Institutional Grants: Investing in Student Retention and Graduation

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This study examines how institutional expenditures and grants (student financial aid) relate to retention and graduation. It looks at this relationship over a 10-year period and examines differences between institutions with low- and high-admissions selectivity standards. In general, expenditures for institutional grants positively contributed to retention and graduation rates except at high-selectivity institutions, where institutional grants did not significantly contribute to retention and graduation rates.

One of the most difficult challenges facing prospective and current college students is how to accumulate sufficient resources to pay for their postsecondary education. Private institutions have responded to this problem, in part, through tuition reduction (discounting) programs (Redd, 2000; Davis, 2003). State and federal governments have instituted loan programs (Heller, 2001) and special individualized savings programs (Ifill & McPherson, 2004) have been facilitated through changes to the federal tax code. Taken together, these initiatives have, to some extent, relieved many students and their parents of having to cover fully the increasing costs of higher education. The consequence is that more than two-thirds of full-time undergraduate students receive financial aid from the federal government, the states, and their institutions (American Council on Education, 2004). But in spite of these efforts, students from low-income families pay a greater percentage of their incomes to tuition than do students from high-income families (Hill, Winston, & Boyd, 2004).

Perhaps because the cost of higher education has increased at rates greater than the consumer price index (Choy, 2004), the public continues to scrutinize closely the financial decisions of institutional leaders (Stringer, Cunningham, Merisotis, & O'Brien, 1999). At least two members of Congress have characterized the situation as a cost crisis in a recent report (Boehner & McKeon, 2003). Increasingly, institutions are being pressured to demonstrate that they are using resources effectively (Alexander, 2000). First-year retention (i.e., the proportion of students who continue their second year of postsecondary education at the same institution where they completed their first year) and six-year graduation rates are measures commonly used to determine institutional effectiveness (Burke, 1998).

A significant amount of research has been conducted to determine factors that lead to student retention and graduation.

However, most of these studies focus on student attributes such as academic and social skills, motivation, and commitment (Tinto, 1993). Fewer studies have examined how institutional attributes, such as organizational behavior and culture, are related to retention and graduation rates.

This study is designed to explore how a particular organizational behavior—dedicating institutional resources to fund financial aid grants to students—affects graduation and retention rates at private, non-profit baccalaureate institutions of higher education. It examines the relationship between institutional expenditures related to institutional grants (i.e., student financial aid) and retention and graduation rates at private Baccalaureate Colleges - Liberal Arts and Baccalaureate Colleges - General (hereafter Baccalaureate Liberal Arts and General) as defined by the Carnegie Classification system (Carnegie Foundation, 2002).

The analyses were part of a more comprehensive investigation that examined how institutional expenditures for instruction, academic support, student services, institutional support, and institutional grants related to retention and graduation. However, that research project revealed interesting results specifically pertaining to institutional grants, which are highlighted in this report.

The study had two goals: to understand the relationship between expenditures for institutional grants and retention and graduation rates during a 10-year period (1992-2002), and to examine the influence of institutional selectivity on the relationship between institutional expenditures on grants and retention and graduation rates. Expenditures were viewed from two perspectives:

1. How the *amounts* of money spent per student on institutional grants relate to student retention and graduation rates at private Baccalaureate Liberal Arts and General colleges and universities.

2. How the *percentages* of institutional expenditures devoted to institutional grants relate to student retention and graduation rates at private Baccalaureate Liberal Arts and General colleges and universities.

Theoretical Framework

This study examines how organizational behavior might affect students' persistence to graduation. Berger (1997) recognized that "few studies examine how facets of organizational behavior affect undergraduate students" (p. 4). He later added, "research focusing on the impact of college on students generally ignores organizational behavior as a source of influence" (Berger, 2000, p. 178).

The most common theories related to retention have focused on students' experiences once they are enrolled in college. A foundational theory of this type is Tinto's (1993) interactionalist theory of student departure. Tinto's theory ex-

amined the relationship between a student and his/her environment and its impact on student persistence. Tinto proposed that the more students interact with their academic and social environments, the more likely they are to persist. Tinto also ascertained that students' perceptions of their acceptance and involvement in their environment were just as influential as their actual involvement.

Berger and Braxton (1998) elaborated on Tinto's (1993) interactionalist theory of student departure by proposing that organizational characteristics within institutions may enhance or detract from a student's ability to get involved, thus affecting retention and graduation. Berger and Braxton examined student background characteristics, institutional commitment, organizational attributes, and social integration, and the impact of these variables on student persistence. The authors found that such organizational attributes had direct effects on student satisfaction and indirect effects on students' intent to persist, both of which can influence student persistence.

Although Tinto's theory views retention from the individual student perspective, he acknowledged the importance of studying organizational behavior because it "necessarily impact (s) on the satisfaction of all members within the organization, students as well as faculty and staff" (Tinto, 1993, p. 89). Braxton, Sullivan, and Johnson (1997) reiterated this belief, stating that organizational behavior is an important way to enhance a student's integration to his or her institution: "The environmental perspective, and specifically the economic and organizational constructs, appears to offer the greatest potential for future integrative efforts" (p. 156).

Examining retention and graduation rates through organizational behavior contributes significant pieces to the student departure puzzle (Braxton, 2002). Berger's (1997) research on the relationship between organizational behavior and community service and humanistic values verified that organizational behavior is a critical framework in which to study student outcomes. Subsequently, Berger (2001-2002) stated, "…the organizational perspective is an appropriate framework for gaining useful insights into how undergraduate retention can be improved on college and university campuses" (p. 3).

Institutional Grants

Institutions significantly vary in the amounts of and the patterns in which they allocate money. In a study of 268 institutions, Bowen (1980) delineated differences in institutional expenditures and found that institutions varied widely in how they allocated their resources. Even institutions that were similar in size and mission reported vast differences in their resource allocation patterns.

NCES (2002a) has collected longitudinal data on educational and general expenditures for institutions of higher education, which make it possible to observe trends in institutional

expenditures. Since 1980, the percentages of expenditures devoted to the various subgroups (instruction, academic support, etc.) have changed (NCES, 2002a). For instance, in 1980, 32.4% of an institution's educational and general expenditures were devoted to instruction. By 1996, the percentage spent on instruction dropped to 30.4%. In the same timeframe, the percentage of expenditures devoted to academic support increased from 6.7% to 7.0%, although library expenditures declined (2.7% to 2.3%). However, the most significant change in expenditures was in institutional grants. From 1980 to 1995, the percentages devoted to institutional grants almost doubled, from 3.9% to 6.9% (NCES, 2002a). Cunningham, Wellman, Clinedinst & Merisotis (2001) analyzed institutional expenditures at all colleges and universities from 1988-89 to 1995-96 and found that institutional grants were one of the fastest growing expenditure categories.

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A significant amount of research has illustrated that student financial aid contributes to retention (St. John, Cabrera, Nora, & Asker, 2000). Other studies have compared different types of financial aid and found that institutional grants more significantly affect retention than loans (Astin, 1993; Perna, 1998).

Retention and Graduation - Institutional Selectivity

This study was designed to determine if there is a difference between highly selective and less selective institutions in terms of the relationship between their institutional expenditures for grants and their retention and graduation rates. Institutional undergraduate admissions selectivity, an important dimension of this study, is a measure of the competitiveness of an institution's admissions policies, which are largely defined by its standards for students' academic ability (Barron's, 2000). Highly selective institutions require that incoming students have higher scores on standardized college admissions tests, such as the ACT and SAT; higher high school grade point averages (GPAs); and a higher class rank than less selective institutions (Barron's, 2000). A substantial amount of research has concluded that students with higher admissions test scores and high school GPAs are more likely to persist in college than students with lower test scores or high school GPAs. In a comprehensive study of 8,000 students, Astin, Korn, & Green (1987) found that SAT scores and high school GPA were correlated with retention and graduation rates. Levitz, Noel, and Richter (1999) examined the relationship between the average SAT and ACT scores of incoming students at institutions and retention and graduation rates. They found a direct relationship between average SAT scores and retention and graduation rates similar to the studies cited earlier. The higher the composite SAT scores of the incoming class, the higher the institution's retention and graduation rates (Levitz, et al, 1999.). Levitz and others' examination of the mea-

sure of average institutional SAT/ACT composite scores is similar to measures of institutional selectivity because institutional selectivity is highly correlated with SAT/ACT composite scores.

The results of these studies highlight the relationship between students' academic ability and retention and graduation rates. Institutions that enroll students with high academic ability have high retention and graduation rates. Because institutional selectivity primarily relies on measures of academic ability, it can be assumed that an institution with a high selectivity rating will enroll students with high academic ability, who are, in turn, more likely to persist toward graduation (Mayer-Foulker, 2002).

Purpose of the Study

This study addressed two research questions:

1. Did the amount of money and percentage of money devoted to institutional grants significantly predict first-year retention and six-year graduation rates in 1992, 1997, and 2002?
2. For institutions with differing levels of institutional selectivity, did the amount and percentage of institutional expenditures for institutional grants predict first-year retention and six-year graduation rates?

Method

Spending on institutional grants was the independent variable for this study. Institutional grants were defined as the "amount of money awarded to students from restricted and unrestricted institutional resources for the purpose of student aid, such as scholarships or fellowships funded by gifts or endowment return" (NCES, 2002b, p. 7).

A study of institutional expenditures also must consider student enrollment (Stringer, et al., 1999). For instance, an institution that spends $500,000 on grants and has an enrollment of 500 will spend $1,000 per student on average, whereas an institution that spends $500,000 on grants but has an enrollment of 5,000 will spend $100 per student. Differences in allocation amounts per student may account for differences in productivity (Bowen, 1980). Therefore, as Stringer, et al. (1999) recommended, "Even when cost analysis is limited to educational function, the basis for student units must be determined" (p. 11).

For this study, student units were defined as the total number of full-time equivalent (FTE) undergraduates enrolled in a specified year. FTE factors in differences between students who are enrolled part-time and full-time (see Stringer, et al., 1999). When the six-year graduation rate (GRAD) was the dependent variable, average institutional expenditures on grants for a six-year time period were calculated. For instance, for 2002, average expenditures were calculated by first calculating the expenditures per student on grants for 1996 to 2002 and then dividing by six to calculate average grant expenditure per student.

In addition to examining the amount of institutional expenditures, this study also considered the percentages of resources that are allocated to grants. This latter approach is important for two reasons. One, solely examining costs does not provide a complete picture of resource allocation priorities and practices. For example, if an institution increased its spending on grants from one year to the next by 2%, but increased its overall expenditures by 3%, then it would be devoting a smaller percentage of its resources to grants, a slight de-emphasis in grants as an institutional priority.

A second reason to examine percentages of institutional expenditures is that it attempts to level the playing field between affluent and less affluent institutions and provides more information within the leader's control (Bowen, 1980). For example, a wealthy institution that can spend $10,000 per student on grants will have the ability to accomplish more than an institution that spends $5,000 per student. Based on Bowen's laws of higher education, it is highly unlikely that less affluent institutions will ever be able to spend as much per student as their wealthy counterparts. However, less affluent institutions potentially could achieve similar, if not better, outcomes than their counterparts who have more financial resources if they were able to dedicate their limited resources strategically in areas that affect retention and graduation.

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Sampling

A target population consisting of all private Baccalaureate Liberal Arts and General institutions as defined by the 2000 Carnegie Classification taxonomy (2002) was chosen for this study. This set included 466 institutions.

These institutions were chosen for three reasons. One, Baccalaureate Liberal Arts and General institutions focus on undergraduate education. Other types of institutions, such as those categorized as Research and Doctoral, educate both graduate and undergraduate students (Carnegie Foundation, 2002). Because there are substantial differences between the costs and experiences of graduate and undergraduate education (Stringer, et al., 1999), Bowen (1980) recommended that researchers distinguish between graduate and undergraduate expenditures.

Second, the relatively small enrollments of Baccalaureate Liberal Arts and General institutions are more sensitive to fluctuations in student numbers than their counterparts at larger Doctoral or Research universities. The loss of even a few students can be translated into thousands of dollars of lost revenue that may lead to negative results for institutional quality (Levitz, et al., 1999). Consequently, institutional leaders at Baccalaureate Liberal Arts and General institutions have a continued and justifiable concern for improving retention and graduation rates.

Third, little is known about the relationship of resource allocation and expenditures at Baccalaureate Liberal Arts and General institutions Many do not have the financial or personnel resources to invest in wide-scale research that examines the relationship between resource allocation and retention (Taylor & Massy, 1996).

Although private institutions may receive funding from state governments, in general they tend to have more direct control in determining institutional expenditures than their public counterparts.

Private rather than public institutions were the focus of this study in an attempt to minimize the influence of state funding and control. Although private institutions may receive funding from state governments, in general they tend to have more direct control in determining institutional expenditures than their public counterparts (Bowen, 1980).

Public institutions also were excluded for methodological and practical reasons. In their recommendations for research using the Integrated Postsecondary Education Data System (IPEDS) database, researchers at the National Center of Education Statistics suggested that public and private not-for-profit institutions be modeled separately because they operate in distinct circumstances (NCES, 2002a). Moreover, because there are only 76 public Baccalaureate Liberal Arts and General institutions, (Carnegie Foundation, 2002), developing a new model using this sample size would have only limited applicability to a substantial number of institutions of higher education.

Instrumentation and Data Collection

Three instruments were used to collect data for this study: IPEDS surveys of postsecondary institutions, which are designed and administered by the U.S. Department of Education's National Center for Education Statistics; *US News and World Report*'s "America's Best Colleges"; and *Barron's Profiles of American Colleges of 2001* (Barron's, 2000).

The IPEDS database is available on-line at www.nces.ed.gov/ipeds. This study uses data from the IPEDS Institutional Characteristics Survey, Finance Survey, and Fall Enrollment Survey. IPEDS was used to identify private Baccalaureate Liberal Arts and General institutions, institutional expenditures on grants per student, and percentage of institutional expenditures on grants for 1992, 1997, and 2002 (NCES 2002b; NCES 1997; NCES, 1992).

US News data on retention and graduation rates for 1992, 1997, and 2002 were used for this report (*US News*, 1993, 1998, 2003). *Barron's Profiles of American Colleges of 2001* (Barron's, 2000) was used to determine institutional selectivity. Barron's ranks institutions on a selectivity scale from most competitive to least competitive. Institutions were coded from 1- 6 with 1 being least competitive and 6 being most competitive. This approach has been used in other studies where selectivity is an important variable (see, for example, Kuh & Pascarella, 2004).

Data Analysis

Descriptive and inferential statistics were used to analyze the data and make inferences about the relationship between institutional expenditures and retention and graduation rates.

For research question 1, the sample consisted of Baccalaureate Liberal Arts and General institutions that provided data on institutional expenditures, retention and graduation rates for 1992, 1997, and 2002. Four data sets were developed for each year (1992, 1997, and 2002). The first data set included the amount of institutional grants per student and first-year retention rates of private Baccalaureate General and Liberal Arts institutions. The second data set included the amount of institutional grants per student and six-year graduation rates. The third data set included the percentage of institutional grant expenditures and first-year retention rates. The fourth, for each year, examined the percentage of institutional grant expenditures and six-year graduation rates. Standard multiple regression was conducted to determine the extent to which the independent variable predicted the dependent variables.

Prior to conducting the multiple regression analysis, the data set was examined for missing data and outliers (Mendenhall & Sincinch, 1996). Institutions that did not provide complete data for the research question being examined were eliminated. Data also were scanned for univariate and multivariate outliers (Mertler & Vanatta, 2001).

In addition, since multiple regression methods were used, data were tested to ensure that three general assumptions were met: normality, linearity, and homoscedasticity (Mertler & Vanatta, 2001). The assumption of normality in multiple regression is the "extent to which all observations in the sample for all combinations of variables are distributed normally" (Mertler & Vannatta,p. 30). Because this is difficult to assess (see Stevens, 1996), this study utilized a procedure recommended by Mertler and Vannatta: each variable was tested for normality through the use of histograms (i.e., instruction, academic support, retention, etc.). When it was assessed that each variable had a normal distribution, scatter plots for each pair of variables (i.e., instruction and retention) were run to assess normality.

The assumption of linearity posits that a straight-line relationship exists between two variables or a combination of variables (Tabachnick & Fidell, 1983). Homoscedasticity is the assumption that the "variability in scores on one variable is roughly the same for all values of the other variables" (Tabachnick & Fidell, p. 81). Although several methods could be used to test these assumptions, this study evaluated linearity and homoscedasticity by running scatter plots of residuals for each data set (Tabachnick & Fidell). Data transformation techniques were employed to restore any violations of linearity. Variance-stabilizing techniques were employed to restore any violations of homoscedasticity (Mendenhall & Sincinch, 1996). SPSS 11.5

was used to pre-screen the sample for missing data, test assumptions related to the statistical methods, and perform multiple regression.

Research question 2 examined whether there were differences in the relationship between institutional grant expenditures and retention and graduation rates at institutions with differing levels of institutional selectivity. Institutions were categorized into six different levels of institutional selectivity. Ideally, the most thorough approach to answering this question would be to use standard multiple regression to develop prediction models for each level of institutional selectivity. However, conducting a multiple regression analysis on each subgroup was not feasible because of the low numbers within some of the subgroups (Mertler & Vanatta, 2001).

To overcome the limitations imposed by inadequate sample sizes, it was necessary to merge some of the subgroups into larger groups using discriminant analysis. One of the purposes of discriminant analysis is to "determine dimensions that serve as the basis for reliably classifying subjects into groups" (Mertler & Vanatta, 2001, p. 281). As it relates to this study, discriminant analysis was used to reliably classify smaller subgroups of institution into larger groups.

Classification results of predicted group membership were analyzed in two steps. First, results were reviewed to identify the predicted levels of institutional selectivity for each original level of selectivity. Second, results were examined across all levels of institutional selectivity to identify any similarities and differences among the levels of selectivity. Based on these patterns, the six subgroups were merged into two larger subgroups. Standard multiple regression was then performed on each subgroup.

Findings

The first research question examined if the amount and percentage of money devoted to institutional grants significantly predicted first-year retention and six-year graduation rates in 1992, 1997, and 2002.

Amount of Expenditures and Retention Rates: 1992, 1997, 2002

Standard multiple regression was conducted to determine the accuracy of institutional expenditures per student predicting first-year retention rates. The results indicated that institutional grants did not significantly contribute to retention rates in 1992 but significantly contributed to retention rates in 1997: $\beta = .14$, $t(250) = 2.47$, $p < .05$ and in 2002: $\beta = .22$, $t(250) = 4.16$, $p < .001$.

Amount of Expenditures and Graduation Rates: 1992, 1997,2002

Institutional grants significantly contributed to graduation rates in 1992: $\beta = .11$, $t(270) = 2.01$, $p < .05$; 1997: $\beta = .24$, $t(270) = 4.94$, $p < .001$, and in 2002: $\beta = .20$, $t(270) = 3.87$, $p < .001$.

Percentage of Institutional Expenditures and Retention Rates: 1992, 1997, 2002

Percentage of institutional grants significantly contributed to retention rates in 1992: $\beta = .23$, $t(258) = 4.17$, $p < .001$; 1997: $\beta = .16$, $t(258) = 2.97$, $p < .01$; and 2002: $\beta = .17$, $t(258) = 2.97$, $p < .01$.

Percentage of Institutional Expenditures and Graduation Rates: 1992, 1997, 2002

Percentage of institutional grants significantly contributed to graduation rates in 1992: $\beta = .27$, $t(273) = 5.33$, $p < .001$; 1997: $\beta = .30$, $t(273) = 6.36$, $p < .001$; and 2002: $\beta = .21$, $t(273) = 4.06$, $p < .001$.

The means, standard deviations, and regression coefficients for institutional grants are presented in Table 1.

The second research question asked if institutional selectivity influenced the relationship between institutional grants and retention and graduation rates. For research question 2, discriminant analysis techniques first were used to classify institutions into two subgroups: high-selectivity and low-selectivity. Standard multiple regression was performed on each subgroup to determine if institutional expenditures, specifically institutional grants, significantly predicted retention and gradua-

Table 1
Institutional Grants for All Models: 1992, 1997, and 2002
Means, Standard Deviations, and Regression Coefficients

Model	Mean	SD	*B*	*SE B*	β
Institutional Grants per Student					
Retention (*n*=262)					
1992	$2452.39	1320.29	3.08	2.41	.08
1997	$4422.86	2315.66	4.77	1.94	.14*
2002	$5869.39	2715.70	7.77	1.87	.22***
Graduation (*n*=276)					
1992	$1799.44	983.61	6.77	3.37	.11*
1997	$3328.35	1768.62	14.20	2.87	.24***
2002	$5094.86	2563.69	10.03	2.59	.20***
Percentage of Institutional Grants					
Retention (*n*=264)					
1992	15.18%	5.75	13.12	3.14	.23***
1997	22.25%	9.96	6.82	2.30	.16**
2002	24.05%	9.48	7.62	2.56	.17**
Graduation (*n*=279)					
1992	13.28%	5.06	23.29	4.37	.27***
1997	17.51%	5.39	32.29	5.07	.30***
2002	23.30%	9.65	13.57	3.45	.21***

**p<.05. **p<.01. **p≤.001.*

tion rates for high-selectivity and low-selectivity institutions. Low-selectivity and high-selectivity institutions differed on their average first-year retention and six-year graduation rates. Low selectivity institutions had an average retention rate of approximately 70% and high-selectivity institutions had an average retention rate of approximately 85%. Low-selectivity institutions had an average graduation rate of approximately 47% compared to 71% for high-selectivity institutions.

For low-selectivity institutions, the amount of institutional grants per student significantly contributed to retention rates ($\beta = .32$, $t(224) = 4.93$, $p < .001$), but for high-selectivity institutions the amount of institutional grants per student did not significantly contribute to retention rates. The amount of institutional grants per student significantly contributed to graduation rates for low-selectivity institutions ($\beta = .28$, $t(220) = 4.10$, $p < .001$), but not for high-selectivity institutions.

The results were similar when percentages of expenditures were examined. For low-selectivity institutions, the percentage of institutional grants significantly contributed to retention rates ($\beta = .34$, $t(223) = 4.79$, $p < .001$) and for graduation rates ($\beta = .32$, $t(218) = 4.66$, $p < .001$). However, the percentage of institutional grants did not significantly contribute to retention rates or graduation rates for high-selectivity institutions. Table 2 provides the means, standard deviations and regression coefficients for institutional grants for all models.

Table 2
Student Retention and Six-Year Graduation Rates and Grants per Student for Low-Selectivity and High-Selectivity Institutions Means, Standard Deviations, and Regression Coefficients

Model	Mean	SD	*B*	*SE B*	β
Institutional Grants per Student					
Retention					
Low Selectivity (*n*=229)	$4233.82	2251.54	9.52	1.93	.32***
High Selectivity (*n*=144)	$7447.94	2517.56	5.69	2.92	.15
Graduation					
Low Selectivity (*n*=226)	$3712.74	1988.27	12.98	3.16	.28***
High Selectivity (*n*=142)	$6723.23	2225.86	1.92	5.05	.03
Percentage of Institutional Grants					
Retention					
Low Selectivity (*n*=229)	22.15%	10.28	10.67	2.23	.34***
High Selectivity (*n*=147)	24.69%	9.44	.10	3.27	.00
Graduation					
Low Selectivity (*n*=224)	21.34%	9.71	17.02	3.65	.32***
High Selectivity (*n*=148)	24.64%	9.08	-3.09	5.53	-.05

**p<.05. **p<.01. **p≤.001.*

Discussion and Implications

A substantial increase in the amount of money spent per student on institutional grants and in the percentage of expenditures devoted to institutional grants occurred between 1992 and 2002. Spending on institutional grants per student more than doubled from 1992 to 2002 and the percentage of expenditures increased approximately 10% in the same period. These patterns reflect current trends in higher education (Cunningham et al., 2001).

It has been well documented that student financial aid is critical to a student's persistence toward graduation (Perna, 1998; St. John et al., 2000), and many of the analyses in this study reiterate this conclusion: institutional grants significantly contribute to retention and graduation rates. A closer look at the results, however, suggests that this conclusion has several dimensions. For low-selectivity institutions, expenditures dedicated to institutional grants significantly contributed to retention and graduation, but for high-selectivity institutions, institutional grants did not significantly contribute to retention and graduation rates. High-selectivity institutions dedicated a larger dollar amount of funds to institutional grants than low-selectivity institutions. High-selectivity institutions also dedicated a higher percentage of their overall expenditures to institutional grants. Nevertheless, institutional grants did not significantly contribute to retention or graduation rates at high-selectivity institutions.

What accounts for this difference? Variations between low-selectivity and high-selectivity institutions may help explain this finding. Because high-selectivity colleges and universities usually cost significantly more than low-selectivity institutions (McPherson & Winston, 1996), high-selectivity institutions tend to enroll more students from high-income families (Lee, 2001). Hearn's study of 1,288 first-year students discovered that low-income students are more likely to attend low-selectivity institutions regardless of their academic ability (Hearn, 1991).

In Hill, Winston, & Boyd's (2004) report, "Affordability: Family Incomes and Net Prices at Highly Selective Private Colleges and Universities," the authors state that at 28 of the most highly selective schools in the United States, only 10% of the students came from low-income families. They summarized, "given the high correlation between family income and academic preparation, most of the students at these (high-selectivity) schools are from high-income families" (Hill, et al., p.7). They also found that although low-income students are paying dramatically lower prices at high-selectivity institutions than their higher-income peers, families of low-income students still pay 49% of their yearly total income to tuition and fees, compared with 21% for higher-income students. Therefore, it can be inferred that since low-selectivity institutions are more likely to enroll low-income students, and because low-income families

have a greater need for financial assistance than their high income counterparts, institutional grants play a more critical role in the retention and graduation at low-selectivity institutions than high-selectivity institutions.

Changes in financial aid policy (i.e., the introduction of unsubsidized loans) in the past 10 years, as well as significant increases in tuition have affected low-income students the most significantly (Choy, 2000). With little hope that these trends will be reversed, low-income students increasingly will rely on institutional grants to pay for college expenses. Institutional leaders need to be cognizant of the impact of financial aid on various student populations. High-income students may experience some financial stress if their financial aid is limited, but low-income students may be forced to alter their educational plans (e.g., enroll in their second– or third-choice institution strictly because of the cost of attendance) if they do not receive adequate financial aid.

From a practical standpoint, the results provide some guidance in terms of how institutions ought to deploy their existing resources.

From a practical standpoint, the results provide some guidance in terms of how institutions ought to deploy their existing resources. If increasing retention and graduation rates is the primary objective of the reallocation, as institutions are able to reallocate their existing budgets, low-selectivity colleges would be well advised to put additional resources into institutional grants, but such would not be the case for their high-selectivity counterparts. Similarly, fundraising campaigns at low-selectivity colleges could be directed at increasing the portion of the college's resources dedicated to scholarships and institutional grants, if the purpose of the campaign is to improve retention and graduation. Perhaps for other reasons, such as maintaining a competitive position with peers, high-selectivity institutions might orient fundraising campaigns toward raising additional scholarship money; however, putting new resources into scholarships and institutional grants does not appear to affect retention or graduation rates significantly. This does not discount the value of these efforts for other purposes, such as diversifying the student body by socioeconomic status or other student characteristics, but primarily, investment by highly selective colleges in scholarships and institutional grants will not result in significantly improved retention and graduation rates.

The reason institutional grants have a potent effect on retention rates at low-selectivity colleges may be explained, in part, by Tinto's theory of student departure (1993). As mentioned earlier, low-selectivity colleges tend to enroll students from less affluent families than high-selectivity institutions. At private not for profit doctoral and liberal arts institutions, students from low-, low-middle-, and middle-income families are more likely to work while enrolled in college than students from high-middle and high-income families, and if they do work, they work more hours (NCES, 2003). Time spent working detracts from the time students could devote to being engaged in out of

class experiences on campus that have linked positively to persistence and graduation rates (See Kuh, Kinzie, Schuh & Whitt, 2005), such as participating in leadership development opportunities, tutoring other students, or serving as an undergraduate research assistant. Institutional grants, presumably, lessen the necessity for students to work long hours. This allows them more time to engage in campus life, which contributes to improved chances for completing a baccalaureate degree.

Limitations and Recommendations for Further Research

As with virtually any study, time, place, and subjects bind the findings of this study. This study looked at private baccalaureate institutions. Replicating it with private comprehensive or doctoral universities might yield different findings. Similarly, this study makes no claims about the effect of institutional grants at public institutions, regardless of their mission. Community colleges typically enroll students from modest economic backgrounds. Would increasing the amount of institutional grants enhance persistence at such institutions? We do not know but we think this question has merit.

While we assert that institutional grants reduce the amount of time that students from low-income families are forced to work, more in-depth examination of how institutional grants change student behavior is worthy of additional study. If such grants actually do change student behavior, then the potency of the assertion that institutional grants increase campus involvement for low-income students is enhanced. Additionally, this study does not examine the issue of how student from low-income families are affected by institutional grants at highly selective institutions. Astin (1993) recommends that institutions provide this form of financial support. Can the issue be parsed to such a degree that the influence of institutional grants on students from low-income families can be measured? We think that this question also merits additional investigation.

References

Alexander, F. K. (2000). The changing face of accountability: Monitoring and assessing institutional performance in higher education. *Journal of Higher Education 71,* 411-430.

American Council on Education. (2004). *Putting college costs into context*. Washington, DC: Author.

Astin, A.W. (1993). *What matters in college? Four critical years revisited*. San Francisco: Jossey-Bass.

Astin, A.W., Korn, W., & Green, K. (1987). Retaining and satisfying students. *Educational Record, 68* (1), 36-42.

Barron's Educational Series (2000). *Barron's profiles of American Colleges of 2001* (24th ed.). Hauppauge, NY: Barron's Educational Series.

Berger, J. B. (2001-2002). Understanding the organizational nature of student persistence: Empirically-based recommendations for practice. *Journal of College Student Retention, 3* (1), 3-21.

Berger, J.B. (1997). *The relationship between organizational behavior at colleges and student outcomes: Generating a quantitatively grounded theory*. Unpublished doctoral dissertation, Vanderbilt University.

Berger, J. B., & Braxton, J. M. (1998). Revising Tinto's interactionalist theory of student departure through theory elaboration: Examining the role of organizational attributes in the persistence process. *Research in Higher Education, 39* (2), 103-119.

Boehner, J. A., & McKeon, H. P. (2003). *The cost crisis: A Congressional analysis of college costs and implications for America's higher education system.* Washington, DC: US House of Representatives.

Bowen, H.R. (1980). *The costs of higher education: How much do colleges and universities spend per student and how much should they spend?* San Francisco: Jossey-Bass.

Braxton, J. M. (2002). Introduction: Reworking the student departure puzzle. In J. M. Braxton (Ed.), *Reworking the student departure puzzle* (pp. 1-8). Nashville, TN: Vanderbilt University Press

Braxton, J.M., Sullivan, A.S., & Johnson, R. (1997). Appraising Tinto's theory of college student departure. In J. Smart (Ed.), *Higher education: Handbook of theory and research, volume 12* (pp. 107-164). New York: Agathon

Britz, J.D., & Lawlor, J. (2001). US News and World Report speaks on the record. *The Lawlor Review*. Retrieved October 10, 2003 from http://www.usnews.com/usnews/edu/college/rankings/about/Interview_Fall_01.pdf

Burke, J.C. (1998). Performance funding: Present status and future prospects. In J. C Burke & A. Serban (Eds.), *Performance funding for public higher education: Fad or trend* (pp. 5-14). (New Directions for Institutional Research, n. 97). San Francisco: Jossey-Bass.

Carnegie Foundation. (2002). *The Carnegie Classification of institutions of higher educati*on. Retrieved November 3, 2002, from http://www.carnegiefoundation.org/Classification/

Choy, S. P. (2004). *Paying for college: Changes between 1990 and 2000 for full-time dependent undergraduates.* (NCES 2004-075). Washington, DC: national Center for Education Statistics.

Cunningham, A.F., Wellman, J.V., Clinedinst, M.E., & Merisotis, J.P. (2001). *Study of college costs and prices, 1988-89 to 1997-98, Vol. 1.* Retrieved September 22, 2002 from National Center for Education Statistics web site, http://www.nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2002157

Davis, J. S. (2003). *Unintended consequences of tuition discounting.* New Agenda Series. Indianapolis, IN: Lumina Foundation.

Hearn, J. C. (1991). Academic and nonacademic influences on the college destinations of 1980 high school graduates. *Sociology of Education, 64* (3), 158-171.

Heller, D. E. (2001). *Debts and decisions: Student loans and their relationship to graduate school and career choice*. New Agenda Series. Indianapolis, IN: Lumina Foundation.

Hill, C., Winston, G., & Boyd, S. (2004). *Affordability: Family incomes and net prices at highly selective private colleges and universities*. Retrieved January 22, 2004 from Williams Project on the Economics of Higher Education web site, http://www.williams.edu/wpehe/DPs/DP-66r.pdf

Ifill, R. M., & McPherson, M. S. (2004). *When saving means losing: Weighing the benefits of college-savings plans*. New Agenda Series. Indianapolis, IN: Lumina Foundation.

Kuh, G. D., Kinzie, J., Schuh, J. H., & Whitt, E. J. (2005). *Student success in college*. San Francisco: Jossey-Bass.

Kuh, G. D., & Pascarella, E. T. (2004, September-October). What does institutional selectivity tell us about educational quality? *Change*, *35*(5), 52-58.

Lee, J. B. (2001). *Undergraduates enrolled with higher sticker prices*. Retrieved January 15, 2004, from National Center of Education Statistics web site, http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2001171

Levitz, R. S., Noel, L., & Richter, B.J. (1999). Strategic moves for retention success. In G.H. Gaither (Ed.). *Promising practices in recruitment, remediation, and retention* (pp. 31-50). (New Directions for Higher Education, n. 108) San Francisco: Jossey-Bass.

Mayer-Foulker, D. (2002). On the dynamics of quality student enrollment at institutions of higher education. *Economics of Education Review, 21,* 481-489.

McPherson, M.S., & Winston, G.C. (1996). The economics of cost, price, and quality in US higher education. In M.S. McPherson, M.O. Shapiro, & G.C. Winston (Eds.), *Paying the piper: Productivity, incentives and financing in US higher education* (pp. 69-108*).* Ann Arbor, MI: The University of Michigan Press.

Mendenhall, W., & Sincich, T. (1996). *A second course in statistics: Regression analysis* (5th ed.). Upper Saddle River, NJ: Prentice Hall.

Mertler, C., & Vannatta, R. (2001). *Advanced and multivariate statistical methods: Practical application and interpretation*. Los Angeles: Pyrczak.

National Center for Education Statistics. (2003). *How families of low- and middle-income undergraduates pay for college*. NCES 2003-162. Washington, DC: US Department of Education.

National Center for Education Statistics. (2002a). *Digest of Education Statistics*. Available from National Center for Education Statistics web site, http://www.nces.ed.gov/programs/digest/d02_tf.asp

National Center for Education Statistics. (2002b). *Integrated Postsecondary Education Data System, 2001* [Data file]. Available from National Center for Education Statistics web site, www.nces.ed.gov/ipeds

National Center for Education Statistics. (1997). *Integrated Postsecondary Education Data System, 1997* [Data file]. Available from National Center for Education Statistics web site, www.nces.ed.gov/ipeds

National Center for Education Statistics. (1992). *Integrated Postsecondary Education Data System, 1992* [Data file]. Available from National Center for Education Statistics web site, www.nces.ed.gov/ipeds

Perna. L. W. (1998). The contribution of financial aid to undergraduate persistence. *Journal of Student Financial Aid*, *28* (3), 25-40.

Redd, K. E. (2000). *Discounting toward disaster: Tuition discounting, college finances, and enrollment of low-income undergraduates.* USA Group Foundation New Agenda Series. Indianapolis, IN: USA Group Foundation.

St. John, E. P., Cabrera, A.F., Nora, A., & Asker, E. (2000). Economic influences on persistence reconsidered: How can finance research inform the reconceptualization of persistence models? In J. M. Braxton (Ed.), *Reworking the student departure puzzle* (pp. 29-47). Nashville, TN: Vanderbilt University Press.

Stringer, W.L., Cunningham, A.F., Merisotis, J. P., Wellman, J. V., & O'Brien, C.T. (1999). *Cost, price, and public policy: Peering into the black box of higher education*. USA Group Foundation New Agenda Series [On-line]. Retrieved August 15, 2004 from www.luminafoundation.org/Publications/new agenda.shtml

Tabachnick, B.G. & Fidell, L.S. (1983). *Using multivariate statistics*. New York: Harper & Row.

Taylor, B. E., & Massy, W. F. (1996). *Strategic indicators for higher education, 1996.* Princeton, NJ: Peterson's.

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago, IL: University of Chicago Press.

US News and World Report. (2003). *America's best colleges, 2004.* [Data file]. Available from *US News and World Report* web site, http://www.usnews.com/usnews/edu/college/rankings/rankindex.htm

US News and World Report. (1998, August 31). *America's best colleges, 1999* [Special issue]. *US News and World Report, 125*(8).

US News and World Report. (1993, October 4). *America's best colleges, 1994* [Special issue]. *US News and World Report, 115* (13).