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Introduction

The American college and university is a sophisticated, complex, challenging business operation. Typically it engages in varied lines of business serving multiple markets. Its sources of revenue are more numerous and diverse than most business corporations. It serves a large number of diverse client groups. Financial planning and management often take place under substantial economic and financial uncertainty. As with other areas of institutional management in higher education, those responsible for financial strategy must balance overall coordination with varying degrees of delegated decision-making and control.

Within this context, long-term financing has become an increasingly important tool for institutional strategic planning and financial support. Long-term debt, or borrowing based on a contractually-obligated repayment period of more than one fiscal year, enables a college or university to secure long-lived resources to support critical programmatic and student support needs. Through long-term borrowing, an institution commits future revenue, anticipated to be received over some fixed time period, to the acquisition or construction of resources needed now, rather than wait for the revenue to accumulate. Colleges and universities engage in long-term borrowing not only to construct and renovate academic and student support buildings but also to purchase equipment, provide recreational facilities, and create and sustain student loan funds.

The importance of college and university long-term borrowing in the big picture can no longer be overlooked. Long-term borrowing activity by the higher education sector in the United States averaged approximately $8 billion annually throughout the 1990s. At the institutional level, long-term debt has become a strategic issue not only at the large private and public flagship universities but at smaller colleges as well. Recently a community college made headlines when it achieved the highest long-term credit rating possible from Moody's Investors Service. Just as noteworthy, but at the other end of the institutional spectrum, the chief financial officer at an institution with one of the largest endowments among public institutions in the country testified recently before a finance subcommittee of the state legislature. He pointed out that maintaining a favorable long-term credit rating was the university's single most important strategic financial planning requirement.

In spite of long-term borrowing's importance in college and university finance, comparatively little empirical analysis has been conducted regarding the actual role it plays relative to other elements of the institutional financial structure. The private financial services industry publishes information on the amount of new debt issued each year by institutions of higher education. However, this does not tell us whether there are trends toward an increase or decrease in the relative amount of long-term, unliquidated institutional debt, and whether there may be important differences in actual practice among broad institutional categories, such as public versus independent institutions, or among institutional groups based on Carnegie institutional categories. The purpose of this article is to discuss findings from an analysis of institutional data from the 1990s on relationships between long-term debt and other key variables and to consider the implications of these findings for long-term financing's role in institutional finance during the first decade of the 21st century.

Previous Research

Much of the past research on college and university debt practice is limited to small samples of institutions and is focused primarily on the process and mechanics of securing and administering debt financing. When college and university administrators decide to borrow funds for a specific identified need and receive governing board and other necessary approvals for project planning and implementation, administrators typically follow a fairly standard set of procedures in issuing long-term debt. Basic steps include: (a) determine the approximate amount of external funds needed; (b) decide on timing for when funds will be needed; (c) review applicable laws and regulations; (d) review current interest rates and trends in debt markets; and (e) secure expert assistance not available within the institution, such as financial and bond advisors, bond legal counsel, and a financial markets specialist.

Libby (1984) studied 77 long-term debt agreements at three public research universities and two private research universities entered into between 1972 and 1983. She concluded that, over time, increasingly detailed financial conditions and covenants were being written into debt agreements and that amount borrowed was the variable of interest that had the highest correlation with differences in agreement development process and structure. In a study of the amount of outstanding long-term debt and the amount of new debt issued by 15 public research universities from 1975 to 1987, Sturtz found that institutional debt managers and staff specialists were becoming increasingly isolated, specialized, and separated from their general finance and administration counterparts within the institution; that administrators relied increasingly on external financial industry professionals for information and guidance in the area of debt issuance and management; and that institutional governing boards typically had neither formal, written, long-term policies on debt management nor guidelines for administrators on issuing institutional long-term debt.

The National Association of College and University Business Officers (NACUBO) has published three guidebooks on planning and managing institutional long-term debt. In the first, Forrester (1988) summarized legal, accounting, regulatory, and financial management considerations for debt management and discussed the connection between financial management strategies and debt management.

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In the second, Klein (1992)covered federal tax law restrictions on tax exempt debt and discussed alternative debt instruments, such as revenue bonds, general obligation bonds, lease structures, variable rate bonds, and commercial paper. In the third NACUBO publication, King, Anderson, Cyganowski and Hennigan (1994) added detail on the roles and functions of external capital markets; discussed capital market segmentation based on types of borrowers and amounts borrowed; summarized historical patterns and cycles in long-term and short-term interest rates; included a section on debt planning and implementation for funding an internal pool of funds for student loans; and provided case examples of actual college and university debt issue decision processes.

Study Procedures

In order to extend prior research by exploring trends in the amount of long-term debt held by four-year institutions and differences in actual practice among broad institutional categories, I examined institutional finance data for all four-year private and public colleges and universities in the United States. The data source was the annual data files for the eight years 1988-89 through 1995-96 in the Integrated Postsecondary Education Data System (IPEDS) maintained by the National Center for Education Statistics. These are the eight years of data files in Final Release form available for downloading from the National Center for Education Statistics World Wide Web site <http://nces.ed.gov/ipeds>. The input data for the files were the annual IPEDS Finance Survey responses from all responding private and public four-year colleges and universities. Institutional characteristics variables included in the IPEDS data files also enabled analysis by independent institutions versus public institutions and by Carnegie institutional classification category.

I analyzed the amount of annual institution-level long-term debt in colleges and universities within a framework of nonprofit enterprise economic activity presented by Hansmann (1987) and Wedig (1994, 1996). Drawing from their conceptual model, the working principles and assumptions for the study were as follows.

1. In considering financial, investment, and resource allocation choices, college and university decision-makers, as managers of nonprofit enterprises, balance risk, cost, and contribution to achievement of organization mission and goals.

2. Financial capital in the college and university is derived either from surplus from operations or support from private or governmental sources. Debt is not a direct form of capital but a financial mechanism for accelerating receipt of economic benefits from future anticipated capital. Financial leverage due to long-term debt is the percentage of organizational assets measured in dollars financed by long-term borrowing. This percentage is measured by comparing the amount of outstanding long-term debt to the sum of long-term debt plus accumulated fund balance supported by surplus from operations and support from outside sources.

3. The financial value of a nonprofit organization's assets and the financial value of debt, surplus from operations, and outside sources of capital are reported in the nonprofit organization's financial statements and reports. Relationships among assets and liabilities are represented by the basic accounting model of the nonprofit enterprise:

Assets = Liabilities (including outstanding unpaid debt) + Fund Balance

4. Business risk is present in the nonprofit organization, including colleges and universities, in the form of operating risk and financial risk. Both forms of risk are present because of the uncertainty of the timing and amount of incoming capital. Operating risk relates to the ability of managers to cover current operating expenditures from current revenues, whereas financial risk is the additional risk from incurring debt and the fixed obligation to support interest expense and principal payments.

By explaining and predicting the amount of outstanding unpaid long-term debt in nonprofit organizations, these theoretical principles suggest that, all things equal, decision-makers are reluctant to increase financial risk to achieve organizational purposes because of the uncertain nature of future incoming capital flow. Institutional officers, however, may add to risk intentionally by incurring debt if the expected economic benefits and enhanced ability to achieve organizational purposes from increased financial leverage outweigh the anticipated costs.

College and university outstanding long-term debt for financial reporting is the net unpaid balance of a financial liability expected to be due and payable more than one year from the liability reporting date. Typically, funds borrowed on a long-term basis must be returned to the lender with interest, which is a charge for the use of the funds, in specified annual amounts over the term of the loan. Without debt, assets defined in financial or monetary terms, such as physical facilities, a pool of student loan funds, or just cash, would be offset in the equation by fund balance created from gifts, grants, endowment income, or from the net surplus of current year revenue over current expenditures. The financial phenomenon of acquiring assets by use of debt (adding to assets through incurring liabilities) is sometimes called financial leverage and is of major interest in understanding the role of debt in institutional financial strategy and its role in the college and university financial structure.

Institutional data for this study were extracted from the 1988-89 through 1995-96 annual automated data base files of the National Center for Education Statistics IPEDS system. One segment of each annual IPEDS data base includes data from the annual Finance Survey of all higher education institutions in the United States. I created institutional records on all variables of interest for each year by matching responses on the IPEDS unique institutional identification number. In order to apply correlation and regression analysis to all years' data combined, I merged the eight sets of annual files into one combined set of files in Statistical Package for the Social Sciences (SPSS) file format for analysis using SPSS version MS for Windows 6.1.3.

For all variables measured in dollars, an estimated average effect of general price inflation over the period under consideration was factored out by using an inflation index to transform the data for each year after 1988-89 into the dollar equivalent of 1988-89. A general price index applicable to goods and services purchased by U.S. colleges and universities is the Higher Education Price Index, which compares prices paid for a variety of typical higher education purchases from one year to the next. Table 1 shows the Higher Education Price Index adjustment factors used in this study to convert IPEDS reported amounts to the equivalent of constant 1988-89 dollars.

Study variables and their relationships are presented in Figure 1.

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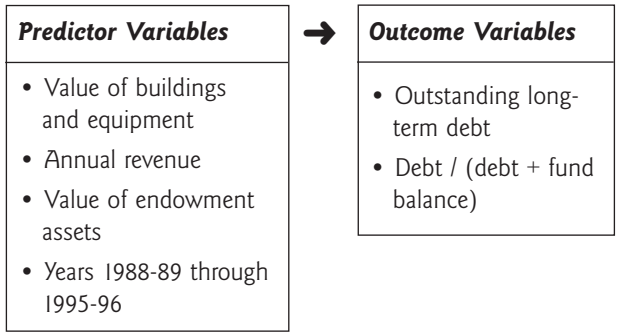
Figure 1. **Predictor and outcome variables.**



Each study variable's operationalized data source from the annual IPEDS Finance Survey files is identified in Table 2.

Table 1. **The Higher Education Price Index**

Year	*Higher Education Price Index Annual Inflation Assumption*	*Higher Education Price Index with 1988-89 = 100.0*
1988-89	n/a	1.000
1989-90	6.02%	1.060
1990-91	5.26%	1.116
1991-92	3.58%	1.156
1992-93	2.93%	1.190
1993-94	3.35%	1.230
1994-95	3.06%	1.267
1995-96	2.97%	1.305

Results

The total amount of long-term debt reported by all U.S. four-year colleges and universities during the period under study, unadjusted for price inflation, grew from $23,648.5 million in 1989 to $35,449.5 million in 1996, an increase of $11,801.0 million or 49.9% (see Table 3). Each year's level increased compared to the previous year except for 1995-96 versus 1994-95. For all private four-year institutions, the total increased from $12,556.5 million in 1988-89 to $19,560.5 million in 1995-96, an increase of $7,004.0 million or 55.8%, whereas long-term debt in public four-year institutions went up by 43.2% or $4,797.0 million, from $11,092.0 million to $15,889.0 million.

Although reported debt increased in all Carnegie institutional classification groups over the period, the percentage increase was highest for public baccalaureate colleges, with the total increasing by 127.0%, from $151.3 million among 47 institutions in 1988-89 to $343.5 million among 56 institutions in 1995-96 (see Table 3). At 26.0%, the percentage increase was lowest for public research universities, which reported $7,398.3 million for 67 institutions in the first year and $9,320.1 million for 65 institutions in the last year. Private and public research universities held the largest share of debt both at the beginning and at end of the period, but their percentage shares of the total declined. In 1988-89, private research universities held 51.7% of the long-term debt held by private institutions, but by 1995-96 they held only 47.7%.

Table 2. **Study Variables and Integrated Postsecondary Education Data System Finance Survey Data Source**

	Study Variable	*IPEDS Finance Survey Response Item*
Predictor Variables	**Value of buildings and equipment**	Current replacement value - buildings plus Current replacement value - equipment
	Annual revenue	Total current funds revenue
	Value of endowment assets	Market value of endowment assets
	Year	Fiscal reporting year
Criterion Variables	**Outstanding long-term debt**	Indebtedness on physical plant - balance owed on principal at end of year
	Financial leverage ratio	
	Long-term debt divided by Sum of long-term debt and fund balance	Balance owed on principal at end of year
	Long-term debt plus Fund balance	Balance owed on principal at end of year
	Current fund balance plus	Current fund balance
	Endowment fund balance plus	Funds functioning as endowment balance
	Book value of buildings plus	Book value - buildings
	Book value of equipment	Book value - equipment

The public research university share of debt reported by all public institutions declined from 66.7% in 1988-89 to 58.7% in 1995-96.

Using adjustment factors based on the Higher Education Price Index, data in Table 3 on total amount of reported annual debt were adjusted for inflation and are presented in Table 4. Price-adjusted debt levels increased for private institutions as a whole and for all public institutions during the period under study. For each Carnegie classification institutional group, total adjusted long-term debt was higher in the last year than in the first, except for public research institutions. After adjusting for price level change over the period, total long-term debt for all private institutions increased from $12,556.5 million to $14,988.9 million, or 19.4%. Adjusted amounts for all public institutions increased by 9.8%, from $11,092.0 million to $12,175.5 million. These increases in adjusted totals occurred in spite of the fact that the total number of private institutions reporting debt declined by 0.8%, from 731 to 725. The number of public institutions holding long-term debt only increased by 4.5%, from 359 to 375. The contrast between the increase in total reported debt, even in inflation-adjusted terms, and the relatively constant number of institutions reporting debt supports the notion that debt in college and university finance during this period took on increasing importance.

Long-term debt's relationship to all long-term financing, or financial leverage, was measured by computing the ratio of reported long-term debt to the sum of long-term debt plus fund balance (with fund balance in this study including current fund balance, endowment fund balance, and book value of buildings and equipment). Lower ratios mean that long-term debt played a smaller role in total financing, whereas higher ratios mean that long-term debt's role was greater.

Means of ratios for the private institutions as a whole and for each Carnegie private institutional sub-category are presented in Table 5. For all private colleges and universities as a group, the mean ratio of long-term debt to debt and fund balance increased throughout the period, beginning at .143 in the first year and ending at .184 in 1995-96. For all public institutions as a group, the mean ratio was lower in each year than the total private mean ratio. (See Table 6.) However, like the private institutions as a whole, the overall trend for public colleges and universities was toward an increasing mean financial leverage ratio throughout this period. By the end of the period, the overall public mean ratio was .136, growing from .120 in 1988-89.

In order to address questions concerning measurable, statistically significant relationships which might have existed during this period between the predictor variables of annual revenue, endowment value, replacement value of buildings and equipment, and time period, on the one hand, and the outcome variables of level of long-term debt and financial leverage, on the other hand, data for all years were combined for simultaneous analysis. If an institution reported all data in all eight years, it was treated as eight different cases on all variables, including year, one of the predictor variables. For simultaneous analysis, all of the

Table 3. **Total Long-Term Debt by Carnegie Institutional Classification**

	1988-89	*1989-90*	*1990-91*	*1991-92*	*1992-93*	*1993-94*	*1994-95*	*1995-96*
TOTAL	$23,648.5	$25,399.1	$28,446.6	$30,973.5	$33,534.7	$35,758.5	$36,642.4	$35,449.5
N	1,090	1,107	1,118	1,136	1,139	1,162	1,158	1,100
PRIVATE								
Total	$12,556.5	$13,999.4	$15,290.8	$17,206.5	$18,701.1	$20,235.7	$20,802.7	$19,560.5
n	731	733	747	758	762	784	782	725
Baccalaureate	$2,315.2	$2,533.4	$2,809.0	$2,982.9	$3,342.6	$3,776.5	$4,000.8	$4,215.5
n	442	438	449	455	456	472	470	443
Comprehensive	$2,047.0	$2,357.1	$2,618.8	$2,901.0	$3,214.4	$3,533.4	$3,681.1	$3,644.2
n	212	216	220	223	226	229	230	213
Doctoral	$1,698.3	$2,000.5	$1,959.4	$2,290.1	$2,392.7	$2,692.5	$2,529.7	$2,373.0
n	42	44	43	43	41	45	43	37
Research	$6,496.0	$7,108.4	$7,903.6	$9,032.5	$9,751.4	$10,233.3	$10,591.1	$9,327.8
n	35	35	35	37	39	38	39	32
PUBLIC								
Total	$11,092.0	$11,399.7	$13,155.8	$13,767.0	$14,833.6	$15,522.8	$15,839.7	$15,889.0
n	359	374	371	378	377	378	376	375
Baccalaureate	$151.3	$192.2	$210.2	$237.0	$295.4	$312.0	$341.9	$343.5
n	47	54	55	55	53	54	56	56
Comprehensive	$2,026.5	$2,409.9	$2,591.7	$2,892.6	$3,179.7	$3,536.8	$3,626.2	$3,939.7
n	190	197	192	199	201	202	198	199
Doctoral	$1,515.9	$1,645.5	$1,771.5	$1,776.7	$1,981.4	$2,169.6	$2,135.9	$2,285.7
n	55	55	56	56	55	55	55	55
Research	$7,398.3	$7,152.1	$8,582.4	$8,860.7	$9,377.1	$9,504.4	$9,735.7	$9,320.1
n	67	68	68	68	68	67	67	65

Note. Dollar amounts are in millions.

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Table 4. **Total Long-Term Debt Adjusted Using the Higher Education Price Index**

	1988-89	*1989-90*	*1990-91*	*1991-92*	*1992-93*	*1993-94*	*1994-95*	*1995-96*
TOTAL INSTITUTIONS								
Total	$23,648.5	$23,961.3	$25,489.8	$26,793.7	$28,180.4	$29,071.9	$28,920.6	$27,164.4
N	1,090	1,107	1,118	1,136	1,139	1,162	1,158	1,100
PRIVATE INSTITUTIONS								
Total	$12,556.5	$13,206.9	$13,701.5	$14,884.5	$15,715.2	$16,451.8	$16,418.9	$14,988.9
n	731	733	747	758	762	784	782	725
Baccalaureate	$2,315.2	$2,390.0	$2,517.1	$2,580.4	$2,808.9	$3,070.4	$3,157.7	$3,230.3
n	442	438	449	455	456	472	470	443
Comprehensive	$2,047.0	$2,223.7	$2,346.6	$2,509.5	$2,701.2	$2,872.7	$2,905.4	$2,792.5
n	212	216	220	223	226	229	230	213
Doctoral	$1,698.3	$1,887.2	$1,755.7	$1,981.1	$2,010.7	$2,189.0	$1,996.6	$1,818.4
n	42	44	43	43	41	45	43	37
Research	$6,496.0	$6,706.0	$7,082.1	$7,813.6	$8,194.4	$8,319.7	$8,359.2	$7,147.7
n	35	35	35	37	39	38	39	32
PUBLIC INSTITUTIONS								
Total	$11,092.0	$10,754.4	$11,788.3	$11,909.2	$12,465.2	$12,620.1	$12,501.7	$12,175.5
n	359	374	371	378	377	378	376	375
Baccalaureate	$151.3	$181.3	$188.3	$205.0	$248.2	$253.6	$269.9	$263.2
n	47	54	55	55	53	54	56	56
Comprehensive	$2,026.5	$2,273.5	$2,322.3	$2,502.3	$2,672.1	$2,875.4	$2,862.0	$3,018.9
n	190	197	192	199	201	202	198	199
Doctoral	$1,515.9	$1,552.3	$1,587.3	$1,537.0	$1,665.0	$1,763.9	$1,685.8	$1,751.5
n	55	55	56	56	55	55	55	55
Research	$7,398.3	$6,747.3	$7,690.4	$7,665.0	$7,879.9	$7,727.2	$7,684.0	$7,141.9
n	67	68	68	68	68	67	67	65

Note. Dollar amounts are in millions.

input data were adjusted for general change in college and university purchasing power over the years under study using the Higher Education Price Index, with all years adjusted to 1988-89 as the reference year.

Each multiple linear regression analysis was performed by entering all predictor variables simultaneously—criteria were not specified for minimum strength of variable contribution to prediction either for including or for excluding a predictor variable. A regression analysis predicting long-term debt level from the four predictor variables was carried out for each private and public Carnegie classification institutional group. A summary of the resulting adjusted coefficient of multiple determination (R^2) on all predictor variables combined and standardized multiple regression coefficient (ß value) for each predictor is presented in Table 7.

With a statistically significant adjusted R^2 value at a 95% confidence level, the four predictor variables together account for 77.17% of the variation in the reported amount of long-term debt for all institutions combined (Table 7). Although the adjusted R^2 is fairly large, only two of the criterion variables, annual revenue and endowment value, made a statistically significant contribution to explaining variation in long-term debt. The relative weight of these two variables in the regression equation was .5908 for annual revenue and .3989 for endowment value, as indicated by each variable's ß value standardized multiple regression coefficient.

At .8200, the adjusted R^2 coefficient of multiple determination for all private institutions was statistically significant and larger than it was for all private and public institutions combined, indicating that these four predictors during the period under study explained more of the variation in reported debt for private colleges and universities than they did for all private and public institutions as a whole. Comparing standardized coefficient ß values for all institutions as a whole and for all private institutions, the results show that annual revenue had a greater influence in explaining long-term debt level for private institutions alone than for all institutions as a whole, whereas endowment value had a smaller influence.

For the public institutions as a group, although adjusted R^2 is not as large as the adjusted R^2 from the analysis for private institutions alone, it is slightly larger than the adjusted R^2 for all private and public institutions combined (Table 7). This suggests that the four predictor variables explain more of the variation in long-term debt for private institutions and for public institutions as separate groups during the period under study than they do for both groups combined. As was the case for private institutions and for all institutions combined during this period, when all four predictor variables are analyzed together, only annual revenue and endowment value play a statistically significant role in predicting the level of long-term debt for all public institutions.

For each private Carnegie classification institutional group, the four predictor variables acting together explained over 60% of the variation in reported level of long-term debt (Table 7). For the public institution Carnegie classification groups, adjusted R^2 ranged from a high of .7021 for research universities to a low of .2079 for baccalaureate colleges. As demonstrated by the standardized ß value coefficients, annual revenue and endowment value had the most influence among the four predictor variables in explaining variation in long-term debt for each private and public institutional group, with the exception of public comprehensive colleges and universities. In this group, reported estimated replacement value of buildings and equipment had more weight in the regression equation than endowment value.

Using the same four predictor variables, a series of regression analyses was conducted for the second criterion variable, the financial leverage ratio (the ratio of long-term debt to the sum of long-term debt and fund balance). In contrast to the analysis explaining variation in the level of long-term debt, regression of the ratio of long-term debt to debt and fund balance on the four predictor variables for all colleges and universities produced an adjusted R^2 of .0119 (Table 8). Change in the four predictor variables during the period under study, acting together, only shared or explained slightly over 1% of the variation in financial leverage.

For all private institutions combined, the adjusted R^2 coefficient of multiple determination was .0221, and for all public institutions it was .0197 (Table 8). The two largest adjusted R^2 values by Carnegie institutional category group were .1256 for private research universities and .1269 for public research universities. Between 12% and 13% of the variation in the ratio of long-term debt to long-term debt plus fund balance during the period under study for these institutions was explained by the variation in the four predictor variables. Even though

Table 5. **Mean Ratio of Long-Term Debt to Long-Term Debt and Fund Balance for Private Colleges and Universities**

	1988-89	*1989-90*	*1990-91*	*1991-92*	*1992-93*	*1993-94*	*1994-95*	*1995-96*
All Private								
M	.143	.136	.148	.157	.186	.184	.188	.184
SD	.253	.144	.127	.149	.127	.152	.136	.131
n	731	733	747	758	762	784	782	725
Baccalaureate I								
M	.097	.100	.106	.110	.166	.163	.167	.164
SD	.072	.070	.074	.071	.106	.096	.090	.087
n	143	140	142	146	147	151	148	144
Baccalaureate II								
M	.147	.127	.144	.143	.164	.173	.177	.175
SD	.379	.193	.148	.130	.128	.150	.146	.148
n	299	298	307	309	309	321	322	299
Comprehensive I								
M	.159	.160	.182	.192	.219	.204	.213	.209
SD	.094	.102	.121	.121	.136	.209	.156	.138
n	154	156	157	161	164	165	167	154
Comprehensive II								
M	.148	.145	.144	.173	.201	.192	.193	.184
SD	.087	.089	.109	.128	.126	.127	.133	.126
n	58	60	63	62	62	64	63	59
Doctoral I								
M	.197	.216	.208	.311	.260	.234	.242	.226
SD	.113	.134	.134	.525	.094	.086	.090	.093
n	21	22	22	21	21	23	22	19
Doctoral II								
M	.192	.201	.174	.197	.231	.223	.222	.227
SD	.123	.122	.109	.108	.131	.119	.122	.126
n	21	22	21	22	20	22	21	18
Research I								
M	.149	.150	.165	.156	.218	.219	.210	.198
SD	.070	.072	.086	.089	.101	.109	.101	.071
n	26	26	26	28	29	28	29	23
Research II								
M	.150	.148	.156	.167	.206	.187	.180	.200
SD	.070	.076	.077	.083	.143	.127	.114	.135
n	9	9	9	9	10	10	10	9

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Table 6. **Mean Ratio of Long-Term Debt to Long-Term Debt and Fund Balance for Public Colleges and Universities**

	1988-89	*1989-90*	*1990-91*	*1991-92*	*1992-93*	*1993-94*	*1994-95*	*1995-96*
All Private								
M	.120	.119	.123	.125	.132	.139	.136	.136
SD	.094	.093	.096	.095	.101	.102	.103	.100
n	359	374	371	378	377	378	376	375
Baccalaureate I								
M	.123	.109	.103	.099	.126	.116	.104	.116
SD	.080	.076	.073	.072	.092	.086	.082	.080
n	6	6	6	6	6	6	6	6
Baccalaureate II								
M	.088	.088	.098	.108	.120	.124	.123	.120
SD	.050	.066	.092	.103	.120	.119	.109	.109
n	41	48	49	49	47	48	50	50
Comprehensive I								
M	.126	.126	.132	.131	.136	.147	.146	.146
SD	.113	.110	.106	.101	.106	.108	.111	.106
n	173	181	176	183	185	185	181	182
Comprehensive II								
M	.126	.124	.114	.143	.163	.143	.145	.143
SD	.085	.076	.076	.104	.127	.124	.123	.128
n	17	16	16	16	16	17	17	17
Doctoral I								
M	.134	.132	.126	.125	.132	.134	.122	.122
SD	.077	.070	.065	.063	.071	.067	.063	.060
n	23	23	23	23	22	22	22	22
Doctoral II								
M	.106	.110	.111	.121	.116	.140	.140	.146
SD	.075	.076	.073	.102	.072	.086	.092	.094
n	32	32	33	33	33	33	33	33
Research I								
M	.131	.130	.132	.131	.145	.145	.140	.137
SD	.081	.078	.083	.078	.089	.089	.088	.088
n	47	46	46	45	45	44	44	43
Research II								
M	.107	.101	.122	.096	.095	.097	.092	.093
SD	.050	.044	.125	.043	.044	.041	.037	.037
n	20	22	22	23	23	23	23	22

all of the adjusted R^2 values for the regression of the leverage ratio on the predictor variables are statistically significant at a 95% confidence level (Table 8), the resulting regression equations are of little practical value in explaining or predicting the leverage ratio because the adjusted R^2 values are not large.

Discussion

The use of long-term debt by a college or university has several implications for institutional finance. Debt indirectly generates revenue by enabling the institution to secure long-term assets to support institutional missions and revenue producing activities. Debt results in additional expenditures by creating obligations for loan repayment and payment of interest charges. Debt changes the financial structure of an institution by linking increases in physical or financial assets to repayment liabilities rather than to financial resources under the institution's control.

Decisions to enter into long-term debt strategies also have important implications for institutional governance, faculty involvement in decision-making, and accountability to external constituencies. Many college and university financial administrators do not have the technical and managerial expertise to deal with all aspects of issuing and managing long-term debt. Individual faculty members, faculty committees, and other governance groups involved in the regular budget planning process may not be included in off-cycle decision-making on resource allocation, such as deciding on commitments to debt service. Debt service requirements tend to be treated as fixed commitments and taken off the table rather than be subjected to the give and take of the regular institutional budgeting cycle. Treating debt principal repayment

and interest costs as fixed commitments that are not considered in the budget planning process also removes them from the budget review and communications activities that internal and external constituencies rely on for data on sources and uses of institutional resources.

The findings of this study demonstrate that the inflation-adjusted dollar value of long-term debt increased from the late 1980s through the mid-1990s in private and in public institutions as a whole and in each four-year Carnegie institutional category. On the whole, financial leverage, or the amount of outstanding, unliquidated long-term debt in relation to fund balance accumulated from operating surpluses and from private and governmental gifts and grants, also increased among four-year institutions. The mean level of long-term debt at the institutional level for all years combined varied more directly with institutional revenue and endowment value than it varied with the value of buildings and equipment or with change in fiscal year.

An institution faces substantial short-term administrative challenges and one-time expenditures when initiating a long-term debt program or when issuing additional long-term debt. These include developing or contracting for legal services, financial analysis, and debt market analysis services to address regulatory, taxation, and financial strategy considerations in preparing for and issuing long-term debt. From the late 1980s through the mid 1990s, private institutions as a whole reported increases in long-term debt of slightly over 19% in inflation-adjusted dollars, and public institutions as a group showed increases of almost 10%. During the same period, however, the number of institutions carrying debt in each group was fairly constant.

This upward trend in amount of long-term debt carried over time suggests that institutions on the whole made a succession of decisions to increase commitments to debt service and increase financial risk at a time when resources in higher education became increasingly constrained by competition, by demands to keep pace with the revolution in computer technology, and, among public institutions, by reduced governmental appropriations and increased expectations for accountability. At the same time, the variation in study findings between private and public institutions and among Carnegie institutional categories reinforces the propositions that American colleges and universities are as diverse financially as they are in other ways and that the large private and public research universities are not representative of all four-year institutions.

The potential attraction of long-term borrowing for colleges and universities is based on need for long-term (capital) investment, institutional financial sophistication, and readiness to take on debt-issuing and management responsibilities, and the financial strength of the institution (credit worthiness). These three perspectives provide a framework for highlighting this study's most important findings and for suggesting some implications of long-term institutional financing in the first decades of the 21st century.

Expectations of continued strong enrollment demand, based on projections of the number of high school graduates, distinguishes the first decade of the 21st century from the early 1990s. The number of high school graduates declined in the early 1990s, whereas steady growth in many areas of the U.S. is now projected for several years. This and other factors suggest an increased need for long-term borrowing by colleges and universities for academic and student support facilities.

Other trends indicate a continued need for investment in long-life assets for several years to come. Competition for students means that colleges and universities will continue to build and renovate facilities to maintain academic quality and offer students amenities to make campuses attractive. Enrollment growth in non-traditional student categories will add to pressures for additional facilities. Aging facilities built from the 1950s through the early 1970s will continue to require new long-term investment for replacement and renovation, as higher education institutions as a whole continue to contend with chronic, unacceptable levels of deferred maintenance and facilities deterioration.

Developments in areas other than facilities also suggest that higher education institutions will be compelled to look to the alternative of long-term financing. Investments to replace and maintain technology-related equipment and infrastructure will often be suitable for financing

Table 7. **Summary of Results of Simultaneous Regression Analysis for Variables Predicting Long-Term Debt**

		Regression Equation Standardized Predictor Variable Coefficient (ß)			
	Adjusted R^2	*Total Annual Revenue*	*Endowment Value at Year End*	*Estimated Replacement Value of Buildings and Equipment*	*Year*
ALL INSTITUTIONS	.7717*	.5908*	.3989*	-0.0009	-0.0041
PRIVATE INSTITUTIONS					
All	.8200*	.6361*	.3333*	-0.0009	0.0001
Baccalaureate	.6191*	.6163*	.4391*	-0.0015	0.0151
Comprehensive	.6445*	.7600*	.0749*	-0.0076	-0.0022
Doctoral	.6696*	.7293*	.1485*	-0.0015	-0.0099
Research	.6168*	.4969*	.4569*	-0.0534	-0.0168
PUBLIC INSTITUTIONS					
All	.7765*	.5078*	.5240*	0.0141	-0.0151
Baccalaureate	.2079*	.3868*	.1523*	-0.0784	0.0914
Comprehensive	.3215*	.3881*	.0660*	0.2532*	0.0653*
Doctoral	.6528*	.7492*	.1317*	0.0124	-0.0226
Research	.7021*	.3822*	.6199*	0.0144	-0.0508*

*p < .05.

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Table 8. **Summary of Results of Simultaneous Regression Analysis for Variables Predicting the Ratio of Long-Term Debt to Long-Term Debt and Fund Balance**

		Regression Equation Standardized Predictor Variable Coefficient (ß)			
	Adjusted R^2	*Total Annual Revenue*	*Endowment Value at Year End*	*Estimated Replacement Value of Buildings and Equipment*	*Year*
ALL INSTITUTIONS	.0119*	0.0288*	-.0062	.0072	.1074*
PRIVATE INSTITUTIONS					
All	.0221*	0.1300*	-.1084*	.0100	.1197*
Baccalaureate	.0192*	0.0996*	-.1277*	-.0037	.1146*
Comprehensive	.0962*	0.3373*	-.2157*	-.0093	.1222*
Doctoral	.0173*	0.0442	-.1656*	.0362	.0917
Research	.1256*	0.2402*	-.2484*	-.1272	.2327*
PUBLIC INSTITUTIONS					
All	.0197*	0.0424	.0831*	.0190	.0813*
Baccalaureate	.0227*	0.0710	.0460	-.1160	.1111
Comprehensive	.0179*	0.0005	-.0407	.1061*	.1053*
Doctoral	.0837*	0.2975*	-.0229	.0333	.0636
Research	.1269*	0.1976*	.2226*	.0343	-.0194

*p < .05.

arrangements beyond one year. The federal government continues to increase research and development grant funding available to colleges and universities in the physical, biotechnology, and health-related basic sciences. To keep pace, institutions must increase their long-term commitment to research facilities, research technology, and other research infrastructure. As academic libraries continue to undergo the transformation brought about by the computer technology revolution in how library services are provided, library facilities and infrastructure likewise will require major long-term investments to adapt physical facilities and communications networks.

Four-year colleges and universities are complex, sophisticated business operations. The increase in use of long-term debt in the 1990s, as documented by this study, suggests that institutions as a whole have become increasingly capable of taking on the responsibilities of issuing and managing long-term debt financing. Strategy and practice at private institutions for many years has contended with long-term debt in the financing mix, and the percentage of operating funds provided by state governments to public institutions has now declined to between 30% and 40%, suggesting a requirement for increasing financial sophistication at public institutions as well. This is indicated by the fact that many public institutions have established institution-affiliated nonprofit foundations and partnerships with private facilities management companies for financing construction and maintaining ownership of new facilities, as well as for acquiring land and existing buildings. In the year 2000, for the first time a public institution was granted the highest possible credit rating by Moody's Investors Service, and then two other public institutions joined the top group in the same year.

Recent reports from the private financial services and credit rating communities continue to indicate a generally favorable view toward the financial stability of higher education on the whole and toward the investment quality of college and university long-term debt instruments. Higher education institutions as a whole, nationwide, have earned an outstanding reputation for reliability as long-term borrowers. For the twenty-year period beginning in 1980, higher education as a whole defaulted on only $143 million of outstanding debt, or approximately one half of one percent of all long-term borrowing by institutions during the period. In addition, within the past few years, credit analyses and credit ratings for many major public institutions by the private financial services industry have become separated from the credit rating process as applied to their state governments because many large public institutions are stronger financially than the state governments with which they are affiliated.

The number of private and public institutions in the Carnegie classification Baccalaureate and Master's institutional categories taking on long-term debt and the amount of outstanding debt by all institutions in these groups will continue to increase. In these institutional categories in general, growth rates in outstanding long-term debt and growth in numbers of institutions issuing debt in the 1990s, as demonstrated in the findings of this study, exceeded growth rates among Research and Doctoral institutions. This trend is expected to continue in the first decade of the 21st century. Continued competition for students and the need to constantly invest in new facilities, campus infrastructure, and adaptive re-use of existing space to meet changing academic program needs will mean increasing use of long-term financing as part of the financial strategy of Master's and Baccalaureate institutions. For these institutions, as well as for the Doctoral/Research universities, both private and public, this will mean accepting more financial risk in terms of a greater percentage role of long-term debt in the institutional financial structure, and it will mean a commitment to long-term development of the institutional capabilities and professional staff sophistication necessary for initiating and overseeing growing long-term debt management programs.

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