AB		R/(C+S)
Operating Income Ratio	AC		(C+S-R-Q+D+E+F+I+K+L+J+T-U)/(W-U-R-Q)
Enrollment	AD		
Net Tuition Revenue Per Student	AE		C/AD
Expenditures Per Student	AF		W/AD

Appendix B: Variables

Variable Name	Variable values/calculations:	Data Source
Age of Institution		Peterson's
Religious Affiliation	0=No 1=YES	Peterson's
Geographic Location	N (North) =PA, RI, CT, NY, DC, NH, MA, MD, VT, NJ, ME, DE S (South) =GA, LA, VA, FL, AL, NC, SC, WV, KY, TN, MS, AR M (Midwest)=MI, NE, IL, IA, OH, MO, MN, KS, SD, ND, WI, IN W (West) =AK, HI, CA, CO, TX, NV, AZ, NM, ID, OR, WA, MT, OK, UT, WY	IPEDS
Male Affiliated	0=NO 1=YES	Peterson's
Female Affiliated	0=NO 1=YES	Peterson's
Co-ed	0=NO 1=YES	Peterson's
Enrollment	Total Undergraduate Enrollment; Calculated each year between 1990 and 2000	IPEDS
Average Enrollment	Average enrollment, 1990-2000	
Percentage of Students Minority	Minority Enrollment/Total Enrollment; Calculated each year between 1990 and 2000	IPEDS
Average Percentage of Student Minority, 1990-2000	Average Minority Student Enrollment between 1990 and 2000	IPEDS
Endowment Value	Endowment Value; Calculated each year between 1990 and 1996	IPEDS
Average endowment, 1990-1996	Average Endowment between 1990 and 1996	IPEDS
Admissions competitiveness Rating	1=noncompetitive 2=minimally difficult 3=moderately difficult	Peterson's

	4=very difficult 5=most difficult	
Percentage of freshman returning for 2nd year		Peterson's
Total Educational and General Expenditures	Total Educational and General Expenditures; Calculated each year between 1990 and 2000	IPEDS
Average Total Educational and General Exp., 1990-2000	Average Total Educational and General Exp., 1990-2000	IPEDS
Academic Reputation Score	Scale of 1-5, 5 is highest	U.S. News and World Report
Student-to-undergraduate faculty ratio	Number of students per faculty member; Calculated each year between 1990 and 2000	IPEDS
Average student-to-faculty ratio, 1990-1999		IPEDS
Tuition Discounting Rate	Unfunded institutional student aid/gross tuition and fees; Calculated each year between 1990 and 2000	IPEDS
Change in tuition discounting rate 1990-2000	Tuition discount rate in 2000 minus tuition discount rate in 1990	IPEDS
Average tuition discounting rate, 1990-2000	Mean of the tuition discounting rates, 1990-2000	IPEDS
Operating Income Ratio	Calculated each year between 1990 and 2000	IPEDS
Net Tuition Revenue Per Student	Calculated each year between 1990 and 2000	
Expenditures Per Student	Calculated each year between 1990 and 2000	

Appendix C: Descriptive Statistics

Descriptive Statistics, BAI Institutions				
	Minimum	Maximum	Mean	Standard Dev
Age	35	258	141.28	44.104
Religious Affiliation	0	1	0.48	0.502
Coed	0	1	0.85	0.359
Institution Located in North	0	1	0.43	0.496
Institution Located in Midwest	0	1	0.28	0.453
Institution Located in West	0	1	0.12	0.322
Institution Located in South	0	1	0.18	0.382
Average Enrollment, 1990-2000	279.9091	3414.636	1561.47	665.856
Admissions Competitiveness Rating	3	5	3.63	0.673
Academic Reputation Score	2	4.8	3.07	0.740
Faculty Student Ratio Avg	8.532569	24.78351	13.75	2.968
% students returning for 2nd year	40	98	85.38	8.182
Avg. Total EG Expenditures, 1990-2000	6702900	98135063	36100680.85	19094119.024
Avg Endowment, 1990-1996	51402.14	22284610	3750009.69	3847511.884
Simple Tuition Discount 90	0	0.51	0.22	0.078
Simple Tuition Discount 91	0.09	0.55	0.24	0.075
Simple Tuition Discount 92	0.1	0.57	0.26	0.078
Simple Tuition Discount 93	0.08	0.57	0.29	0.085
Simple Tuition Discount 94	0.11	0.59	0.30	0.092
Simple Tuition Discount 95	0.12	0.65	0.31	0.094
Simple Tuition Discount 96	0.1	0.57	0.32	0.096
Simple Tuition Discount 97	0	0.73	0.34	0.108
Simple Tuition Discount 98	0	0.63	0.32	0.129
Simple Tuition Discount 99	0.17	0.62	0.35	0.098
Simple Tuition Discount 00	0.09	0.65	0.35	0.100
Operating Income Ratio 90	0.26	1	0.75	0.134
Operating Income Ratio 91	0.33	1.02	0.75	0.130
Operating Income Ratio 92	0.3	0.99	0.74	0.131
Operating Income Ratio 93	0.3	1.02	0.74	0.135
Operating Income Ratio 94	0.3	1.04	0.74	0.131
Operating Income Ratio 95	0.31	1.02	0.75	0.130
Operating Income Ratio 96	0.33	1.19	0.75	0.143
Operating Income Ratio 97	0.346458	3.55418	1.00	0.373
Operating Income Ratio 98	0.27	3.19	1.02	0.379
Operating Income Ratio 99	0.17	3	1.02	0.377
Operating Income Ratio 00	0.12	2.17	1.02	0.369
Net Tuition Revenue Per Student 90	3456.398	27383.27	9297.14	3199.659
Net Tuition Revenue Per Student 91	3527.735	32606.24	9948.27	3739.055
Net Tuition Revenue Per Student 92	3542.881	19384.65	10259.31	3341.726
Net Tuition Revenue Per Student 93	3608.78	20293.43	10516.34	3421.111
Net Tuition Revenue Per Student 94	4065.98	25990.32	11115.20	4054.576

Net Tuition Revenue Per Student 95	4250.082	21882.72	11324.82	3715.902
Net Tuition Revenue Per Student 96	4958.202	21760.13	11583.73	3840.363
Net Tuition Revenue Per Student 97	4399.644	24422.79	11861.36	4416.175
Net Tuition Revenue Per Student 98	4426.381	25241.34	12285.46	4683.246
Net Tuition Revenue Per Student 99	3907.13	28067.99	12795.51	4741.338
Net Tuition Revenue Per Student 00	3895.026	59150.8	13529.12	6509.728
Expenditures Per Student 90	8890.818	45402.68	20680.08	6929.718
Expenditures Per Student 91	9597.474	47921.91	22049.69	7006.201
Expenditures Per Student 92	9864.046	44814.01	23646.38	7107.710
Expenditures Per Student 93	10759.3	40435.9	24954.45	7121.295
Expenditures Per Student 94	11535.53	49826.25	26229.62	7929.817
Expenditures Per Student 95	12403.37	49118.45	27047.58	7703.432
Expenditures Per Student 96	12940.03	52687.37	28651.57	8255.830
Expenditures Per Student 97	10244.31	48928.82	24889.90	8182.501
Expenditures Per Student 98	10829.97	53194.15	26061.95	8680.208
Expenditures Per Student 99	11616.13	54509.55	27462.61	9102.226
Expenditures Per Student 00	12911.61	83184.58	29663.82	11204.365

Descriptive Statistics, BAII Institutions				
	Minimum	Maximum	Mean	Standard Dev
Age	27	213	103.54	39.818
Religious Affiliation	0	1	0.84	0.366
Coed	0	1	0.91	0.287
Institution Located in North	0	1	0.28	0.451
Institution Located in Midwest	0	1	0.40	0.490
Institution Located in West	0	1	0.13	0.333
Institution Located in South	0	1	0.20	0.399
Average Enrollment, 1990-2000	347	6449.091	1366.51	877.491
Admissions Competitiveness Rating	1	3	2.87	0.383
Academic Reputation Score	2	3.9	2.87	0.394
Faculty Student Ratio Average	12.19367	125.2002	22.79	11.365
% students returning for 2nd year	44	94	71.68	10.064
Avg. Total EG Expenditures, 1990-2000	3237693	82204704	15213079.65	9240062.131
Avg Endowment, 1990-1996	0	2743288	486524.10	519199.990
Simple Tuition Discount 90	0	0.46	0.19	0.093
Simple Tuition Discount 91	0	0.45	0.20	0.096
Simple Tuition Discount 92	0	0.47	0.21	0.093
Simple Tuition Discount 93	0	0.46	0.22	0.099
Simple Tuition Discount 94	0	0.47	0.23	0.101
Simple Tuition Discount 95	0	0.47	0.24	0.100
Simple Tuition Discount 96	0	0.49	0.25	0.109
Simple Tuition Discount 97	0	0.85	0.26	0.138
Simple Tuition Discount 98	0	0.66	0.27	0.138
Simple Tuition Discount 99	0	0.69	0.30	0.134
Simple Tuition Discount 00	0	0.56	0.29	0.121
Operating Income Ratio 90	0.46	1.58	0.81	0.148
Operating Income Ratio 91	0.39	1.35	0.82	0.149
Operating Income Ratio 92	0.29	1.22	0.83	0.132
Operating Income Ratio 93	0.45	1.18	0.84	0.119
Operating Income Ratio 94	0.44	1.53	0.85	0.138
Operating Income Ratio 95	0.45	1.37	0.85	0.129
Operating Income Ratio 96	0.52	1.46	0.85	0.137
Operating Income Ratio 97	0.543815	2.042066	1.10	0.253
Operating Income Ratio 98	0.34	2.52	1.10	0.327
Operating Income Ratio 99	0.43	2.28	1.11	0.310
Operating Income Ratio 00	0.36	2.23	1.13	0.306
Net Tuition Revenue Per Student 90	1274.56	11816.2	4656.56	1646.541
Net Tuition Revenue Per Student 91	1439.962	12465.36	5058.91	1809.739
Net Tuition Revenue Per Student 92	1372.128	13543.52	5357.35	1906.329
Net Tuition Revenue Per Student 93	1599.247	15907.31	5668.94	1972.761
Net Tuition Revenue Per Student 94	1775.039	17559.52	6012.52	1955.863
Net Tuition Revenue Per Student 95	1715.743	18186.28	6348.57	2088.044

Net Tuition Revenue Per Student 96	1928.945	14461.57	6693.84	2022.360
Net Tuition Revenue Per Student 97	1901.629	17740.04	6664.55	2250.535
Net Tuition Revenue Per Student 98	1819.277	18387.24	6934.21	2332.883
Net Tuition Revenue Per Student 99	1734.101	20434.71	7261.24	2403.270
Net Tuition Revenue Per Student 00	2275.568	20940	7686.44	2649.860
Expenditures Per Student 90	3210.174	19607.34	10502.22	3425.626
Expenditures Per Student 91	3168.666	23759.95	11190.21	3775.196
Expenditures Per Student 92	3273.94	22556.94	11929.77	4007.951
Expenditures Per Student 93	3417.469	24543.46	12428.64	4143.370
Expenditures Per Student 94	3163.472	25214.33	13015.00	4282.813
Expenditures Per Student 95	3649.21	26353.74	13791.31	4313.046
Expenditures Per Student 96	3313.675	26559.9	14591.66	4389.071
Expenditures Per Student 97	2828.965	22600.1	12209.66	3557.874
Expenditures Per Student 98	2678.044	23327.08	12752.51	3720.089
Expenditures Per Student 99	2639.333	25633.92	13483.83	3886.855
Expenditures Per Student 00	3441.587	33769.85	14300.10	4416.749

Appendix D: List of Institutions by State

Institution Name	State	Carnegie Code
FAULKNER UNIVERSITY	AL	BAII
GRAND CANYON UNIVERSITY	AZ	BAII
HENDRIX COLLEGE	AR	BAI
JOHN BROWN UNIVERSITY	AR	BAII
UNIVERSITY OF THE OZARKS	AR	BAII
WILLIAMS BAPTIST COLLEGE	AR	BAII
CONCORDIA UNIVERSITY	CA	BAII
THE MASTER'S COLLEGE AND SEMINARY	CA	BAII
MILLS COLLEGE	CA	BAI
OCCIDENTAL COLLEGE	CA	BAI
PITZER COLLEGE	CA	BAI
POMONA COLLEGE	CA	BAI
SCRIPPS COLLEGE	CA	BAI
SIMPSON COLLEGE	CA	BAII
WHITTIER COLLEGE	CA	BAI
COLORADO COLLEGE	CO	BAI
CONNECTICUT COLLEGE	CT	BAI
TRINITY COLLEGE	CT	BAI
WESLEYAN UNIVERSITY	CT	BAI
ECKERD COLLEGE	FL	BAI
FLORIDA SOUTHERN COLLEGE	FL	BAII
PALM BEACH ATLANTIC COLLEGE-WEST PALM BEACH	FL	BAII
AGNES SCOTT COLLEGE	GA	BAI
MOREHOUSE COLLEGE	GA	BAI
SPELMAN COLLEGE	GA	BAI
ALBERTSON COLLEGE OF IDAHO	ID	BAII
AUGUSTANA COLLEGE	IL	BAI
BARAT COLLEGE	IL	BAII
EUREKA COLLEGE	IL	BAII
GREENVILLE COLLEGE	IL	BAII
LAKE FOREST COLLEGE	IL	BAI
MCKENDREE COLLEGE	IL	BAII
MILLIKIN UNIVERSITY	IL	BAII
MONMOUTH COLLEGE	IL	BAI
NORTH PARK UNIVERSITY	IL	BAII
QUINCY UNIVERSITY	IL	BAII
ANDERSON UNIVERSITY	IN	BAII
BETHEL COLLEGE	IN	BAII

FRANKLIN COLLEGE OF INDIANA	IN	BAI
GOSHEN COLLEGE	IN	BAI
GRACE COLLEGE AND THEOLOGICAL SEMINARY	IN	BAII
HANOVER COLLEGE	IN	BAI
MANCHESTER COLLEGE	IN	BAII
MARIAN COLLEGE	IN	BAII
SAINT JOSEPHS COLLEGE	IN	BAII
SAINT MARY-OF-THE-WOODS COLLEGE	IN	BAII
SAINT MARY'S COLLEGE	IN	BAII
WABASH COLLEGE	IN	BAI
BRIAR CLIFF UNIVERSITY	IA	BAII
COE COLLEGE	IA	BAI
CORNELL COLLEGE	IA	BAI
DORDT COLLEGE	IA	BAII
IOWA WESLEYAN COLLEGE	IA	BAII
LORAS COLLEGE	IA	BAII
LUTHER COLLEGE	IA	BAI
MORNINGSIDE COLLEGE	IA	BAII
MOUNT MERCY COLLEGE	IA	BAII
MOUNT ST CLARE COLLEGE	IA	BAII
NORTHWESTERN COLLEGE	IA	BAII
SIMPSON COLLEGE	IA	BAII
WARTBURG COLLEGE	IA	BAI
WILLIAM PENN UNIVERSITY	IA	BAII
BENEDICTINE COLLEGE	KS	BAII
BETHANY COLLEGE	KS	BAII
NEWMAN UNIVERSITY	KS	BAII
OTTAWA UNIVERSITY	KS	BAII
SAINT MARY COLLEGE	KS	BAII
TABOR COLLEGE	KS	BAII
BRESCIA UNIVERSITY	KY	BAII
CAMPBELLSVILLE UNIVERSITY	KY	BAII
GEORGETOWN COLLEGE	KY	BAI
KENTUCKY WESLEYAN COLLEGE	KY	BAII
KENTUCKY CHRISTIAN COLLEGE	KY	BAII
PIKEVILLE COLLEGE	KY	BAII
TRANSYLVANIA UNIVERSITY	KY	BAI
BATES COLLEGE	ME	BAI
BOWDOIN COLLEGE	ME	BAI
COLBY COLLEGE	ME	BAI
UNITY COLLEGE	ME	BAII
ST JOHN'S COLLEGE	MD	BAI
WESTERN MARYLAND COLLEGE	MD	BAI

AMHERST COLLEGE	MA	BAI
GORDON COLLEGE	MA	BAI
HAMPSHIRE COLLEGE	MA	BAI
COLLEGE OF THE HOLY CROSS	MA	BAI
LASELL COLLEGE	MA	BAII
MERRIMACK COLLEGE	MA	BAII
MOUNT HOLYOKE COLLEGE	MA	BAI
MOUNT IDA COLLEGE	MA	BAII
COLLEGE OF OUR LADY OF THE ELMS	MA	BAII
REGIS COLLEGE	MA	BAII
SIMONS ROCK COLLEGE OF BARD	MA	BAI
SMITH COLLEGE	MA	BAI
WELLESLEY COLLEGE	MA	BAI
WHEATON COLLEGE	MA	BAI
WILLIAMS COLLEGE	MA	BAI
ADRIAN COLLEGE	MI	BAII
ALBION COLLEGE	MI	BAI
HOPE COLLEGE	MI	BAI
SIENA HEIGHTS UNIVERSITY	MI	BAII
SPRING ARBOR UNIVERSITY	MI	BAII
WILLIAM TYNDALE COLLEGE	MI	BAII
AUGSBURG COLLEGE	MN	BAII
BETHEL COLLEGE	MN	BAII
CARLETON COLLEGE	MN	BAI
CONCORDIA COLLEGE AT MOORHEAD	MN	BAI
GUSTAVUS ADOLPHUS COLLEGE	MN	BAI
HAMLINE UNIVERSITY	MN	BAI
MACALESTER COLLEGE	MN	BAI
NORTHWESTERN COLLEGE	MN	BAII
COLLEGE OF SAINT BENEDICT	MN	BAI
SAINT JOHNS UNIVERSITY	MN	BAI
SAINT OLAF COLLEGE	MN	BAI
CROWN COLLEGE	MN	BAII
MILLSAPS COLLEGE	MS	BAI
COLUMBIA COLLEGE	MO	BAII
MISSOURI BAPTIST COLLEGE	MO	BAII
STEPHENS COLLEGE	MO	BAII
WESTMINSTER COLLEGE	MO	BAI
WILLIAM JEWELL COLLEGE	MO	BAI
WILLIAM WOODS UNIVERSITY	MO	BAII
CARROLL COLLEGE	MT	BAII
UNIVERSITY OF GREAT FALLS	MT	BAII
ROCKY MOUNTAIN COLLEGE	MT	BAII
CONCORDIA UNIVERSITY	NE	BAII

HASTINGS COLLEGE	NE	BAI
NEBRASKA WESLEYAN UNIVERSITY	NE	BAI
COLLEGE OF SAINT MARY	NE	BAII
COLBY-SAWYER COLLEGE	NH	BAII
NEW ENGLAND COLLEGE	NH	BAII
SAINT ANSELM COLLEGE	NH	BAII
CALDWELL COLLEGE	NJ	BAII
CENTENARY COLLEGE	NJ	BAII
DREW UNIVERSITY	NJ	BAI
FELICIAN COLLEGE	NJ	BAII
COLLEGE OF SAINT ELIZABETH	NJ	BAII
BARNARD COLLEGE	NY	BAI
COLGATE UNIVERSITY	NY	BAI
CONCORDIA COLLEGE	NY	BAII
DAEMEN COLLEGE	NY	BAII
HAMILTON COLLEGE	NY	BAI
HARTWICK COLLEGE	NY	BAI
HILBERT COLLEGE	NY	BAII
HOBART WILLIAM SMITH COLLEGES	NY	BAI
HOUGHTON COLLEGE	NY	BAI
LE MOYNE COLLEGE	NY	BAII
MANHATTANVILLE COLLEGE	NY	BAI
MARYMOUNT COLLEGE	NY	BAII
MARYMOUNT MANHATTAN COLLEGE	NY	BAII
MEDAILLE COLLEGE	NY	BAII
COLLEGE OF MOUNT SAINT VINCENT	NY	BAII
NYACK COLLEGE	NY	BAII
ROBERTS WESLEYAN COLLEGE	NY	BAII
ST FRANCIS COLLEGE	NY	BAII
ST LAWRENCE UNIVERSITY	NY	BAI
SAINT THOMAS AQUINAS COLLEGE	NY	BAII
SARAH LAWRENCE COLLEGE	NY	BAI
SIENA COLLEGE	NY	BAI
SKIDMORE COLLEGE	NY	BAI
SAINT JOSEPHS COLLEGE-MAIN CAMPUS	NY	BAII
TOURO COLLEGE	NY	BAII
UNION COLLEGE	NY	BAI
UTICA COLLEGE OF SYRACUSE UNIVERSITY	NY	BAII
WELLS COLLEGE	NY	BAI
BELMONT ABBEY COLLEGE	NC	BAII
DAVIDSON COLLEGE	NC	BAI
GREENSBORO COLLEGE	NC	BAII
METHODIST COLLEGE	NC	BAII
MONTREAT COLLEGE	NC	BAII

SAINT AUGUSTINES COLLEGE	NC	BAII
ST ANDREWS PRESBYTERIAN COLLEGE	NC	BAI
ANTIOCH COLLEGE	OH	BAI
CEDARVILLE UNIVERSITY	OH	BAII
DEFIANCE COLLEGE	OH	BAII
DENISON UNIVERSITY	OH	BAI
THE UNIVERSITY OF FINDLAY	OH	BAII
HEIDELBERG COLLEGE	OH	BAII
HIRAM COLLEGE	OH	BAI
KENYON COLLEGE	OH	BAI
LOURDES COLLEGE	OH	BAII
MARIETTA COLLEGE	OH	BAII
MOUNT UNION COLLEGE	OH	BAII
MUSKINGUM COLLEGE	OH	BAII
NOTRE DAME COLLEGE OF OHIO	OH	BAII
OHIO DOMINICAN COLLEGE	OH	BAII
OHIO NORTHERN UNIVERSITY	OH	BAII
OHIO WESLEYAN UNIVERSITY	OH	BAI
OTTERBEIN COLLEGE	OH	BAII
UNIVERSITY OF RIO GRANDE	OH	BAII
URSULINE COLLEGE	OH	BAII
WITTENBERG UNIVERSITY	OH	BAI
COLLEGE OF WOOSTER	OH	BAI
OKLAHOMA WESLEYAN UNIVERSITY	OK	BAII
CONCORDIA UNIVERSITY	OR	BAII
GEORGE FOX UNIVERSITY	OR	BAII
LEWIS & CLARK COLLEGE	OR	BAI
NORTHWEST CHRISTIAN COLLEGE	OR	BAII
REED COLLEGE	OR	BAI
WESTERN BAPTIST COLLEGE	OR	BAII
WILLAMETTE UNIVERSITY	OR	BAI
ALBRIGHT COLLEGE	PA	BAI
ALLEGHENY COLLEGE	PA	BAI
DESALES UNIVERSITY	PA	BAII
ALVERNIA COLLEGE	PA	BAII
BRYN MAWR COLLEGE	PA	BAI
BUCKNELL UNIVERSITY	PA	BAI
CEDAR CREST COLLEGE	PA	BAII
CHATHAM COLLEGE	PA	BAI
DELAWARE VALLEY COLLEGE	PA	BAII
ELIZABETHTOWN COLLEGE	PA	BAII
FRANKLIN AND MARSHALL COLLEGE	PA	BAI
GENEVA COLLEGE	PA	BAII
GETTYSBURG COLLEGE	PA	BAI

HAVERFORD COLLEGE	PA	BAI
JUNIATA COLLEGE	PA	BAI
KINGS COLLEGE	PA	BAII
LAFAYETTE COLLEGE	PA	BAI
LEBANON VALLEY COLLEGE	PA	BAII
LYCOMING COLLEGE	PA	BAII
MERCYHURST COLLEGE	PA	BAII
MESSIAH COLLEGE	PA	BAII
MORAVIAN COLLEGE AND THEOLOGICAL SEMINARY	PA	BAI
MUHLENBERG COLLEGE	PA	BAI
NEUMANN COLLEGE	PA	BAII
ROSEMONT COLLEGE	PA	BAII
SETON HILL COLLEGE	PA	BAII
SUSQUEHANNA UNIVERSITY	PA	BAII
SWARTHMORE COLLEGE	PA	BAI
THIEL COLLEGE	PA	BAII
URSINUS COLLEGE	PA	BAI
WASHINGTON & JEFFERSON COLLEGE	PA	BAI
WESTMINSTER COLLEGE	PA	BAI
WILSON COLLEGE	PA	BAII
YORK COLLEGE PENNSYLVANIA	PA	BAII
ROGER WILLIAMS UNIVERSITY	RI	BAII
COKER COLLEGE	SC	BAII
ERSKINE COLLEGE AND SEMINARY	SC	BAI
FURMAN UNIVERSITY	SC	BAI
MORRIS COLLEGE	SC	BAII
NEWBERRY COLLEGE	SC	BAII
PRESBYTERIAN COLLEGE	SC	BAI
AUGUSTANA COLLEGE	SD	BAII
UNIVERSITY OF SIOUX FALLS	SD	BAII
BRYAN COLLEGE	TN	BAII
CUMBERLAND UNIVERSITY	TN	BAII
FREED-HARDEMAN UNIVERSITY	TN	BAII
KING COLLEGE	TN	BAII
LAMBUTH UNIVERSITY	TN	BAII
MARYVILLE COLLEGE	TN	BAII
UNIVERSITY OF THE SOUTH	TN	BAI
TENNESSEE WESLEYAN COLLEGE	TN	BAII
CONCORDIA UNIVERSITY AT AUSTIN	TX	BAII
UNIVERSITY OF DALLAS	TX	BAI
EAST TEXAS BAPTIST UNIVERSITY	TX	BAII
HOWARD PAYNE UNIVERSITY	TX	BAII
HUSTON-TILLOTSON COLLEGE	TX	BAII

LETOURNEAU UNIVERSITY	TX	BAII
MCMURRY UNIVERSITY	TX	BAII
SOUTHWESTERN UNIVERSITY	TX	BAI
TEXAS LUTHERAN UNIVERSITY	TX	BAII
WAYLAND BAPTIST UNIVERSITY	TX	BAII
BENNINGTON COLLEGE	VT	BAI
MARLBORO COLLEGE	VT	BAI
MIDDLEBURY COLLEGE	VT	BAI
BLUEFIELD COLLEGE	VA	BAII
BRIDGEWATER COLLEGE	VA	BAII
EMORY AND HENRY COLLEGE	VA	BAII
EASTERN MENNONITE UNIVERSITY	VA	BAII
FERRUM COLLEGE	VA	BAII
HAMPDEN-SYDNEY COLLEGE	VA	BAI
HOLLINS UNIVERSITY	VA	BAI
RANDOLPH-MACON COLLEGE	VA	BAI
ROANOKE COLLEGE	VA	BAII
SWEET BRIAR COLLEGE	VA	BAI
VIRGINIA WESLEYAN COLLEGE	VA	BAI
WASHINGTON AND LEE UNIVERSITY	VA	BAI
UNIVERSITY OF PUGET SOUND	WA	BAI
WHITMAN COLLEGE	WA	BAI
ALDERSON BROADDUS COLLEGE	WV	BAII
BETHANY COLLEGE	WV	BAI
BELOIT COLLEGE	WI	BAI
CONCORDIA UNIVERSITY-WISCONSIN	WI	BAII
LAWRENCE UNIVERSITY	WI	BAI
MOUNT MARY COLLEGE	WI	BAII
MOUNT SENARIO COLLEGE	WI	BAII
NORTHLAND COLLEGE	WI	BAII
WISCONSIN LUTHERAN COLLEGE	WI	BAII

Appendix E: Correlations for Institutional Quality Variables

Correlations, BAI Institutions						
		Academic Reputation Score	Faculty Student Ratio Average	% students returning for 2nd year	Avg. Total EG Expenditures, 1990-2000	Avg Endowment, 1990-1996
Academic Reputation Score	Pearson Correlation	1.00	-0.53	0.67	0.77	0.76
	Sig. (2-tailed)	.	0.00	0.00	0.00	0.00
	N	120.00	120.00	120.00	120.00	120.00
Faculty Student Ratio Average	Pearson Correlation	-0.53	1.00	-0.24	-0.30	-0.45
	Sig. (2-tailed)	0.00		0.01	0.00	0.00
	N	120.00	120.00	120.00	120.00	120.00
% students returning for 2nd year	Pearson Correlation	0.67	-0.24	1.00	0.62	0.51
	Sig. (2-tailed)	0.00	0.01		0.00	0.00
	N	120.00	120.00	120.00	120.00	120.00
Avg. Total EG Expenditures, 1990-2000	Pearson Correlation	0.77	-0.30	0.62	1.00	0.69
	Sig. (2-tailed)	0.00	0.00	0.00		0.00
	N	120.00	120.00	120.00	120.00	120.00
Avg Endowment, 1990-1996	Pearson Correlation	0.76	-0.45	0.51	0.69	1.00
	Sig. (2-tailed)	0.00	0.00	0.00	0.00	.
	N	120.00	120.00	120.00	120.00	120.00

Correlations, BAII Institutions						
		Academic Reputation Score	Faculty Student Ratio Average	% students returning for 2nd year	Avg. Total EG Expenditures, 1990-2000	Avg Endowment, 1990-1996
Academic Reputation Score	Pearson Correlation	1.00	-0.21	0.43	0.39	0.50
	Sig. (2-tailed)	.	0.01	0.00	0.00	0.00
	N	167.00	167.00	167.00	167.00	167.00
Faculty Student Ratio Average	Pearson Correlation	-0.21	1.00	-0.10	-0.02	-0.18
	Sig. (2-tailed)	0.01	.	0.22	0.76	0.02
	N	167.00	167.00	167.00	167.00	167.00
% students returning for 2nd year	Pearson Correlation	0.43	-0.10	1.00	0.44	0.23
	Sig. (2-tailed)	0.00	0.22	.	0.00	0.00
	N	167.00	167.00	167.00	167.00	167.00
Avg. Total EG Expenditures, 1990-2000	Pearson Correlation	0.39	-0.02	0.44	1.00	0.32
	Sig. (2-tailed)	0.00	0.76	0.00	.	0.00
	N	167.00	167.00	167.00	167.00	167.00
Avg Endowment, 1990-1996	Pearson Correlation	0.50	-0.18	0.23	0.32	1.00
	Sig. (2-tailed)	0.00	0.02	0.00	0.00	.
	N	167.00	167.00	167.00	167.00	167.00

Appendix F: Regression Results, Grouped Data

Coefficients

N=287 R^2=.561		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
1	(Constant)	1831.352	1136.969		1.611	.108
	Religious Affiliation	-2369.649	350.911	-.329	-6.753	.000
	Average Enrollment, 1990-2000	-.240	.185	-.058	-1.296	.196
	Minority Percentage Avg	-2332.616	1086.711	-.094	-2.146	.033
	Institution Located in South	-828.310	427.736	-.098	-1.936	.054
	Institution Located in Midwest	-213.001	364.206	-.031	-.585	.559
	Institution Located in West	-42.806	479.621	-.004	-.089	.929
	Coed	413.771	457.503	.038	.904	.367
	Age	12.917	3.314	.177	3.898	.000
	Admissions Competitiveness Rating	1822.979	299.296	.352	6.091	.000
	Avg Endowment 1990-1996	1.481E-04	.000	.133	2.263	.024
	Tuition Discount Rate 1990	-3789.153	1697.023	-.101	-2.233	.026

a Dependent Variable: NTRPS90

Coefficients

N=287 R^2=.615		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
1	(Constant)	1933.048	1248.508		1.548	.123
	Religious Affiliation	-2159.097	376.117	-.263	-5.740	.000
	Average Enrollment, 1990-2000	-.307	.197	-.066	-1.561	.120
	Minority Percentage Avg	-2636.030	1170.135	-.095	-2.253	.025
	Institution Located in South	-1035.919	460.380	-.108	-2.250	.025
	Institution Located in Midwest	-373.441	385.539	-.048	-.969	.334
	Institution Located in West	506.909	507.003	.044	1.000	.318
	Coed	935.172	495.999	.076	1.885	.060
	Age	14.063	3.671	.168	3.831	.000
	Admissions Competitiveness Rating	2399.123	333.772	.395	7.188	.000
	Avg Endowment 1990-1996	2.630E-04	.000	.211	3.741	.000
	Tuition Discount Rate 1995	-6101.615	1587.746	-.169	-3.843	.000

a Dependent Variable: NTRPS95

Coefficients

N=287 R^2=.442		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
1	(Constant)	7170.256	2162.420		3.316	.001
	Religious Affiliation	-3663.915	652.906	-.309	-5.612	.000
	Average Enrollment, 1990-2000	-.669	.337	-.097	-1.984	.048
	Minority Percentage Avg	-4934.217	2051.109	-.120	-2.406	.017
	Institution Located in South	-1566.566	798.327	-.112	-1.962	.051
	Institution Located in Midwest	-785.346	667.645	-.068	-1.176	.241
	Institution Located in West	491.770	882.553	.029	.557	.578
	Coed	699.396	851.171	.039	.822	.412
	Age	17.180	6.320	.142	2.718	.007
	Admissions Competitiveness Rating	2665.452	552.082	.312	4.828	.000
	Avg Endowment 1990-1996	8.299E-05	.000	.045	.686	.493
	Tuition Discount Rate 2000	-12199.971	2406.882	-.259	-5.069	.000

a Dependent Variable: NTRPS00

Coefficients

N=287 R^2=.730		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
1	(Constant)	-5735136.625	2025559.253		-2.831	.005
	Religious Affiliation	-2498744.099	625162.878	-.153	-3.997	.000
	Average Enrollment, 1990-2000	4397.803	329.548	.465	13.345	.000
	Minority Percentage Avg	-5649753.088	1936022.954	-.100	-2.918	.004
	Institution Located in South	-1510742.955	762029.527	-.078	-1.983	.048
	Institution Located in Midwest	-696463.027	648848.463	-.044	-1.073	.284
	Institution Located in West	-669609.578	854465.224	-.028	-.784	.434
	Coed	925804.668	815061.157	.038	1.136	.257
	Age	18314.610	5903.768	.110	3.102	.002
	Admissions Competitiveness Rating	2926134.310	533208.327	.249	5.488	.000
	Avg Endowment 1990-1996	.606	.117	.240	5.200	.000
	Tuition Discount Rate 1990	-8528000.800	3023319.304	-.100	-2.821	.005

a Dependent Variable: NTR90

Coefficients

N=287 R^2=.767		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
1	(Constant)	-7936832.992	2438243.199		-3.255	.001
	Religious Affiliation	-2697413.638	742317.024	-.129	-3.634	.000
	Average Enrollment, 1990-2000	6709.039	389.416	.553	17.228	.000
	Minority Percentage Avg	-5227629.809	2328768.200	-.072	-2.245	.026
	Institution Located in South	-1684031.386	909961.404	-.068	-1.851	.065
	Institution Located in Midwest	-1221259.750	764084.479	-.060	-1.598	.111
	Institution Located in West	-62330.210	1005428.573	-.002	-.062	.951
	Coed	1630201.767	969497.312	.052	1.681	.094
	Age	14435.168	7119.409	.068	2.028	.044
	Admissions Competitiveness Rating	3709977.451	630792.490	.246	5.881	.000
	Avg Endowment 1990-1996	.730	.138	.226	5.292	.000
	Tuition Discount Rate 1995	-8416402.006	3110548.822	-.090	-2.706	.007

a Dependent Variable: NTR95

Coefficients

N=287 R^2=.742		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
1	(Constant)	-7850701.503	3081698.046		-2.548	.011
	Religious Affiliation	-3640156.658	930467.073	-.146	-3.912	.000
	Average Enrollment, 1990-2000	7979.812	480.716	.554	16.600	.000
	Minority Percentage Avg	-7733657.531	2923067.124	-.090	-2.646	.009
	Institution Located in South	-2628630.843	1137708.531	-.090	-2.310	.022
	Institution Located in Midwest	-2219001.828	951470.815	-.092	-2.332	.020
	Institution Located in West	-270988.623	1257739.474	-.008	-.215	.830
	Coed	3002051.001	1213017.191	.080	2.475	.014
	Age	18692.200	9006.789	.074	2.075	.039
	Admissions Competitiveness Rating	4735298.877	786780.115	.264	6.019	.000
	Avg Endowment 1990-1996	.484	.172	.126	2.807	.005
	Tuition Discount Rate 2000	-13766094.546	3430085.381	-.139	-4.013	.000

a Dependent Variable: NTR00

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