FINANCIAL FACTORS AND INSTITUTIONAL CHARACTERISTICS

THAT RELATE TO THE LONG-TERM DEBT OF U.S. FOUR-YEAR

PUBLIC COLLEGES AND UNIVERSITIES

by

DANA SIMS KEITH

DAVID E. HARDY, COMMITTEE CHAIR

NATHANIEL BRAY
CALI DAVIS
CLAIRE MAJOR
PAMELA PARKER
JOHN WIEST

A DISSERTATION

Submitted in partial fulfilment of the requirements
for the degree of Doctor of Philosophy in the
Department of Educational Leadership,
Policy, and Technology Studies
in the Graduate School of
The University of Alabama

TUSCALOOSA, ALABAMA

2013

ABSTRACT

Debt for public colleges and universities has been increasing while financial resources, which provide the support to repay debt, have been declining. As debt increases in proportion to assets, the risk profile of a college or university increases. This study examined the relationships between financial variables and institutional characteristics that relate to long-term debt and leverage of U.S. four-year public colleges and universities during a period of economic downturn. Understanding these relationships is needed to determine factors that enable or constrain public higher education's ability to borrow funds to meet organizational goals. In addition, this study also explored long-term debt and leverage trends categorized by Carnegie classification and geographic region from 2005 to 2009.

The data for the study were obtained from IPEDS. Descriptive statistics, ANOVA, and OLS regression were used to analyze the data. The findings showed that both long-term debt and leverage of public institutions had increased from 2005 to 2009. However, leverage increased at a slower pace, which indicated that public universities were able to use existing assets to offset the increase in liabilities associated with the additional long-term debt. This study also found that differences existed in long-term debt by Carnegie classification. Doctoral/Research institutions had more long-term debt than Master's institutions, and Master's institutions had more long-term debt than Baccalaureate institutions. Although Master's institutions did not have the greatest amount of long-term debt, they had greater amounts of leverage than Doctoral/Research and Baccalaureate institutions in all fiscal years. Additionally,

Master's and Doctoral/Research institutions located in the Northeast had mean leverage in all five years that exceeded recommended thresholds.

The variable with the strongest relationship with long-term debt was property, plant, and equipment. Approximately 65.9% of the variance in long-term debt was explained by property, plant, and equipment. In comparison, the leverage model showed that geographic regions had the strongest relationship with leverage. Collectively, the West, Midwest, and Southeast regions accounted for 27.1% of the variance in leverage. The detailed results of the findings, conclusions, and recommendations are provided at the end of the study.

LIST OF ABBREVIATIONS

ANOVA Analysis of variance

ARRA American Reinvestment and Recovery Act

BABs Build America Bonds

FASB Financial Accounting Standards Board

FTE Full-time equivalent

GASB Governmental Accounting Standards Board

HEA Higher Education Act

HHI Hirschman-Herfindahl Index

IPEDS Integrated Postsecondary Education Data System

IRS Internal Revenue Service

NACUBO National Association of College and University Business Officers

NCCS National Center for Charitable Statistics

NCES National Center for Education Statistics

NTTE National Taxonomy of Exempt Entities

OLS Ordinary least squares

PPP Public Private Partnerships

RDI Revenue Diversification Index

RZED Recovery Zone Economic Development

VRDB Variable Rate Demand Bonds

LIST OF STATISTICAL SYMBOLS

a   Constant or intercept

b   Slope or regression coefficient of independent variables

B   Regression coefficient

β   Beta coefficient; standardized regression coefficient

df   Degrees of freedom

M   Mean

Min   Minimum

Max   Maximum

Mdn   Median

n   Number of public colleges and universities in data set

p   Probability

r   Pearson product-moment correlation coefficient estimate

r^2 Pearson product-moment correlation coefficient squared estimate

R   Multiple correlation coefficient

R^2 Multiple correlation coefficient squared; indicates strength of relationship

Adjusted R^2 Modified coefficient of determination which considers size of data set and number of independent variables

SD   Standard deviation

SE B   Standard error of the regression coefficient

$\sum$ Summation

X   Independent variables that relate to the dependent variables

Y′   Predicted value of the dependent variable

ACKNOWLEDGMENTS

Completing this degree would not have been possible without the support and involvement of many individuals. First, to my Chair, Dr. David Hardy, words are not adequate to truly express how much I valued your patience and understanding as I pursued this research project. The Tuesday night sessions you held for your dissertation students were invaluable; the extra time that you devoted was a critical element in moving me forward. I thank you for all the time you spent with me to get me to this point. To my Committee members, Dr. Nathaniel Bray, Dr. Cali Davis, Dr. Claire Major, Dr. Pamela Parker, and Dr. John Wiest, I appreciate the time you invested in this process, and the feedback you provided to improve my research.

To Dr. Judy Bonner, thank you for inspiring me to pursue my Ph.D. and constantly checking on my progress. To my boss, Dr. Lynda Gilbert, I probably would not have seriously pursued this degree without you pushing me along the path. You have been a professional mentor to me for many years and provided opportunities to me that have advanced my career. I am grateful for your guidance and wisdom.

To my colleagues, Dr. Adam Tate, Dr. Delphine Harris, and Nancy Whittaker, I am grateful for the support system you provided. To my friends, Karen and Dr. Eric Reidenbach, and my knowledgeable advisor, Dr. J.T. Johnson, I am grateful to you for giving me that final nudge when I needed it most.

To my parents, Herman and Grace Sims, thank you for always believing in and encouraging me in all my endeavors, particularly my quest for a higher education. To my

CONTENTS

x

LIST OF TABLES

xiv

LIST OF FIGURES

CHAPTER I:

INTRODUCTION

Introduction to the Study

Historically, public colleges and universities had limited need for debt because financing

from state and federal governments reduced the amount required for borrowing (Millett, 1952).

Public colleges and universities began to borrow more in the 1940s for projects that generated a

source of income (known as project-specific financing), which could be used to repay the debt

(Millett, 1952). Project-specific financing was largely used to build dormitories, athletic

facilities, student unions, and dining halls. In other instances, debt was not viewed favorably.

When institutions started construction of new academic buildings without having sufficient funds

available and required borrowed funds to finish the project, this type of debt was viewed as

"such a menace to the future stability of the institution that every effort should be made to avoid

it" (Russell, 1954, p. 376). This concern was amplified when new academic buildings could not

produce income to repay the debt (Russell, 1954).

In the 1970s and 1980s, colleges and universities continued project-specific financing

(King, Anderson, Cyganowski, & Hennigan, 1994). However, in the 1990s, statutory

restrictions, which prevented public institutions from pledging all available revenues for debt

payments, were lifted. As a result of this change, public colleges and universities were allowed

to issue debt to finance new academic and research facilities (King et al., 1994). In addition to

new construction, public colleges and universities now use debt financing to renovate existing

buildings, repair a backlog of deferred maintenance, purchase new equipment (Hornfischer,

1

1997), fund infrastructure projects (King et al., 1994), and finance short-term operating needs (Matthews & Cook, 1997).

The benefit of issuing long-term debt is that these types of projects can be paid for over the life of the asset, allowing institutions to "build now and pay later" (Massy, 1996a, p. 122). For example, instead of paying $30,000,000 outright for a new building that will have a useful life of 30 years, long-term debt can be borrowed with repayment of the debt corresponding with the life of the building. Debt, when used strategically, can provide the financial resources needed for activities that support the mission of a college or university. Although long-term debt has benefits, the concern with increasing the amount of borrowed funds is that additional debt may place financial pressure on colleges and universities by reducing financial flexibility (Blustain et al., n.d.b; Tahey, Salluzzo, Prager, Mezzina, & Cowen, 2010; Van Gorden, 2006). Unlike some costs such as maintenance that can be deferred, debt is a fixed cost that cannot be postponed.

The Chronicle of Higher Education reports that universities have issued record amounts of debt for the 10-year period from 1999 to 2009 (Blumenstyk, 2009, April 10). Debt service payments have risen from three percent of the annual budget of colleges and universities to five percent over the past two decades (Wilson, 2008, October 10). Furthermore, in a 2009 survey of 842 public and private colleges and universities, 654 institutions held debt (National Association of College and University Business Officers and Commonfund Institute, 2010). Although the results did not show how many of the 654 institutions were public institutions, the survey reported that the average debt for public institutions was $616.8 million, which represented five times more than the average debt reported by private institutions, and 55% of the public institutions had increased debt in 2009 (National Association of College and University Business

Officers and Commonfund Institute, 2010). In the 2010 survey, 635 public and private institutions carried debt. Of the 635 institutions, 134 were public institutions. The study further subdivided public institutions into three categories: public only, institutional research foundations, and combined endowment/foundations. Of the 134, 47 were public only, and they reported average debt of $788 million, which was an increase of $171.2 million or 21.7% in comparison to the prior year (National Association of College and University Business Officers and Commonfund Institute, 2011).

With a global financial crisis, the U.S. economy experienced its longest financial recession since World War II beginning in December of 2007 and ending in June 2009 (National Bureau of Economic Research, 2010). The U.S. economic problems have placed stress on the financial coffers of public colleges and universities. In a 2009 survey, 80% of public university governing boards reported that state budget reductions placed a financial strain on their institutions (Fain, 2009, April 22). Public colleges and universities have dealt with the loss of state funding by cutting budgets, reducing personnel, freezing wages, delaying facilities projects, and increasing tuition. Although federal stimulus funds have helped offset some of the immediate reductions, future budget reductions at the state level are predicted (Fain, 2009, April 22).

Moody's Investors Service, an agency that rates the credit of over 220 public colleges and universities, reported a negative or weakening financial outlook in fiscal year 2009 for the U.S. public higher education sector due to losses in state funding and tuition increasing at rates greater than inflation (Woeppel & Gusta, 2010). This shift has resulted in public higher education relying more on tuition and other self-generated revenues. In addition, median debt levels were rising at a faster pace than enrollment, revenue, and total financial resources

3

(Woeppel & Gusta, 2010). In 2011, Moody's continued its negative financial outlook for U.S. public higher education with the exception of those institutions that had more market and revenue diversity, such as large public university systems, and flagship and land-grant universities (Tuby, 2011). Revenue sources are a key component of debt financing because revenues are pledged as security to assure lenders the debt will be repaid (Blustain et al., n.d.b).

In addition to decreases in state support, other financial resources have declined. With a stock market in decline, university endowments have lost value. An endowment is defined as "the permanent funds of a nonprofit institution consisting of cash, securities, or property" (National Association of College and University Business Officers and Commonfund Institute, 2011, p. 105). In a 2010 survey by the National Association of College and University Business Officers and Commonfund Institute, the average net return for college and university endowments over the past decade was only 3.4% (National Association of College and University Business Officers and Commonfund Institute, 2011). Accordingly, endowments have lost value by not earning a return that keeps up with inflation. From a financial perspective, endowments benefit an institution because they represent assets that may be invested to produce income. In addition, a college or university's endowment is a financial criterion that credit ratings agencies use to evaluate credit strength (Stripling, 2010, June 16).

Similar to revenues, assets like endowments may be pledged as collateral for debt. This concept is known as leverage, which can be defined as the ratio of total liabilities to total assets. Leverage allows institutions to "generate extra utility from the pool of available assets" (Massy, 1996a, p. 122). Leverage also demonstrates how much of the capital structure of an institution is financed with debt as opposed to equity or reserves (Bowman, 2002; Jegers & Verschueren, 2006). When leverage increases, the risk profile increases for an institution because debt is

4

being used more than other resources. Furthermore, if the debt is not being used to support the competitive strengths of an institution, additional risk has been added without any associated benefit (Tahey et al., 2010).

While they must deal with these financial constraints, public colleges and universities must also contend with political pressures that have the potential to impact financial resources. Public colleges and universities have been criticized for declining affordability because of increased tuition prices and a lack of accountability. In addition, colleges and universities have been caught in the middle of legislative debates. In 2008, Senator Charles Grassley focused on the endowments of public and private institutions, threatening legislation that would require institutions to spend a certain percentage of their endowments for student financial aid (Brainard, 2008, July 25). This public scrutiny continued in 2009 as Congress questioned the tax breaks given to Athletic Departments that utilize tax-exempt bonds and receive donations that are deductible for tax purposes (Wolverton, 2008, March 14). In an interview with *The Chronicle of Higher Education* in 2010, Senator Grassley stated that the issue of endowment spending remained on the "front burner", and he expected colleges and universities to voluntarily disburse more endowment funds to students or legislation may be passed to mandate such disbursement (Blumenstyk, 2010, March 9).

Problem Statement and Significance of the Study

Debt for public colleges and universities has been increasing while financial resources have been declining. Financial resources, such as revenues and assets, provide the financial support needed to repay debt. As debt increases in proportion to assets, the risk profile of a college or university increases. Yet, very little research has been done to understand the financial factors and institutional characteristics of public institutions that explain long-term debt

5

and leverage values. Specifically, no research has been done to focus on distinct types of revenue and their relationship to long-term debt. Furthermore, research has not been done during an economic downturn. Studying recent data is necessary in order to understand the financial implications of the obligation of long-term debt that public institutions carry to achieve their missions.

This study of debt in public universities is important for four reasons. These reasons include the following: 1) closing the gap in knowledge from previous studies; 2) developing a model to determine the financial factors and institutional characteristics that may relate to long-term debt and leverage; 3) providing data for financial administrators for benchmarking purposes; and 4) informing planners and policymakers. Each of these reasons is discussed further.

First, a study of long-term debt and leverage is needed to close the gap in knowledge from previous studies. A lack of scholarly research exists in understanding the relationship between long-term debt and financial factors such as specific revenues. Previous studies (Shultz, 2000; Stump, 2002) of debt of higher education institutions focused on the total amount of revenues and did not study how specific types of revenues may relate to long-term debt and leverage. In addition, these studies were performed using data that were from 15 years ago and older. In their recommendations for future research, both Shultz (2000) and Stump (2002) recommended that long-term debt of higher education institutions be studied during different economic periods. Accordingly, an analysis of debt with more recent data is needed in the current economic environment.

In addition, the literature suggests that nonprofit organizations are more likely to have higher levels of debt when the organization has more diversified revenues and more government

6

subsidies. This conclusion was reported in a recent study of nonprofit organizations in the arts, cultures, and humanities sectors (Yan, Denison, & Butler, 2009). Yan et al. (2009) recommended that future research include other sectors of nonprofit organizations. Accordingly, this study expands that body of knowledge to include public colleges and universities. This knowledge is important because if public colleges and universities have higher debt levels because of greater government subsidies and different types of revenues, then this phenomenon needs to be understood as government support dwindles and universities are forced to self-generate more revenue or diversify their revenue sources. Understanding the relationship between long-term debt and different types of revenues has implications for public colleges and universities because long-term debt must be sustained by revenues. If a significant revenue source declines, then this change also has implications for students and their families as tuition and fee increases may be needed to offset declines in subsidized revenue sources.

Second, the study provides a model to examine financial factors and institutional characteristics that relate to long-term debt and leverage. The use of debt by a college or university has the potential to decrease operational flexibility and increase its risk profile. Therefore, a model provides insight into the influence that specific revenues and assets, as well as institutional characteristics, have on the amount of long-term debt that public colleges and universities hold and their ability to leverage debt. Modeling these relationships highlights constraints on public higher education's ability to borrow funds and carry debt in the future to meet organizational goals.

Third, the study reports changes in long-term debt and leverage over a five-year period, which allows the data to be used for benchmarking purposes. The study categorizes total long-term debt and leverage values by Carnegie classification and geographic region. Due to the fact

that long-term debt and leverage are not classified in this manner in other research, this classification allows financial administrators of public institutions to compare their institution to a group of their peers. In addition, the study informs financial administrators about the types of revenues and assets that relate to long-term debt and leverage.

Fourth and finally, this analysis provides information to inform policy makers and legislators. Recently, colleges and universities have been criticized by Congress for not spending enough of their endowments. Yet, the literature indicates that endowment values are a strong predictor of long-term debt of higher education institutions (Shultz, 2000). In addition, public support of higher education continues to face intense scrutiny by both its internal and external stakeholders including federal, state, and local governments and students and their families, who expect public higher education to be affordable and accountable. Accordingly, this analysis provides information to inform policy makers and legislators, who are responsible for regulations that have both negative and positive consequences for the finances of public higher education institutions.

Purposes of the Study

Thus, the purposes of this study were to identify the financial factors and institutional characteristics of U.S. four-year public colleges and universities that relate to long-term debt and leverage. This study examined total long-term debt amounts and leverage values for the five-year period from 2005 to 2009. In addition, determining whether differences existed in total long-term debt and leverage values by institutional type and geographic region for this same period were considered. Finally, a model was developed to explore the financial factors and institutional characteristics that relate to long-term debt and leverage values of U.S. four-year public higher education institutions.

Research Questions

In order to accomplish these purposes, the following research questions were answered for the study:

1. What was the long-term debt profile of U.S. four-year public colleges and universities from 2005 to 2009 in terms of

    a. Mean total long-term debt by year

    b. Mean five-year change in total long-term debt

    c. Mean year-to-year change in total long-term debt

    d. Mean leverage by year

    e. Mean five-year change in leverage

    f. Mean year-to-year change in leverage

2. How did long-term debt of U.S. four-year public colleges and universities differ for fiscal years 2005 through 2009 based on

    a. Simplified Carnegie classification (i.e., baccalaureate, master's, and doctoral/research)

    b. Geographic region

3. How did leverage of U.S. four-year public colleges and universities differ for fiscal years 2005 through 2009 based on

    a. Simplified Carnegie classification (i.e., baccalaureate, master's, and doctoral/research)

    b. Geographic region

4. What financial factors and institutional characteristics of U.S. four-year public colleges and universities were related to long-term debt?

5. What financial factors and institutional characteristics of U.S. four-year public colleges and universities were related to leverage?

Assumptions

The study was conducted based upon the following *a priori* assumptions:

- The National Center for Education Statistics' (NCES) Integrated Postsecondary Educational Data System (IPEDS) was the most appropriate data source for the study.

- The public higher education institutions in the study have submitted correct and complete data to IPEDS for the surveys and reporting periods of interest.

- Using the Carnegie Classification system and geographic region was the most appropriate ways to classify public higher education institutions included in the study.

Delimitations

In conducting the study, the researcher established, *a priori*, the following delimitations:

- Only U.S. public colleges and universities in the 50 states classified as doctoral/research, master's or baccalaureate institutions in the Carnegie Classification of Institutions of Higher Education of 2005 Basic Classification were included.

- Public higher education institutions that report financial data in accordance with Financial Accounting Standards Board requirements were excluded. Only public institutions that report financial data according to Governmental Accounting Standards Board requirements were included in order to have comparable financial variables.

- Public higher education institutions with a response status on the IPEDS Finance survey indicating a parent or child relationship were excluded because data were not reported under a unique identification number and, thus, the characteristics of a single institution among those reported aggregately could not be ascertained.

- Component units (affiliated foundations) of the public higher education institutions were excluded from the data set.

- As this study focuses on long-term debt and leverage, public institutions that have no long-term debt were excluded.

- Public institutions with missing data in any year were excluded.

Limitations

The study was conducted with the following limitations acknowledged *a priori*:

- Institutions may have input data incorrectly.

- Institutions may interpret or define certain data elements differently.

- The data were limited only to the years in which the institutional characteristics, enrollment, and finance surveys were completed by institutions.

Organization of the Study

The study is divided into five chapters. Chapter I includes the introduction, problem statement and significance of the study, purposes of the study, and research questions. In addition, assumptions, delimitations, and limitations of the study are provided. Chapter II provides a review of the literature. The review focused on three areas: higher education finance; college and university debt; and prior debt studies of nonprofit hospitals, other nonprofit entities, and educational organizations. Chapter III provides the methodology and research design of the

study. Chapter IV reports the findings of the research, and Chapter V provides a discussion of

the findings, conclusions, and implications for future research.

CHAPTER II:

REVIEW OF THE LITERATURE

Introduction

The literature review for this study concentrates on three areas. First, higher education

finance is discussed with a focus on the revenues and expenditures of public higher education.

This discussion also includes recent trends and issues. Second, an overview of debt in public

colleges and universities is presented. This overview addresses planning for debt, the uses of

debt, the characteristics of debt, the legal authority to issue debt, forms of debt, and the history

and current trends of college and university debt usage. Third and finally, previous debt studies

are examined. This section encompasses debt studies of hospitals, nonprofit organizations, and

education, including K-12 schools and higher education. The section related to prior debt studies

concludes with a synthesis of the methodologies and significant variables across the sectors

studied.

Higher Education Finance

This section discusses the revenues and expenditures of four-year public colleges and

universities. This discussion includes an overview of the types of revenues received and the

trend in revenues over the past five years. In addition, the financial significance of revenue

diversity to nonprofit organizations like higher education institutions is discussed. Finally, an

overview of expenditure trends and how the funds are spent by function is provided.

Revenues

Most public colleges and universities classify their revenues as promulgated by the Governmental Accounting Standards Board (GASB), and data provided by IPEDS follow the reporting guidelines required by GASB. Accordingly, revenues are classified as operating or nonoperating revenues. The National Association of College and University Business Officers (NACUBO) provides a simple definition of operating revenues as those "associated with the ongoing mission-specific objectives or activities of an institution" (National Association of College and University Business Officers, 2006, p. 101). An institution also is required to classify revenues as nonoperating when funds are received that provide a benefit but the institution is not required to provide a service to the provider equal to the value of the benefit received. Nonoperating revenues are not specifically attributable to the core activities of an institution. For purposes of this discussion, operating and nonoperating revenues will not be delineated. Additionally, investment income is not discussed because fiscal year 2008-2009 resulted in investment losses as opposed to income. Furthermore, revenues earmarked for capital projects or for retention in perpetuity in the permanent endowment are not presented. Table 1 provides a comparison of specific revenue sources of four-year public colleges and universities in 2004-2005 and 2008-2009. Based on Table 1, total revenues for four-year public degree granting institutions increased from approximately $174.1 billion in fiscal year 2004-2005 (Snyder & Dillow, 2010) to $213.0 billion in fiscal year 2008-2009 (Snyder & Dillow, 2011). With an increase in fall full-time equivalent (FTE) student enrollment from 5,640,650 in fall 2004 to 6,139,525 in fall 2008 (Snyder & Dillow, 2011), revenues per FTE student in current dollars still increased from $30,872 in 2004-2005 (Snyder & Dillow, 2010) to $34,700 in 2008-2009 (Snyder & Dillow, 2011). However, adjusted for inflation, total revenues per FTE student

decreased slightly. Based on constant 2008-2009 dollars per FTE student, total revenues peaked

at $34,976 in 2006-2007, and declined to $34,700 in 2008-2009 (Snyder & Dillow, 2011).

Revenue sources to be discussed include appropriations, tuition and fees, grants and contracts,

sales and services of auxiliary enterprises and hospital operations, and gifts and endowments.

Table 1

Select Revenues of Four-year Public Degree-granting Institutions, by Source of Revenue, 2004-2005 and 2008-2009

| | *In thousands of current dollars* | | | |
| | 2004-2005 | | 2008-2009 | |
Function	Amount	% of Total	Amount	% of Total
Tuition and fees	$31,669,001	18.19%	$43,478,018	20.41%
Appropriations				
Federal	1,635,613	0.94%	1,934,958	0.91%
State	43,165,057	24.79%	50,863,465	23.87%
Local	298,771	0.17%	484,689	0.23%
Total appropriations	45,099,441	25.90%	53,283,112	25.01%
Grants and contracts				
Federal	26,878,896	15.44%	30,603,498	14.36%
State	5,534,573	3.18%	7,256,568	3.41%
Local	6,921,242	3.97%	9,163,271	4.30%
Total grants and contracts	39,334,711	22.59%	47,023,337	22.07%
Sales and services of auxiliary enterprises	15,884,386	9.12%	19,391,219	9.10%
Sales and services of hospitals	21,771,547	12.50%	27,301,883	12.82%
Independent operations	590,166	0.34%	1,036,660	0.49%
Gifts	4,328,996	2.49%	5,635,304	2.65%
Other	15,458,496	8.88%	15,893,381	7.46%
Total revenues	$174,136,744	100%	$213,042,914	100%
Total revenues per FTE student (current $)	$30,872		$34,700	
Total revenues per FTE student (constant $)	$34,094		$34,700	

Data Source: Digest of Higher Education Statistics, 2010, (Snyder & Dillow, 2011) Table 362. Revenues of public degree-granting institutions, by source of revenue and type of institution: 2005-06 through 2008-09 and Digest of Higher Education Statistics, 2009, (Snyder & Dillow, 2010) Table 352. Revenues of public degree-granting institutions by source of revenue and type institution: 2003-04 through 2006-07.

Appropriations. State appropriations still comprise the largest portion of total revenues for four-year public degree-granting institutions. Table 1 shows that in 2008-2009, state appropriations were $50.9 billion increasing from $43.2 billion in 2004-2005. However, the $50.9 billion represents a decline of 4.7% in state appropriations when compared to a peak in state funding of $53.3 billion in 2007-2008 (Snyder & Dillow, 2011). The percentage decline from 2007-2008 to 2008-2009 is 8.8% when full-time equivalent students and inflation are considered. As a percentage of total revenues, state appropriations decreased from 24.79% to 23.87% over the same five-year period. Federal and local appropriations for four-year public institutions have remained constant, representing only around 1.1% of total appropriations in 2008-2009 (Snyder & Dillow, 2011).

When reviewing the trend of state funding for higher education over a longer period of time, state appropriations per FTE student, adjusted for inflation, are 19% less than 10 years ago (Baum & Ma, 2010). Twenty years ago, states contributed on average $9.74 per $1,000 of state personal income to public institutions. In 2009-2010, this amount was equivalent to only $6.60 (Baum & Ma, 2010).

The national economy plays a role in the level of funding provided by the states to higher education. The National Bureau of Economic Research reports that the most recent recession lasted for 18 months, beginning in December of 2007 and ending in June 2009 (National Bureau of Economic Research, 2010). To assist states during this economic downturn, Congress passed the American Recovery and Reinvestment Act (ARRA). State fiscal stabilization funds were provided to states to support education. However, not every state provided funds to higher education. Fifteen states provided $2.3 billion in state fiscal stabilization funds to higher education in fiscal year 2009, and 43 states provided $4.8 billion in fiscal year 2010. These

funds represented 2.6% and 5.4%, respectively, of total state and local government support to higher education (State Higher Education Executive Officers, 2011).

While each state is different, scholars (Hovey, 1999; Okunade, 2004; Weerts & Ronca, 2006; Zumeta, 2004) agree that the structure of state budgets, which is impacted by the national economy, is a common cause for the decline in operating appropriations. The national economy with the economic recessions in the early 1980s and early 1990s was a major factor in declining state support, and this cycle of fiscal uncertainty continued at the beginning of the 21st century (Weerts & Ronca, 2006). In addition, in the structure of most state budgets, public higher education is funded as a discretionary expenditure (Hovey, 1999; Zumeta, 2004). Public institutions must compete for funding with mandatory expenses or expenses that must be funded by law, such as Medicaid and other health care expenses, public welfare, social security, and corrections. Higher education also has to compete with elementary and secondary education for a shrinking piece of the state budget (Mumper, 2001; Okunade, 2004; Zumeta, 2004). Hovey (1999) notes that this competition for scarce dollars results in higher education becoming the balancing wheel for state budgets. In turn, increasing tuition and fees becomes the balancing wheel that public institutions use to balance their budget. These reductions in state funding are notably significant in recessionary times (Weerts & Ronca, 2006).

Tuition and fees. Tuition and fees have become an increasingly important revenue source for public institutions. As noted earlier, funding levels for state appropriations for four-year public institutions have not kept pace with inflation and enrollment growth. Consequently, tuition and fees increase faster when state and local support does not maintain funding sufficient to support enrollment increases and offset inflationary increases (State Higher Education Executive Officers, 2011). As shown in Table 1, in 2004-2005, tuition and fees for four-year

public institutions comprised 18.19% of total revenues (Snyder & Dillow, 2010). This amount

increased to 20.41% in 2008-2009 (Snyder & Dillow, 2011). In dollar terms, tuition and fees

increased from $31.7 billion to $43.5 billion over the same time period. With a shift to tuition

becoming a greater portion of total revenues, this privatization of funding requires students and

their families to pay for the benefit of a higher education as opposed to society (Dennison, 2003).

Yet, the number of FTE students enrolled in postsecondary institutions continues to rise

(State Higher Education Executive Officers, 2011). According to the *Digest of Education

Statistics 2010*, in the past five years from fall 2005 to fall 2009, enrollment in four-year public

colleges and universities increased from 5,728,327 to 6,452,407 or 12.6% (Snyder & Dillow,

2011). Increases in enrollment are particularly large during economic recessions (State Higher

Education Executive Officers, 2011).

Grants and contracts. Grants and contracts funded by federal, state, and local agencies

also comprise a significant portion of total revenues for four-year public colleges and

universities. According to the IPEDS online glossary (Integrated Postsecondary Education Data

System, n.d.c), these funds are provided for specific research projects and other programs to fund

direct and indirect expenses of the activity. When federal, state, and local grants and contracts

are combined, they present the second largest revenue source for four-year public colleges and

universities. This portion was 22.07% of total revenues in 2008-2009 compared to 22.59% in

2004-2005. Federal grants and contracts represented the largest portion of total grants and

contracts at 14.36% (Snyder & Dillow, 2011).

Wellman, Desrochers, and Lenihan (2008) report that public higher education revenues

have become more restrictive. For their analysis, restricted revenues included grants and

contracts, as well as auxiliary and hospital operations, while unrestricted revenues included

private gifts, tuition, state and local appropriations, unrestricted endowment earnings, and investment income. According to their report, unrestricted revenues decreased by 7.4%, 3.9% and 7.9% for public research, master's and associate's institutions, respectively, from 1998 to 2005. They note that these results indicate that public universities have less flexibility with the funds they have to spend. The recent trend shows a more consistent amount of restricted revenues. According to Table 1, when grants and contracts and sales and services of auxiliary and hospital operations are combined, the total of these revenue sources decreased slightly from 44.21% to 43.99% of total revenues from 2004-2005 to 2008-2009.

Auxiliary enterprises and hospital operations. Auxiliary operations are "a business-like, self-supporting set of activities whose costs must be covered by their revenues" (McPherson & Shulenburger, 2010, p. 16). Examples of auxiliary enterprises include food services, bookstores, housing, licensing, shopping malls, conferences, public assembly buildings, vending, student health centers, child care, and laundry services. Other services that may be self-supporting include mail services, printing and copying, parking, transportation services, fleet services, college unions, intercollegiate athletics, and university presses (Powell, 1992). However, Powell (1992) explains that "colleges and universities may classify their support and service activities differently, depending on institutional size and complexity and the purpose of the activity" (p. 1193). As shown in Table 1, sales and services of auxiliary enterprises of four-year public institutions totaled $19.4 billion in 2008-2009, an increase of $3.5 billion or 22.1% from 2004-2005. As a percentage of total revenues, auxiliary revenues remained fairly constant at 9.10% in 2008-2009 compared to 9.12% in 2004-2005 (Snyder & Dillow, 2011).

Hospital operations also are considered a form of a self-supporting activity. They are classified separately because of their financial materiality and their teaching function (Powell,

1992). Sales and services of hospitals for four-year public colleges and universities totaled $27.3 billion in 2008-2009, an increase of $5.5 billion or 25.4% from 2004-2005. As a percentage of total revenues, hospital operations increased slightly from 12.50% in 2005-2006 to 12.82% in 2008-2009.

Gifts and endowments. Although not as significant as other revenue sources, discussing gift revenue is salient because gifts depend on the wealth of donors, which may be affected negatively in recessionary economic times (Toutkoushian, 2003). Even with the U.S. economy experiencing negative growth in the latter part of 2008 and early part of 2009 (National Association of College and University Business Officers and Commonfund Institute, 2011), four-year public colleges and universities continued to collect gifts. Table 1 reveals that gifts to four-year public colleges and universities increased from $4.3 billion in 2004-2005 to $5.6 billion in 2008-2009. Gifts remained fairly steady as a percentage of total revenues, increasing from 2.49% in 2004-2005 to 2.65% in 2008-2009.

The financial benefit that gifts provide to colleges and universities receives mixed reviews. Speck (2010) notes that gifts for facilities, scholarships, and unrestricted needs can be used to reduce the gap in funding due to declining state support. However, Cheslock and Gianneschi (2008) examined gifts and state appropriations from 1994 to 2004 for public four-year universities and found that while private giving at public institutions in the aggregate increased, at the institutional level, private giving was not sufficient to offset contractions in state funding. They also found that private giving was higher for those public institutions that were more selective. Wellman, Desrochers, and Lenihan (2008) also reported that from 1987 to 2005, gifts as a percentage of total revenues had not increased and had not contributed significantly to institutions' budgets.

A specific type of gift common to higher education is a gift to an endowment (Speck, 2010). An endowment is defined as "the permanent funds of a nonprofit institution consisting of cash, securities, or property" (National Association of College and University Business Officers and Commonfund Institute, 2011, p. 105). Endowment funds come in different forms based on a donor's stipulations. Some donors require the principal amount of the gift to be maintained in perpetuity (true endowment), while other donors may allow the principal to be spent after a time or purpose restriction has been met (term endowment). An institution's board also may establish a "fund functioning as an endowment" that may be spent with board approval (Mezzina, Prager, Salluzzo, & Tahey, 2010). Although endowment gifts may be restricted to certain activities, Cheslock and Gianneschi (2008) noted that "many gifts are "effectively unrestricted" in that they are restricted to activities the institutions would perform anyway" (p. 210). Thus, endowment gifts provide an alternative source of revenue to higher education institutions. Endowments provide a financial benefit in that they represent assets that may be invested to produce investment income. This income provides revenue diversification, which in turn shields an institution financially against fluctuations in other income sources (Lapovsky, 2007) and contributes to the budget of an institution (Lapovsky, 2007; Spitz, 1999).

A recent study by the National Association of College and University Business Officers (NACUBO) and Commonfund Institute provides information about the endowments of public and private educational institutions (National Association of College and University Business Officers and Commonfund Institute, 2011). The study included 850 institutions, of which 308 or 36% were public institutions. The endowments of public institutions represented 29% of the total endowments reported for the reporting period of July 1, 2009, to June 30, 2010. For 2010, endowments earned an average net return of 11.9% in comparison to a negative return of -8.1%

in 2009. However, even with the strong performance in 2010, the average net returns for the past three, five, and ten years were -4.2%, 3.0%, and 3.4%, respectively, resulting in college and university endowments that have lost value in real terms (National Association of College and University Business Officers and Commonfund Institute, 2011, pp. 4-5). While endowments can provide a source of investment income, they also produce investment losses when market conditions decline.

In terms of budget support, the NACUBO and Commonfund Institute (2011) study showed that institutions with larger endowments ($501 million and greater) generally funded a larger portion of the operating budget from the endowment (National Association of College and University Business Officers and Commonfund Institute, 2011). Endowments also are more important to private institutions for providing operating budget support. In 2010, private institutions funded an average of 8.8% of their operating budget from the endowment. However, the median percentage was much lower at 4.3%. In comparison, public institutions, excluding their foundations, funded an average of 3.0% of their operating budget. The median percentage of the operating budget funded by the endowment for public institutions was only 1.0% (National Association of College and University Business Officers and Commonfund Institute, 2011).

Revenue Diversity

Revenue diversity is not a new idea for higher education (Ehrenberg, 2000; Hearn, 2006). Revenue diversity has been described as a shift from a dependency on funds from governmental support to revenues from nongovernmental sources, such as parents, students, and donors (Clark, 2003; Johnstone, 2001). This shift in funding sources also may be referred to as the privatization of higher education (Dennison, 2003). Higher education scholars (Chabotar, 1989; Clark, 2003)

explain the significance of revenue diversification. Chabotar (1989) noted that revenues should be "diversified by sources so that the nonprofit does not become overly dependent on government appropriations, private gifts and grants, user fees or any single source" (p. 196). Accordingly, a diversified revenue base makes a college or university more self-reliant, which in turn, allows a university to adapt to change more quickly and exert discretion in spending funds (Clark, 2003). In addition, Moody's Investors Service, an agency that assigns credit ratings to higher education debt, assigns higher credit ratings to those colleges and universities with more diversified business lines (Tuby, 2011). Furthermore, a higher credit rating results in a lower interest rate for borrowing money (Blustain et al., n.d.b).

Although the extant literature reveals little research related to revenue diversification in higher education, empirical research of nonprofit institutions provides additional insight into revenue diversification. Chang and Tuckman (1994) used a Hirschman-Herfindahl Index (HHI) based on the amount of revenue and the number of revenue sources to examine the relationship between revenue diversification and the financial strength of nonprofit entities. Organizations with a calculated revenue diversification index that was closer to zero had higher diversity of revenues. Chang and Tuckman found a positive relationship existed between more diversified revenues and financial strength, where financial strength was measured based on higher operating margins. In another study of nonprofit organizations, Carroll and Stater (2009) explored the relationship between revenue volatility and revenue diversification. They reported that nonprofit entities with additional revenue sources had less revenue volatility, which increased financial stability. Finally, Yan et al. (2009) found that revenue diversification increased the likelihood that arts, cultures, and humanities nonprofit entities would issue debt but

was not significant in determining the amount of an entity's leverage or the amount of debt in proportion to assets.

Expenditures

The previous section explored the various ways that public colleges and universities generate funding for operations. These funds are then expended to fulfill the missions of the institution. Expenditures represent the costs necessary to operate a college or university (Layzell & Caruthers, 2002). As discussed in the revenue section, expenditures also must be classified as operating and nonoperating. The allocation of expenditures can by reported by functional purpose or by natural classification (i.e., compensation and benefits, supplies, etc.) (National Association of College and University Business Officers, 2006). For purposes of this section, only functional expenditures will be reported. Operating expenditures by function include instruction, research, public service, academic support, student services, institutional support, operation and maintenance of plant, depreciation, scholarships and fellowships, auxiliary enterprises, hospitals, independent operations, and other (Snyder & Dillow, 2011). Table 2 provides a comparison of expenditures by purpose in 2004-2005 to 2008-2009. The data presented in the table are discussed below.

Based on the *Digest of Education Statistics 2010* (Snyder & Dillow, 2011)*,* expenditures in total have increased for four-year public institutions from approximately $177.2 billion in 2004-2005 to $225.4 billion in 2008-2009. When student enrollment is considered, total expenditures also increased in current and constant dollars. Total expenditures per FTE equivalent student increased 16.85% from $31,413 in 2004-2005 to $36,707 in 2008-2009. However, when adjusted for inflation, expenditures per full-time equivalent student showed only a modest increase from $35,177 to $36,707 or 4.35% over the five-year period from 2004-2005

to 2008-2009. This increase represented less than a 1% increase in expenditures per year when considering enrollment and inflation.

Table 2 shows that all expenditures for four-year public colleges and universities by function remained constant as a percentage of total expenditures, varying less than 1% from 2004-2005 to 2008-2009. For example, institutional support and academic support expenditures were 7.32% and 6.79% of total expenditures, respectively, in 2008-2009 compared to 6.86% and 6.44% in 2004-2005. The only exception was other operating expenditures, which dropped from 2.80% to 1.68% from 2004-2005 to 2008-2009 when independent operations are excluded (Snyder & Dillow, 2011). Expenditures related to the educational mission of the university comprised the largest shares of total expenditures with instructional expenditures at 25.41% and research at 11.82% in 2008-2009. In comparison, instruction and research expenditures were 25.23% and 12.71%, respectively, in 2004-2005.

Table 2

Expenditures of Four-year Public Degree-granting Institutions, by Function, 2004-2005 and 2008-2009

| Function | *In thousands of current dollars* | | | |
| | 2004-2005 | | 2008-2009 | |
	Amount	% of Total	Amount	% of Total
Instruction	$44,699,891	25.23%	$57,265,615	25.41%
Research	22,528,940	12.71%	26,629,400	11.82%
Public service	8,819,093	4.98%	10,499,031	4.66%
Academic support	11,417,218	6.44%	15,300,115	6.79%
Student services	6,475,649	3.65%	8,612,795	3.82%
Institutional support	12,151,581	6.86%	16,505,969	7.32%
Operations and maintenance of plant	10,287,442	5.81%	13,805,143	6.13%
Depreciation	8,136,660	4.59%	11,719,734	5.20%
Scholarships and fellowships	5,453,252	3.08%	7,156,258	3.18%
Auxiliary enterprises	14,593,314	8.24%	18,293,456	8.12%
Hospitals	20,104,812	11.35%	25,944,900	11.51%
Independent operations and other	5,912,185	3.34%	4,297,196	1.91%
Total operating expenditures	$170,580,037	96.27%	$216,029,612	95.86%
Interest	2,526,222	1.43%	2,354,694	1.04%
Other	4,085,586	2.31%	6,978,823	3.10%
Total nonoperating expenditures	$6,611,808	3.73%	$9,333,517	4.14%
Total operating and nonoperating expenditures	$177,191,845	100.00%	$225,363,129	100.00%
Total expenditures per FTE student in current dollars	$31,413		$36,707	
Total expenditures per FTE student in constant dollars	$35,177		$36,707	

Data source: Digest of Higher Education Statistics, 2010, (Snyder & Dillow, 2011) Table 337. Expenditures of public degree-granting institutions, by purpose of expenditure and type of institution: 2003-04 through 2008-09.

The largest non-educational expenditures were hospitals and auxiliary enterprises that represented 11.51% and 8.12% of total expenditures in 2008-2009 (Snyder & Dillow, 2011). The amount that four-year public colleges and universities paid for borrowing funds (interest expenditures) decreased from $2.5 billion in 2004-2005 to $2.4 billion in 2008-2009, dropping from a high of $3.5 billion in 2006-2007 (Snyder & Dillow, 2011). As a percentage of total expenditures, interest expenditures declined from 1.43% in 2004-2005 to 1.04% in 2008-2009 for four-year public colleges and universities (Snyder & Dillow, 2011).

This section focused on the sources and uses of funds of four-year public colleges and universities and related trends. The predominant sources of revenues that were discussed included state appropriations, grants and contracts, tuition and fees, sales and services of auxiliary enterprises and hospital operations, gifts, and endowments. The majority of revenue sources, as a percentage of the total revenues, has remained fairly stable over the five-year fiscal period from 2004-2005 to 2008-2009. However, state appropriations have declined slightly while tuition and fees have increased as a percentage of total revenues. In addition, revenue diversification in higher education and nonprofits was reviewed. Finally, trends in higher education expenditures were provided. Expenditures in total have increased, but by function have remained constant as a percentage of total expenditures from 2004-2005 to 2008-2009. The next section discusses debt, which is another type of resource that colleges and universities may use to fulfill their missions.

University Debt

This section provides a comprehensive view of debt for colleges and universities beginning with the process of strategically planning for debt and alternatives to borrowing funds. In addition, the uses and characteristics of debt are discussed. Next, the legal authority of

colleges and universities to issue debt is explained, and the types of debt instruments that colleges and universities may use to borrow are described. Finally, this section provides a historical overview of debt usage and current trends for borrowing funds by colleges and universities.

Planning for Debt

Planning for debt is important for two reasons. First, debt is not an infinite resource; colleges and universities are constrained by the financial resources needed to repay debt. Therefore, debt must be used judiciously for institutional priorities (Van Gorden, 2006). Second, the repayment of debt—in particular, long-term debt—is a fixed cost that requires a reallocation of resources within the operating budget; thus, debt has the potential to limit operating flexibility (Blustain et al., n.d.b; Tahey et al., 2010; Van Gorden, 2006).

Planning for debt should not be a static process but rather a strategic and dynamic one that can be modified as priorities change. Hence, planning for debt requires a strong connection to the strategic plan of a university (Tahey et al., 2010; Van Gorden, 2006). A strategic plan provides the opportunity to analyze the need for debt. While the intricacies of strategic planning will not be discussed, understanding where planning for debt fits in a holistic planning framework for higher education is important.

Higher education planning can be classified into three types: academic, resource, and facilities (Hollowell, Middaugh, & Sibolski, 2006). The use of debt is part of resource planning, which includes human resources, budget planning, investment strategies, and fundraising (Hollowell et al., 2006). Academic and facilities planning (also referred to as capital planning) (Kaiser, 2001) provide the inputs that must be considered when planning for resources.

Kaiser (2001) provides five phases that illustrate the capital planning process for facilities. In phase one, the strategic plan provides overall guidance related to campus growth and academic and program needs. External factors are also considered in this phase. In phase two, a qualitative and quantitative assessment of needs is made. The quantitative assessment entails identifying facilities space and analyzing utilization requirements. The qualitative assessment includes an analysis of the physical condition and adequacy of facilities. In addition, an assessment of facilities management is conducted to determine what resources are currently available and whether the resources are sufficient for maintaining the facilities. Phase three combines the inputs from the first two phases into a capital plan document that identifies the capital projects that need to be undertaken, and a ranking is assigned to each project. In phase four, the campus master plan is developed. A campus master plan is the framework to guide the development of the facilities needs summarized in phase three. A campus master plan shows how the campus is projected to change physically for the planning period (Caruthers & Layzell, 1999). The master plan identifies "building design and location, campus traffic patterns, utilities needs (that is, electricity, natural gas, water, and sewer), and needed land improvements or acquisitions" (Caruthers & Layzell, 1999, p. 74). Phase five includes a communications strategy to reveal the planning process to campus constituencies (Kaiser, 2001).

Once the needs and priorities are set, then the next step is to develop a multi-year capital budget that coordinates with the strategic plan (Blustain et al., n.d.b; Van Gorden, 2006). This capital budget provides the starting point for planning for resources such as debt. Funding is established through the preparation of a capital budget. Dickmeyer (1992) notes that a capital budget is also a means for an institution to evaluate different financial strategies for funding projects by considering project timelines, size, and cost. This evaluation allows an institution's

financial officer to understand the implications of project financing and its impact on the institution's financial statements. Kaiser (2001) recommends the initial preparation of a financial template to determine the basis for funding. The template should separate the funding by source, including public, private, and institutional sources. Due to the large cost of capital projects, funding for one project may come from a combination of sources. The combination of funding streams should be analyzed to ensure the best possible allocation of resources is achieved (Tahey et al., 2010).

Again, several sources of funds may be used to develop a capital budget. For public universities, state capital appropriations are one source of funds for capital projects (Manns & Katsinas, 2006). In a recent report, Harris, Manns, and Katsinas (2012) studied state funding for capital needs for public higher education from fiscal year 1997 to 2008 and concluded that capital appropriations for U.S. public higher education had not increased sufficiently to address facilities' needs for deferred maintenance and student enrollment increases. Without capital appropriations, public institutions must use other sources of funds for capital projects. Kaiser (1996) reported in a 1995 survey that state funding represented the majority of funding for construction and renovation for public institutions at 44.6%. The next largest funding sources were institutional funds (21.1%) and tax-exempt bonds (20.6%). Federal funds, private gifts, foundation gifts, internal loans, taxable bonds, commercial loans, and other sources comprised the remaining 13.7% of funding. The sources of institutional funds were not delineated in the 1995 study; however institutional sources may include internal reserves, endowments, and gifts (Dickmeyer, 1992). Dickmeyer further indicated that gifts are a favored source of funding for capital projects, but reserves are more appropriate for the occasional major repair. In addition, endowments are not a preferred funding mechanism because an institution will earn a higher

interest rate on its endowment than the interest rate paid for the cost of tax-exempt debt. This economic justification supports a college or university using debt and retaining internal funds for investment purposes (Hornfischer, 1997). Massy (1996a) also notes that borrowing from endowments can be problematic based on donor stipulations that do not allow permanent endowments to be spent, and donor restrictions that determine how income generated from endowments must be spent. As such, long-term debt has become a more common mechanism to fund major capital projects. After all available funding resources are identified for prioritized projects, gaps in funding sources can be identified. In turn, this gap in funding may be addressed through debt financing.

After the amount of debt that is needed for campus priorities is determined, a debt strategy must be developed. Blustain et al. (n.d.b) notes that a debt strategy should consider four areas. These areas include measuring debt capacity, establishing a diversified debt portfolio, developing policies and practices, and ensuring management oversight of debt.

As part of a debt strategy, a university should compute its debt capacity. Debt capacity is the amount of long-term debt a university can issue while maintaining a certain credit rating (Blustain et al., n.d.b). Financial ratios may be used to calculate a measure for debt capacity. Blustain et al. (n.d.b) provide two common ratios to measure debt capacity. One measure is the ratio of debt service to total revenues. Based on national averages, debt service comprises between 4% and 6% of total revenues (Blustain et al., n.d.b). A second measure is the ratio of debt to total invested assets (Blustain et al., n.d.b). Invested assets include endowment and quasi-endowment values. In a 2005 study of 50 New England universities by Strehle and Eisenberg (as cited in Blustain et al., n.d.b), less wealthy institutions had an average ratio of debt to endowment of 67% compared to 15% for wealthier colleges.

Another measure recommended to evaluate debt capacity is the viability ratio (Mezzina et al., 2010). For public institutions, the viability ratio is calculated as expendable net assets (defined as unrestricted net assets plus expendable restricted net assets) divided by long-term debt that is project-related debt. Although institutions should develop their own benchmark that meets their purposes, a ratio greater than 1:1 indicates that an institution could pay outstanding obligations as of the date calculated (Mezzina et al., 2010).

To manage debt strategically, Mezzina et al. (2010) note that colleges and universities should compute financial ratios that not only measure debt capacity but also debt affordability. Analyzing debt affordability ratios will allow an institution to determine if debt payments are manageable and operations can sustain the obligation. Two primary ratios that measure debt affordability include the debt burden ratio and the debt service coverage payment. For public institutions, the debt burden ratio is calculated as: debt service payments (interest expense plus principal payments) divided by total operating and nonoperating expenses plus principal payments less depreciation expense. The debt burden ratio shows how much of the institution's budget is obligated for debt repayment and whether additional debt payments can be managed. Mezzina et al. (2010) explain that a debt burden ratio that does not exceed 7% is considered an appropriate tolerance level. That is, debt payments ideally should not exceed 7% of total expenditures to maintain budget flexibility. In comparison, the debt service coverage ratio focuses on an institution's sources that can be used for debt repayment. Although no benchmark is indicated for the debt service coverage ratio, a ratio that shows an increasing trend indicates an institution has the financial resources to sustain the debt payment. The debt service coverage ratio is calculated as net operating income plus net nonoperating revenues plus interest and depreciation expense divided by principal and interest payments.

After an institution analyzes its financial capacity and ability to afford debt, another part of a debt strategy includes establishing a diversified debt portfolio. A diversified debt portfolio requires the debt of an institution to be managed as a collective group "with an eye toward lowering costs, mitigating risk, optimizing credit ratings, and supporting the institution's strategic direction" (Blustain et al., n.d.b, p. 16). A portfolio approach requires analyzing total debt as opposed to individual debt transactions. In developing a debt portfolio, various factors should be considered such as the structure of debt instruments and the distribution of project financing between internal sources and debt. Once established, the debt portfolio should have established benchmarks for monitoring purposes (Blustain et al., n.d.b).

A debt strategy also requires an institution's governing board to approve a debt policy (Blustain et al., n.d.b; Van Gorden, 2006). The policy should be adapted to the needs of the institution and should provide "the framework and guidelines for borrowing institutional debt" (Van Gorden, 2006, para. 2). This policy will serve as a guide for the institution's financial officer to follow for issuing debt. Like the debt portfolio, the policy should be monitored once approved (Mezzina et al., 2010). In addition to a debt policy, Blustain et al. (n.d.b) recommend that prior to the issuance of debt, institutions need to follow certain practices. Although not all encompassing, procedures that institutions may follow include determining the: internal and external sources in addition to debt that will fund capital projects; need for independent analysis of debt issuance; adequacy of revenues that support debt service and if not adequate, the steps that will occur to remedy the deficiency; allocation of debt issuance costs to projects and debt service to functional areas; processes to monitor debt covenants and other compliance requirements; and need for debt limits when institutions are large and decentralized (Blustain et al., n.d.b).

Finally, strategically planning for debt requires a high level of management involvement (Blustain et al., n.d.b). Prior to issuing debt, the institution's financial officer must have a model that provides projections illustrating the effect additional debt will have on the institution's finances. The plans for debt will need to be communicated to the governing board. Furthermore, once debt is issued, management must ensure that skilled professionals are assigned the responsibility of monitoring debt on a consistent basis to ensure compliance with lender and other requirements (Blustain et al., n.d.b).

Uses of Debt

Debt can be used for a variety of short and long-term needs. For long-term needs, debt can be used to fund capital projects including new construction, equipment, renovations of existing facilities, and deferred maintenance (Hornfischer, 1997, p. 17). Funding these types of projects with debt is justified because the projects have a long useful life that will benefit future generations of campus constituencies (Blustain et al., n.d.b; Hornfischer, 1997). Therefore, using debt allows the university to pay for the expense of acquiring the project over the same period as the useful life of the project (Blustain et al., n.d.b). Examples of each of these project types and short-term debt needs are discussed below.

New construction represents new buildings and/or major additions (Blustain, Bruszewski, Daigneau, Roloff, & Ledbetter, n.d.a). New academic buildings can help an institution maintain the quality of program offerings, appeal to quality faculty (King et al., 1994), improve an institution's overall quality, and enable participation in new programs (Hornfischer, 1997). Examples of new construction projects at colleges and universities include academic buildings, libraries, residential communities, athletic facilities, and recreational facilities (King et al., 1994).

New equipment also may be funded with debt; however, the financing period may need to occur over a shorter time frame because equipment has a shorter useful life (Hornfischer, 1997). Technological change occurs quickly and can render a piece of equipment obsolete in a short timeframe (Hornfischer, 1997). For instance, a computer may have a useful life that is less than five years. Therefore, using debt that must be repaid over 30 years to finance the computers would not be prudent, but using the debt for a new building that has a useful life of 30 years would be.

Debt also may be used to fund infrastructure projects (King et al., 1994). Infrastructure projects are projects that support facilities but are not linked to a specific building project. Examples of these projects include utilities projects for electrical and telecommunication services, and water and sewer lines. In addition, land may be acquired with debt and used for future expansion (King et al., 1994).

Renovation projects also may be financed with debt. A renovation project requires the modernization or upgrade of an existing facility (Blustain et al., n.d.a). This type of project may include partial or full replacement of building systems. Renovation projects may be required to meet building code requirements, change the use of the space, or retrofit an older building for the latest technology (Blustain et al., n.d.a).

Debt also may be used to fund deferred maintenance projects. Deferred maintenance is defined as "planned or unplanned work that is postponed to a future budget cycle or because the facility is scheduled to be replaced or renovated" (Blustain et al., n.d.a, pp. 8-9). Deferred maintenance is not often a campus priority but must be addressed to ensure that buildings are maintained in a safe condition (King et al., 1994). Furthermore, when the maintenance issues continue to be postponed, fixing the deteriorating facility becomes more costly (Blustain et al.,

n.d.a). A recent survey by Harris et al. (2012) found that facilities for U.S. public higher education have continued to deteriorate from fiscal year 1997 to 2008 based on benchmark indicators for deferred maintenance.

In addition to capital projects, debt may be used to fund short-term operating needs (Matthews & Cook, 1997). This situation could arise if the college or university has its cash reserves invested, and based on timing, cannot or does not want to liquidate the investment. In this situation, the use of short-term debt for this need would be prudent if a higher rate is earned on the investment of cash reserves than is paid to finance short-term working capital needs (Matthews & Cook, 1997).

Characteristics of Debt

Debt has certain characteristics that are established by the borrower (a college or university) and the lender. These characteristics include the term for repayment, the interest rate charged for the use of the borrowed funds, and security for the debt. In addition, the debt of nonprofit colleges and universities may be classified as tax-exempt or taxable by the Internal Revenue Service (IRS) depending on the use of the proceeds. Each of these characteristics is discussed below.

Term of the debt. The term for the maturity or the date on which a debt instrument is due for repayment can be viewed from either a financial reporting or financial market perspective. According to the National Association of College and University Business Officers' *Essentials of College and University Accounting: A Reference Companion to NACUBO's Online Self-Study Course* (2006), financial statement reporting for debt of a college or university is classified as either a current liability or a noncurrent liability. Debt payable in less than one year

is classified as a current liability. Alternatively, debt payable in greater than one year is classified as a noncurrent liability.

From a financial market perspective, the term of debt may occur over different time horizons. The time period for repayment may be: (a) short-term—debt maturing in less than one year; (b) intermediate-term—debt maturing between one year and 10 years; or (c) long-term—debt maturing in more than 10 years (Matthews & Cook, 1997). In general, the longer that debt is outstanding, the higher the interest rate will be for the debt (Blustain et al., n.d.b; Matthews & Cook, 1997).

Interest rates. Certain factors influence the interest rate that must be paid for borrowed funds. These factors include (a) the real interest rate (Blustain et al., n.d.b; Bodie, Kane, & Marcus, 2004; Libby, 1985; Mankiw, 2002; Mason & Alfano, 1986; Matthews & Cook, 1997); (b) inflationary expectations (Blustain et al., n.d.b; Bodie et al., 2004; Libby, 1985; Mankiw, 2002; Matthews & Cook, 1997); (c) the term or liquidity of the debt (Libby, 1985; Mason & Alfano, 1986; Matthews & Cook, 1997); and (d) lender's risk or creditworthiness of the borrower (Blustain et al., n.d.b; Libby, 1985; Mason & Alfano, 1986; Matthews & Cook, 1997). These factors and two types of interest rates—fixed and variable—are briefly discussed below.

According to traditional business scholars, the nominal interest rate or the interest a borrower pays consists of two components—the real interest rate and inflationary expectations (Bodie et al., 2004; Mankiw, 2002; Matthews & Cook, 1997). The real rate is determined by the supply of and demand for money. Matthews and Cook (1997) explain that if lenders have a supply of funds that are readily available and abundant for investment but entities that need to borrow the funds are limited, then interest rates for the borrowed funds will be lower. In contrast, if high demand exists for borrowed funds with limited supply, then this market

condition increases the interest rate. Mankiw (2002, pp. 487-488) explains that the supply of money in the U.S. and other countries is controlled by monetary policy, which is set by an independent central bank. For the U.S., the central bank is known as the Federal Reserve or simply the Fed. The Fed's monetary policy includes three mechanisms to control the supply of money. The use of open-market operations is one mechanism, which involves the Fed purchasing and selling government bonds. Purchasing government bonds will increase the supply of money, whereas selling government bonds will decrease the supply. Another mechanism is the establishment of reserve requirements that the Fed mandates that banks have. If banks are required by the Fed to have more funds in reserves, then less money will be available in the market. The final mechanism is the discount rate, which is the rate that banks must pay the Fed for borrowed funds needed to meet reserve requirements. A lower discount rate will allow a bank to borrow more cheaply to maintain reserves, resulting in an increase in the money supply (Mankiw, 2002).

Inflationary expectations are another driver of the nominal interest rate (Blustain et al., n.d.b; Bodie et al., 2004; Mankiw, 2002; Matthews & Cook, 1997). Lenders have certain expectations about what their investments should earn. In addition to expecting compensation for not having access to loaned funds while the debt is outstanding, a lender also expects compensation for shifts in purchasing power or inflation (Blustain et al., n.d.b). Therefore, if inflation is expected to rise, then lenders will expect a higher interest rate for compensation (Blustain et al., n.d.b; Matthews & Cook, 1997). This expectation is especially true when the debt has a longer time for repayment (Matthews & Cook, 1997).

Liquidity and financial risk factors also may influence the interest rate that must be paid for borrowed funds (Matthews & Cook, 1997). As noted earlier, debt can be repaid over

different periods of time. In general, an inverse correlation exists between time and interest rate.

Long-term debt will carry higher interest rates in comparison to short-term debt because of the

greater risk for interest rate fluctuations (Matthews & Cook, 1997). A lender will expect a

higher interest rate for committing funds for a longer period of time. With longer term debt, the

lender foregoes liquidity or "how readily an investment can be converted into cash without loss

of principal" (Matthews & Cook, 1997, p. 1686) and therefore must be compensated at a higher

rate. Likewise, borrowers are willing to pay a higher rate for the longer period to avoid uncertain

market fluctuations.

The risk a lender perceives based on a borrower's creditworthiness also influences the

interest rate of debt. If a lender is concerned about the potential for a borrower not to repay the

debt, then a higher interest rate will be expected to compensate for the additional financial risk

(Blustain et al., n.d.b; Matthews & Cook, 1997). Just as individuals have credit ratings, entities

like colleges or universities can be rated by credit agencies to assist lenders in determining the

amount of financial risk (Matthews & Cook, 1997). The process for rating an institution's credit

is discussed further in a later section.

While certain influences on interest rates are not within the control of the borrower,

colleges and universities, as borrowers, can decide what type of interest rate is appropriate.

Certain debt instruments may carry a fixed or variable rate of interest. Blustain et al. (n.d.b)

explain that the advantage to a fixed interest rate is that the college or university knows exactly

what the annual principal and interest payments will be and can budget accordingly. However,

the disadvantage to fixed interest rates is that, depending on market conditions, these interest

rates may be higher than variable rates. These market conditions can affect the lender and the

borrower (i.e., university). The lender is accepting the risk of a fixed rate over a period of time;

therefore, if interest rates rise, the lender that is locked into a fixed rate loses additional investment income. Conversely, if interest rates decline, then the institution or borrower may pay more interest than the market currently demands.

An alternative to fixed rate interest is variable rate interest. Variable rate debt may also be referred to as floating rate debt (Blustain et al., n.d.b). Because a debt instrument with a variable rate will reset within a predefined time (Matthews & Cook, 1997), the lender has less interest rate risk; therefore variable rate debt has the advantage of having lower interest rates, which reduces the costs associated with financing a project (Blustain et al., n.d.b; Matthews & Cook, 1997). As evidenced by the name, the disadvantage to variable rate debt is that the college or university is subject to interest rates that vary, which increases risk and makes budgeting annual debt payments difficult.

Security. The security pledged for debt is another characteristic of debt. When structuring a debt financing, the security pledged for debt provides the lender with assurances that debt will be repaid. Common types of security include: revenue pledges, collateral, and covenants (Blustain et al., n.d.b; King et al., 1994). Credit enhancements also may be used to improve the credit quality of debt (Blustain et al., n.d.b; Matthews & Cook, 1997).

Revenue pledges may be broadly or narrowly defined. Revenue pledges that pledge general institutional resources are a broader form. A general institutional resources pledge allows the pledge of "all revenues and resources of the institution not restricted legally to another use or purpose" (Blustain et al., n.d.b, p. 50) to be used to repay the debt. Broad pledges may include all available revenues but exclude revenues that the college or university is legally restricted from pledging, such as state appropriations and restricted gifts and grants. Revenue pledges also may be more narrowly defined and, as such, provide less security to lenders. A

pledge of tuition and fees is one type. Specific revenues, such as those from student room fees, also may be pledged from a specific project that generates revenue (Blustain et al., n.d.b).

Physical collateral may also be used as security. If the borrower fails to repay the debt, the lender may sell the asset to pay off the debt (Blustain et al., n.d.b). In the past, colleges and universities would pledge endowments as collateral; however, changes in the federal tax law in 1986 restricted the earnings on funds that had been pledged to repay the debt to an earnings yield that was equal to or less than the interest rate on any tax-exempt debt (King et al., 1994). As such, with higher rates of return on endowments, this restriction effectively eliminated endowments as collateral. However, endowments may be included as part of debt covenants (Blustain et al., n.d.b; King et al., 1994).

Debt covenants are "the ongoing operating promises of the institution that will form parameters within which the institution must be managed" (King et al., 1994, p. 82). King et al. (1994) provide examples of different covenants including the requirement of maintaining and insuring the debt financed asset, completion of annual audits, limitations on issuing additional debt, and maintenance of certain financial ratios. Colleges and universities also may be required to sustain rates for various revenues at a level that will cover obligations when due (Mincke, 2008). Determining compliance with this rate covenant is done through an annual calculation of the debt service coverage ratio (Mincke, 2008). The extent to which covenants will be required depends on the strength of a college's or university's credit (King et al., 1994). For example, Mincke (2008, p. 1060) explains "a small private, college with weak student demand, slim liquidity, and/or above average debt burden", is likely to have more restrictive covenants in comparison to a large flagship university. Because covenants can be restrictive and potentially

limit operational flexibility, colleges and universities should analyze covenants carefully prior to inclusion in a debt financing (King et al., 1994).

A college or university may also consider credit enhancement to achieve a lower interest rate on a borrowing. With credit enhancement, the university assumes the credit rating of the entity providing the enhancement. Forms of credit enhancement include guarantees (Blustain et al., n.d.b), letters of credit, and bond insurance (Blustain et al., n.d.b; King et al., 1994; Matthews & Cook, 1997). Guarantees are provided by third parties that are generally affiliated with the institution and agree to pay the debt if the institution defaults on the loan. For an upfront or annual fee, colleges and universities may also obtain a letter of credit from a financial institution that agrees to pay the debt if not paid by the institution (Blustain et al., n.d.b). Letters of credit are more commonly used as an enhancement for shorter-term debt that can range from one to 10 years. Finally, colleges and universities may pay an upfront irrevocable insurance premium for bond insurance to guarantee payment of debt service to lenders. However, bond insurance is no longer as common after the credit crisis in 2008 resulted in the downgrade of many of the bond insurers' credit ratings (Blustain et al., n.d.b). Credit enhancement should only be used if the cost of paying the additional fees is less than the interest that would be paid without the enhancement.

Tax-exempt and taxable debt. Unlike corporations and for-profit colleges and universities, nonprofit institutions have the advantage of issuing debt that is either tax-exempt or taxable depending on the use of the borrowed funds. Under U.S. tax law, the federal government does not tax the income earned by individuals or businesses from the debt of a nonfederal governmental entity (Blustain et al., n.d.b). Therefore, public colleges and universities, as agencies of state government, would qualify to issue tax-exempt debt. In addition, charitable,

educational, scientific, religious, and like nonprofit organizations designated as tax-exempt organizations under Internal Revenue Code 501(c)(3) (Hopkins, 2004) can issue tax-exempt debt (Fabozzi, 2002). These types of organizations are commonly referred to as 501(c)(3) nonprofit organizations. The IRS provides an online searchable database of tax-exempt organizations. For higher education, this database includes independent and public colleges and universities, as well as affiliated foundations of higher educational institutions (Internal Revenue Service, 2012).

The tax status of the debt applies to the purchaser of the debt or the lender of the money. Blustain et al. (n.d.b) explain that the purchaser of a tax-exempt instrument will not pay federal taxes and potentially state and local taxes on the interest earned. Hence, a tax-exempt debt instrument could potentially be a triple tax-exempt security and not taxed for federal, state, and local purposes. Thus, tax-exempt debt instruments can be appealing investments for individuals or entities that are in a higher tax bracket.

Because of this tax advantage, tax-exempt debt will have a lower interest rate than taxable debt. This tax advantage can be illustrated with a calculation. The tax-exempt interest rate can be computed as: Tax-exempt interest rate = (Taxable interest rate)(100% minus Marginal tax rate) (Fabozzi, 2002). Consider an individual who pays 33% of his or her income in taxes. This individual could purchase a tax-exempt investment or a taxable investment. A taxable investment that pays a 6% interest rate would be equivalent to a 4% tax-exempt interest rate computed as (6%)(100% minus 33%). Therefore, the purchaser of tax-exempt debt will accept a lower interest rate because the interest income will not be taxed. However, when federal tax rates decline, investors, who purchase tax-exempt debt, will require a higher interest rate (Blustain et al., n.d.b).

Although tax-exempt debt has its advantages, taxable debt can also be beneficial to colleges and universities. Taxable debt has two principal advantages (Blustain et al., n.d.b). First, taxable debt instruments do not have the same compliance requirements as tax-exempt debt instruments. This factor reduces the transaction costs of taxable debt. Second, tax-exempt debt cannot be issued for every type of project an institution needs to finance with borrowed funds. For example, a university may need to build a dining facility for campus and issue debt for the financing. The university does not manage the dining operations. Instead, the management of dining services is outsourced to a third party service provider. This type of arrangement would be considered private activity use under the Internal Revenue Code and would limit the amount of tax-exempt debt (Blustain et al., n.d.b; Israel, 2008) that could be used. Thus, the tax-exempt advantage that a college or university receives cannot be transferred to its private partners. Therefore, taxable debt is an alternative source of financing because the use of the funds is not subject to the restrictions of tax-exempt debt (Blustain et al., n.d.b). As illustrated earlier, the principal disadvantage to taxable debt is that a college or university will have to pay a higher interest rate on the taxable debt (Blustain et al., n.d.b) in comparison to tax-exempt debt.

Debt that is structured as tax-exempt debt is subject to the provisions of Section 103 of the Internal Revenue Code, which provides the restrictions related to tax-exempt financings (Blustain et al., n.d.b; Israel, 2008). These provisions include the use of bond proceeds, tax arbitrage, and other general requirements (Israel, 2008). Additional discussion is provided related to the use of bond proceeds and tax arbitrage.

Tax-exempt debt must be related to the exempt purpose of an entity (Blustain et al., n.d.b). For a college or university, the project would have to contribute to the university's educational mission. In addition to private activity use discussed earlier, Israel (2008) explains

that private payment or security may limit the use of tax-exempt financing for projects. Private payment occurs when a private or nongovernmental entity will make a payment to the college or university for facility usage that has been financed with tax-exempt debt. Private security occurs when tax-exempt debt is secured by an interest in the facility that will be used by a private entity. Colleges and universities may have facilities with space allocated for a combination of mission-specific and private activities. Therefore, colleges and universities that anticipate having private use and private payment or security in facilities financed with tax-exempt debt should confer with tax counsel to determine the impact of these private activities on the taxability of the debt (Israel, 2008).

Another key provision of Section 103 is that tax arbitrage is not allowed (Blustain et al., n.d.b; Israel, 2008). Tax arbitrage occurs when tax-exempt debt is issued and then invested by a borrower in an investment vehicle that earns a higher rate than the cost of the debt. The potential for tax arbitrage exists because colleges or universities may issue the debt and then begin construction. Therefore, the debt proceeds may be invested until the funds are spent for construction. If tax arbitrage should occur, institutions are required to rebate the profits on the earnings to the Internal Revenue Service (Israel, 2008).

Authority to Issue Debt

Depending on the legal and regulatory structure of each state, not all public colleges and universities will have the authority to issue tax-exempt debt (Blustain et al., n.d.b; King et al., 1994). A 2006 survey of 37 states on capital funding for public higher education reported that 29 states indicated that their public universities or university systems could issue debt (Potter, 2006). In addition, 23 states reported that the state may issue the debt and require the institution to share in the repayment.

To assist public and independent colleges and universities without legal authority, states have created state or local authorities. An authority is a legal entity that "by state legislation is either a government instrumentality or public benefit corporation and is authorized to issue tax-exempt securities under federal tax law" (King et al., 1994, p. 37). These authorities vary in the level of service to the institution. Some authorities may be involved in the initial planning stages of the capital project through completion, while others may serve only as a passive conduit (Blustain et al., n.d.b). The authorities will issue the debt and then loan the money to the college or university; in turn, the institution will pay the authority the principal and interest on the debt and other administrative expenses of the authority. These authorities are often used by private or independent colleges and also may be used by other 501(c)(3) nonprofit institutions (Blustain et al., n.d.b; King et al., 1994). As such, a nonprofit affiliated foundation of a college or university may be able to use an authority to issue tax-exempt debt for colleges and universities. In sum, a public institution may be able to issue tax-exempt debt through three conduits: the institution itself, the state, or an authority (Blustain et al., n.d.b).

Types of Debt

Debt may be comprised of different types of financial instruments with varying lengths of time required for repayment. Common forms of debt utilized by colleges and universities will be explained here. In addition, the associated timeframes for repayment of the debt and the efficacy of the debt instrument will be discussed.

Bonds. Developing the financial structure for a bond issue and selling bonds to the public involves a complex process that is beyond the scope of this study. However, a general understanding of the process of procuring bonds as debt is important because public colleges and universities utilize bonds to fund capital projects (Kaiser, 1996). Blustain et al. (n.d.b) define a

bond as "a promise to repay a specified sum (principal) plus compensation (interest) to a lender for use of the lender's money, with payments to be made on specified dates" (p. 21). As noted earlier, colleges and universities must have the legal authority to issue any bonds. In addition, institutions are required to engage several external participants to accomplish the process. The participants may vary depending on the structure of the bond financing. Colleges and universities will need to hire bond legal counsel, a financial advisor, a bond trustee, and underwriters (Blustain et al., n.d.b). The external auditor of the institution also will need to be involved as the audited financial statements of the college or university must be disclosed as part of the process (King et al., 1994).

Independent ratings agencies that issue a credit rating for the bonds also will be a part of the process (Blustain et al., n.d.b). The three ratings agencies are Moody's Investors Service, Inc., Standard & Poor's (S&P) Corporation, and Fitch Ratings. The ratings agencies are paid a fee to assess the creditworthiness of the bonds and will continue to review the bond rating for the time period the bonds are outstanding (Blustain et al., n.d.b).

The most common factors that ratings agencies consider when rating college or university debt is the institution's student demand, financial performance, and management (Blustain et al., n.d.b). Blustain et al. (n.d.b, p. 55) note that "credit analysts consider student demand to be one of the most critical factors in credit worthiness" for colleges and universities. To assess student demand, Blustain et al. (n.d.b) explain that credit agencies will complete a detailed analysis of the institution's enrollment trends and other measures such as freshman admissions, matriculation and acceptance rates, graduation rates, and student quality. Other factors are also considered such as the geographic diversity and quality of the student population, degree offerings, and the institution's competition. To illustrate how these factors are evaluated,

consider geographic diversity. A student population that is highly diversified across geographical regions signifies to a credit analyst that a college or university will not be as impacted by regional economic issues, and therefore, may indicate more creditworthiness (Blustain et al., n.d.b).

Financial performance is another important part of creditworthiness. Credit analysts will perform a complete analysis of an institution's finances including revenues, expenses, operating results, current debt, and liquidity (Blustain et al., n.d.b). Revenues that are more diverse and flexible are viewed more favorably, while reliance on one source, such as tuition, may be viewed unfavorably. Additionally, expenditures are evaluated based on functional type. Of note, a college or university with a greater number of tenured faculty is viewed by credit analysts as having higher fixed costs and therefore less flexibility (Blustain et al., n.d.b). Multiple ratios are computed to determine the institution's ability to operate with current and future debt amounts based on available resources.

Finally, an institution's management is considered as part of the credit analysis to assess organizational viability and strength (Blustain et al., n.d.b). This analysis includes an evaluation of the stability of management and any management turnover. In addition, management's past performance and implementation of the strategic plan are reviewed. Credit analysts also want to know if management has developed contingency plans for factors that could impact the financial situation of the university (Blustain et al., n.d.b).

Both private and public colleges and universities are rated by ratings agencies, but credit analysts consider additional factors related to the state for a public institution. These factors include the state's general obligation debt rating, state appropriation trends, and any state policies that may impact a university's ability to borrow (Blustain et al., n.d.b). In 2008, public

colleges and universities without credit enhancement had a long-term median rating of A1 to Aa3, which means the bonds were rated as strong to very strong investment grade following Moody's rating system (Blustain et al., n.d.b).

The involvement of multiple external parties and required regulatory paperwork will result in additional costs for issuing bonds. The transaction costs will range from "one to two percent of the face value of the bonds" (Matthews & Cook, 1997, p. 1691). In addition to the interest costs required for borrowing the funds, transaction costs are added to the total amount of bonds to issue and therefore will increase the total amount of debt. Still, the advantage to including the transaction costs as debt is that the institution can pay back or amortize up to two percent of the expense over the period of time required to repay the bonds (Blustain et al., n.d.b).

Bonds can be sold either privately or publically (Blustain et al., n.d.b). Blustain et al. (n.d.b) explain the difference between private and public sales. A private placement is handled by an investment banker who finds investors to purchase the bonds. Private placements are more economical for small bond issues and for issuers that have lower credit ratings. In contrast, bonds that are sold publically may be offered through a competitive or negotiated sale. A financial advisor plays a key role in managing the structure of a competitive sale, soliciting underwriters to purchase the bonds, and assisting the institution in evaluating the bids. The bidder who submits the lowest interest cost purchases the bonds. For a negotiated sale, the college or university would engage an investment banker or a syndicate of underwriters to negotiate a purchase price for the bonds. The underwriter may assist the institution with preparing documents, obtaining credit ratings, evaluating security requirements, structuring the pricing, marketing the bonds, and ultimately selling the bonds. The financial advisor of the

institution also may be engaged to handle all of these tasks except for selling the bonds (Blustain et al., n.d.b).

Because different types of bonds exist, a distinction should be made between general obligation bonds and general revenue bonds. General obligation bonds are a common bond in the tax-exempt municipal markets. General obligation bonds are defined as "long-term obligations that are backed by the full faith and credit of the issuer, a state or local government. The credit structure of these bonds is based on the taxing authority of the issuer" (Klein, 1992, p. 524). States may issue general obligation bonds to fund college or university facilities; however, public colleges and universities do not issue general obligation bonds because they do not have taxing authority. Therefore, college and university bonds are classified as revenue bonds (Klein, 1992). As noted earlier, the bonds may be backed by a general revenue pledge or a specific revenue pledge of the institution.

Bonds may be structured in different ways. The most traditional structure for bond debt for universities is long-term fixed rate bonds, and the most common maturities are 20 or 30 years (Blustain et al., n.d.b). In addition, fixed rate bonds may be classified as taxable or tax-exempt bonds.

Maturities of fixed rate bonds will depend on whether the bonds are term or serial bonds. With term bonds, the outstanding bonds are payable at one time, and borrowers will accumulate funds to repay the bonds at maturity. In comparison to term bonds, "serial bonds permit an overall reduction in interest costs because the bonds with shorter maturities pay lower rates of interest than do those with the longer maturities" (Blustain et al., n.d.b, p. 28). Accordingly, serial bonds may mature in various amounts over a period of years.

If interest rates drop, fixed rate bonds can be disadvantageous if the institution pays a higher rate than the current market demands. To counteract this situation, long-term fixed rate bonds can be structured to be called. A call provision allows the college or university to pay off the debt based on a predefined time and premium and reissue new debt with interest rates based on market conditions (Blustain et al., n.d.b; Matthews & Cook, 1997). An institution can enter into a refunding if it does not have sufficient funds to pay off the debt on the call date. "A refunding is the issue of new bonds to replace an outstanding bond issue" (Blustain et al., n.d.b, p. 76). Blustain et al. (n.d.b) also explain that a college or university may enter into an advanced refunding prior to the call date. With an advance refunding, the institution issues new bonds at current rates and sets aside the proceeds so that sufficient funds including accrued interest will be available to repay the debt when the call date or maturity occurs.

In addition to long-term fixed rate bonds, colleges and universities may have variable rate bonds that can be taxable or tax-exempt. One specific type of bond that institutions may use is a variable rate demand bond (VRDBs). VRDBs are a "hybrid form of both long-term and short-term financing vehicles" (Matthews & Cook, 1997, p. 1688) and may be in the form of tax-exempt or taxable bonds (Blustain et al., n.d.b). VRDBs may be outstanding from three years to longer than 30 years (Matthews & Cook, 1997). Blustain et al. (n.d.b) note that while VRDBs may have a long-term maturity, they have "an interest rate that is reset on a yearly, semiannual, monthly, weekly, or daily basis, based on market conditions" (p. 31). This feature means that the interest rate for VRDBs is linked to a short-term index, and therefore, will have a lower interest rate than long-term fixed rate bonds (Matthews & Cook, 1997).

Another feature of VRDBs is a "put option." Blustain et al. (n.d.b) explain that a put option is a demand feature that requires the issuer to repurchase the bonds that are outstanding

plus pay any accrued interest; however, because the interest rates on VRDBs reset to market conditions, investors face little interest rate risk. Blustain et al. (n.d.b) also note that if the put option is exercised, the bonds must be remarketed to new investors by the issuer's marketing agent; the issuer pays the remarketing agent an annual fee for this service. To protect against interest rate swings and the demand for repayment, VRDBs are generally secured with either a bank's letter of credit or a standby bond purchase agreement. If the put option is exercised, the VRDBs can be repaid from these sources while the bonds are remarketed (Blustain et al., n.d.b).

Blustain et al. (n.d.b) provide the advantages and disadvantages to issuing VRDBs. Two advantages of VRDBs are a lower interest rate and the ability of the issuer to redeem or pay off VRDBs by providing only brief notification. In comparison, fixed rate debt has higher interest rates and may not be redeemed for five to 10 years. The primary disadvantage to using VRDBs is the interest rate volatility. Thus, universities must have the flexibility within their operating budgets to pay potentially higher interest rates. On a final note, VRDBs may be structured so that the issuer has the one-time option to convert to a fixed rate bond.

Municipal notes. Municipal notes may be issued through the same authority a college or university uses to issue bonds (King et al., 1994). Generally, these notes are issued for a period of a year but may be outstanding for three to 36 months (Fabozzi, 2002). Two types of notes are appropriate for higher education financing: bond anticipation notes (BANs) and revenue anticipation notes (RANs) (King et al., 1994).

Bond anticipation notes can be used as a form of interim financing until institutions issue long-term bonds. King et al. (1994) note that using BANs has two advantages. First, market conditions may not be appropriate for issuing long-term debt at a reasonable interest rate. Second, BANS can provide financing while the details about the costs of projects to be

permanently financed can be confirmed. BANs are repaid when the long-term bonds are issued (Fabozzi, 2002). BANS may not be appropriate to use when interest rates are low; in this instance, obtaining a permanent rate as soon as possible would be more prudent (King et al., 1994).

Revenue anticipation notes are issued in expectation of revenues (Fabozzi, 2002). RANs are appropriate when institutions expect a large source of revenue, such as a governmental appropriation but, in the interim, need operating cash before the revenue is received (King et al., 1994). Thus, RANs provide the working capital needed to stabilize a university's cash flows (Fabozzi, 2002). Hence, RANs should be used only for intervening purposes and unlike BANs, institutions should not expect to repay the notes with a more permanent form of debt (King et al., 1994).

Commercial paper. Commercial paper is a promissory note that can be issued for one to 270 days, may be unsecured or secured, and may be tax-exempt or taxable (Fabozzi, 2002; Matthews & Cook, 1997). While Fabozzi (2002) notes that due to changes in the 1986 tax law, tax-exempt commercial paper is rare, Blustain et al. (n.d.b) indicate that tax-exempt commercial paper "is becoming more prevalent, and is now considered one of the many viable options available to those colleges and universities with strong underlying credit" (p. 41). Commercial paper may be used by colleges or universities for short-term financing of working capital and projects that will eventually receive long-term financing (Blustain et al., n.d.b) or be used to pay off variable rate debt that has matured (Matthews & Cook, 1997).

Term or Bank Loans. Term or bank loans are issued by commercial banks. The loan period may vary from short to long, and the interest rate for the loan may be fixed or variable (Blustain et al., n.d.b). "A term loan is often secured by a mortgage, in which real property (land

and/or buildings) is pledged as collateral or security" (Blustain et al., n.d.b, p. 46). Matthews and Cook (1997) note that mortgage financing typically requires the borrower to pay at least 20% of the cost of the asset that is being financed and borrow funds for the remaining 80%. The advantage of issuing term loans and mortgage financing is that funds can be borrowed quickly and inexpensively because the borrower does not have to deal with the regulatory environment surrounding a public offering of bonds or hire underwriters and other professionals to issue the debt (King et al., 1994). However, the interest rates may be higher than tax-exempt bonds, notes, and taxable bonds. In addition, mortgage financing may place restrictions on the underlying asset or require additional financial covenants (King et al., 1994).

Repurchase or Reverse repurchase Agreements. A repurchase agreement is "a contract to sell and repurchase financial securities, typically U.S. treasury obligations" (King et al., 1994, p. 90) for a fixed price on a certain date (Matthews & Cook, 1997). In a repurchase agreement, a securities dealer agrees to sell and repurchase securities. In contrast, a reverse repurchase agreement is where the securities dealer purchases the securities from an entity like a university instead of selling them. For colleges and universities, reverse repurchase agreements can be used to fund short-term working capital or interim project financing. This type of transaction is classified as collateralized debt for the institution (King et al., 1994; Matthews & Cook, 1997). This type of debt carries a lower interest rate and issuance costs. However, reverse purchase agreements have two disadvantages (King et al., 1994). First, an institution can no longer lend the securities and must evaluate how this transaction impacts its investment portfolio. Second, the institution that sells the securities loses the associated interest income on the sold security. However, Matthews and Cook (1997) provide an example for colleges and universities that indicates that interest income can be retained on the sold security when short-

term or interim financing is needed. They explain that an institution arranges to sell securities in its endowment and agrees to repurchase the securities in the future for the negotiated sale amount. The purchaser holds the security as collateral for the funds provided, and in return, the institution pays interest periodically to the purchaser over the course of the agreement by the institution. Concurrently, the institution continues to record interest on the securities that are part of the repurchase agreement as endowment income.

Leasing. Capital leases allow colleges and universities to finance equipment or other assets at a tax-exempt interest rate with terms of repayment that range from several months to 20 to 30 years (Eden, 1987; Matthews & Cook, 1997). Lessors or lease issuers may be a manufacturer, commercial bank or an investment banker. Examples of assets that have been financed by institutions using tax-exempt leases include telecommunication systems, equipment, computers, vehicles, and buildings (Eden, 1987, p. 48). Two types of leases are operating leases and capital leases (Eden, 1987; Matthews & Cook, 1997). For accounting purposes, operating leases are reported as operating expenses as opposed to debt, whereas capital leases must be reported as an asset with a corresponding liability or debt (Matthews & Cook, 1997). Thus, only capital leases create a debt instrument. The advantage to tax-exempt leasing is that the process is not as complex as issuing bonds (King et al., 1994; Matthews & Cook, 1997) and, therefore, financing can be obtained more quickly with lower issuance costs and at a lower rate than a bank loan (King et al., 1994). Leasing also provides a simpler mechanism to match the useful life of the leased asset with a financing instrument.

Sales/Leaseback. A sales/leaseback agreement entails selling an asset, such as land or a building, and concurrently leasing the asset back for use (Matthews & Cook, 1997). The lease may be an operating or a capital lease. As such, the type of lease will determine whether the

transaction is recorded as debt. This transaction allows an institution to generate funds from the sale of the asset while maintaining the ability to use the asset.

Conclusion. In conclusion, this section focused on several topics related to college and university debt. This discussion centered on the need to link the planning for debt to an institution's strategic plan and the development of a debt strategy. Then, the various uses of debt were reviewed. Uses of debt financing for colleges and universities include new construction, equipment, renovation, infrastructure and deferred maintenance projects, as well as short-term operating needs. Next, the legal authority needed by public universities to issue debt was discussed. Additionally, the characteristics of debt were reviewed. These characteristic included term of the debt, interest rates, security or collateral, and the taxability of debt. Finally, the different types of debt were discussed. The various types of debt that colleges and universities may have include bonds, municipal notes, commercial paper, term or bank loans, repurchase or reverse purchase agreements, leasing, and sales/leaseback transactions.

In the next section, the history of debt is examined. This section traces the historical uses of debt at the early part of the 20th century and follows a chronological order to present day. This historical account includes significant legislation that influenced the use of debt by colleges and universities. Finally, this section concludes by discussing some of the recent trends in the usage of debt and recent legislation that enabled colleges and universities to gain access to credit markets.

History and Current Trends of Debt Usage by Public Universities

The Revenue Act of 1913, which began the U.S. federal income tax system, included the tax exemption of state and local government debt. This legislation also allowed charitable, religious, and educational organizations to benefit from a tax-exempt status (Blustain et al.,

n.d.b; Libby, 1985). Even with the tax-exempt status, accumulating debt was not a common

practice for public colleges or universities.

Prior to 1920, public colleges and universities seldom borrowed money (Stewart & Lyon,

1948). When public colleges and universities began borrowing funds in the 1920s, the amounts

borrowed were small (Taylor, 1949). Millett (1952) explains that substantial borrowing was not

needed by public institutions for two reasons. First, the federal government established the

public works program in 1930 to reduce widespread unemployment. This program allowed

colleges and universities to apply for federal funds to construct facilities improvements. The

federal government provided 45% of the construction costs, and the state provided the remaining

55%. If needed, the state could borrow the remaining 55% share from the federal government.

Second, public institutions did not need to borrow during the 1930s and 1940s because the

federal government restricted the use of construction materials for the war efforts. During the

restriction, the federal government encouraged states to continue tax collections at the same rate

and set aside funds for construction in the future. When the restrictions on construction materials

were removed, public colleges and universities were able to receive an allocation of these state

funds for construction projects. Stewart and Lyon (1948) note that the federal government's

matching grant program contributed to heavier borrowing in the 1930s. They also note these

federal programs pressured states to change their statutes or establish legal entities so that state

colleges and universities could legally borrow.

Public colleges and universities began to borrow more in the 1940s for projects that

generated a source of income, which could be used to repay the debt (Millett, 1952). Millett

noted that this project-specific financing was used for auxiliary projects such as dormitories,

athletic facilities, student unions, and dining halls. In other instances, debt was not viewed

favorably. When institutions started construction on new academic buildings without having sufficient funds available and required borrowed funds to finish the project, this type of debt was viewed as "such a menace to the future stability of the institution that every effort should be made to avoid it" (Russell, 1954, p. 376). This concern was amplified when new academic buildings could not produce income to repay the debt (Russell, 1954).

In addition, state constitutional or statutory legal restrictions prevented many state supported colleges and universities from incurring debt (Long & Weimer, 1957; Millett, 1952; Stewart & Lyon, 1948). Constitutional restrictions meant institutions were subject to the state's debt limit (Long & Weimer, 1957). Colleges and universities were able to avoid this restriction by issuing revenue bonds that required the debt to be repaid from a specific source of revenue. Specific revenue, such as room charges to students, could be used to repay the debt for a new dormitory project (Long & Weimer, 1957; Stewart & Lyon, 1948). Some states allowed institutions to use arrangements to lease their land through public or private nonprofit organizations that would borrow money to build dormitories or other buildings with an income source. Then, the institution would sublease the property for its uses (Long & Weimer, 1957). Long and Weimer (1957) also noted that colleges and universities had problems borrowing funds because investors were not familiar with university operations. Therefore, university debt was not easily marketed for sale, resulting in higher interest rates on debt that was sold. Long and Weimer (1957) suggested that marketability could be improved if the ratings agencies would assign credit ratings to student housing debt issues.

With the passage of the GI Bill in 1945 and the post WWII enrollment growth in higher education, public colleges and universities had a great need for facilities. These factors resulted in the establishment of a new federal program, the College Housing Loan Program, in 1950

(Long & Weimer, 1957). Under the program, the Housing and Home Finance Agency (now Housing and Urban Development) could loan up to $500 million in total to colleges and universities at a 2.75% interest rate to finance the construction of student and faculty housing. The federal government loaned the funds by purchasing bonds issued by public and private colleges and universities (Long & Weimer, 1957).

Another federal program that greatly benefited both public and private institutions was the Higher Education Facilities Act of 1963, which later became Title VII under the Higher Education Act of 1965 (Katsinas & Tollefson, 2009). Moore and Field (1965) explained that the Higher Education Facilities Act of 1963 allowed colleges and universities not only to apply for grant funds to construct facilities, but also to apply to borrow funds to construct academic facilities. In 1965, the term of the loan was 30 years and the interest rate was 3.75% (Moore & Field, 1965). According to the U.S. Department of Education's fiscal year 2011 budget request for the college housing and academic facilities loan programs, no new loans have been awarded since 1994 for these programs (U.S. Department of Education, 2011).

In the late 1970s, interest rates increased significantly. In response, a shift occurred from the use of long-term fixed rate debt to variable rate debt to fund projects in the 1980s (Blustain et al., n.d.b). King et al. (1994) provides additional information about the trends in borrowing during the 1970s and into the early 1990s. They indicate that in the 1970s and 1980s colleges and universities continued project-specific financing. However, in the 1990s, this type of financing changed when statutory restrictions were removed, and institutions began to pledge all available unrestricted revenues for debt. This change allowed public colleges and universities to issue general revenue bonds to finance academic and research facilities. As a result, an overall assessment of the credit of public institutions by ratings agencies was required.

In addition, federal capital funding programs did not completely disappear in the 1990s. In the Higher Education Act Amendment of 1992, the Historically Black Colleges and Universities (HBCU) Capital Financing Program was started (Hoffman, 1993). The program provides loans to HBCUs to repair, renovate, acquire, and construct facilities. The bonds are issued by a private authority but guaranteed by the Department of Education. According to a report by the U.S. Government Accountability Office (2006), the program has not been utilized extensively. Only 14 HBCUs—10 private and four public—out of around 100 existing HBCUs have ever borrowed funds from this program. Of the $375 million authorized to loan, $250 million and $125 million were allocated to private and public HBCUs, respectively. As of August 2006, approximately $141 million and $66 million in loan funds remained available for private and public HBCUs respectively. The GAO report recognized that the U.S. Department of Education had made progress in improving the program but effective management control was still lacking and provided recommendations for further improvement.

During the 1990s, a trend of increased privatization of student housing began. These public private partnerships (PPPs) provided public colleges and universities with an opportunity to build student housing faster without dealing with state regulations (Cirino, 2004; Sabo, 2006), while still preserving institutional debt capacity (Bruszewski, Jung, & Turner, 2010). This financing technique is known as off-balance-sheet financing. Off-balance-sheet financing may also be referred to as non-recourse debt (Augustine, 2002; Blustain et al., n.d.b).

Bruszewski, Jung, and Turner (2010) explain the structure for a typical model for off-balance-sheet financing. A separate nonprofit entity is used to finance projects that generate income. This nonprofit entity may be an affiliated 501(c)(3) foundation of the institution or an unaffiliated foundation that engages in these projects with colleges and universities. The

nonprofit entity enters into a ground lease with the institution and owns the improvements that are constructed on the land. Subsequently, the nonprofit entity engages a developer for a fee to construct the project.

Initially, off-balance-sheet financing was marketed as a way for colleges and universities to preserve debt capacity (Bruszewski et al., 2010). The initial appeal of off-balance-sheet financing was the debt transaction was not shown on the financial statements of an institution. However, as rating agencies became more knowledgeable about these privatized projects, they began to analyze the relationship between the institution and the privatized project. When credit rating agencies evaluate these projects, they consider how closely connected the project is to the college or university (Blustain et al., n.d.b) or the degree of college or university control of the project (Augustine, 2002). A project that is more closely connected to the institution or is controlled by it will have a higher credit rating designated by credit agencies, which results in lower financing costs. Conversely, a project that has a weaker connection or less institutional control will have a lower credit rating and higher financing costs (Augustine, 2002; Blustain et al., n.d.b).

Bruszewski et al. (2010) explain how certain types of off-balance-sheet financing projects may be part of an institution's debt profile. When projects are funded entirely from debt proceeds without any developer equity and commitment, the institution is viewed as the only source for financial recourse. Therefore, depending on the structure of the project, the institution's debt capacity may or may not be impacted.

The use of PPPs was spurred by a complicating factor in 2008. The credit markets froze, which made borrowing money difficult for all sectors of the economy. Accordingly, in 2008, PPPs continued to be a model that colleges and universities used for student housing projects, but

the projects expanded to include "other revenue-generating facilities such as parking garages, research parks, retirement communities, sports facilities, campus-edge developments, retail stores, renewable energy projects, and recreation centers" (Bruszewski et al., 2010, para. 17). These PPPs differ from previous models because the private partner provides its own equity for the project (Bruszewski et al., 2010). The private partners' funding contribution may vary from partial to full funding.

In 2009, colleges and universities received some important relief from the federal government. In response to the credit crisis and turmoil in the municipal markets, Congress passed the American Reinvestment and Recovery Act (ARRA) in 2009, which enacted the Build America Bonds (BABs) program (Ang, Bhansali, & Yuhang, 2010; Bruszewski et al., 2010; Robbins & Simonsen, 2010). Robbins and Simonsen (2010) noted that the BABs program was designed to stimulate the municipal markets. Because BABs had to be issued for tax-exempt projects at the higher taxable rates, investors, such as pension funds and foreign investors, that do not pay federal income taxes, and therefore, do not benefit from a traditional tax-exempt bond, were willing to invest in BABs (Ang et al., 2010). In turn, a public institution that issued BABs would be able to pay the bondholder a higher interest rate but receive a subsidy from the federal government for 35% of the interest cost. The subsidy would make the cost of borrowing similar to a traditional tax-exempt issue. The cost to borrow BABs can be computed as: Subsidized BABS interest rate = Taxable interest rate (100% minus 35%). For example, consider BABs that are sold with an interest rate of 6%. The purchaser would be paid 6% in interest income by the institution. Then, the college or university would be reimbursed for 35% of that interest cost by the federal government, which would lower its interest expense to 3.9% computed as 6% (100% minus 35%). Capital projects could proceed because of the demand from new investors for

BABs, and these projects helped stimulate the economy with job creation. The first BABs were issued by the University of Virginia in April 2009 (Ang et al., 2010; Robbins & Simonsen, 2010).

In addition to BABs, Congress enacted two additional programs. Similar to BABs, Recovery Zone Economic Development Bonds (RZED) provided a 45% interest subsidy from the federal government (Robbins & Simonsen, 2010). Bank-qualified loans also allowed a college or university to borrow up to $30 million annually at a lower interest rate and borrowing costs (Bruszewski et al., 2010). The investor or lender was allowed to take a tax benefit for the bank-qualified loan. With the expiration of ARRA, bank-qualified loan limits reverted to the $10 million annual limit that was in place prior to the legislation ("American Recovery and Reinvestment Act of 2009," 2009). Both the BABs and RZEDs programs enacted under ARRA expired as of December 31, 2010 (Hamill, 2011). While BABs and RZEDs are no longer available, higher education institutions that issued these types of bonds will continue to receive the federal subsidy for interest for the term of the bonds, subject to federal appropriations.

In the 21st century, public colleges and universities are well known in the credit markets and continue to borrow based on strong credit profiles (Blustain et al., n.d.b). Two trends are notable. First, the type of debt issued by institutions has shifted from traditional fixed rate debt to more complex financing structures (Augustine, 2002). Augustine (2002) notes that "today's tax-exempt debt markets offer a tremendous array of financing opportunities, including long-dated bonds, swaps, interest rate locks, caps, off-balance-sheet structures and commercial paper programs" (p. 16). Second, the common term directed to higher education financial officers is that debt must be managed strategically; that is, debt should be viewed as a portfolio, as opposed to individual debt transactions (Augustine, 2002; Blustain et al., n.d.b; Van Gorden, 2006).

In summary, public colleges and universities historically received financing from the state and federal government that reduced their need to borrow. However, these two sources are no longer major funding drivers for public higher education. As a result, public institutions began to borrow more in the 1980s and use different types of debt. In the 1990s, PPPs also provided another mechanism for colleges and universities to raise funds for campus assets. Most recently, federal legislation from BABs and other programs temporarily have assisted institutions in their need for funding in an unfavorable economy. In the next section, prior studies of debt for hospitals, nonprofit organizations, K-12 schools, and higher education will be reviewed.

Prior Studies of Debt

This section begins with a brief overview discussing the differences between capital structures of nonprofit and for-profit organizations and common characteristics of nonprofit organizations. This overview is followed by prior debt studies of nonprofit organizations. The context for these studies is nonprofit hospitals and broader studies of multiple sectors of nonprofit organizations, as well as a single study focused on one nonprofit sector. Next, studies of debt of the education sector, a type of nonprofit organization, are discussed. The context for these studies is K-12 schools and colleges and universities.

Nonprofit Organizations

Studies of debt have focused on the capital structure of an entity. Bowman (2002) noted that "capital structure refers to the mixture of financing methods: debt, equity, and so on. The ratio of debt to assets, also called *leverage*, is used to operationalize the concept of capital structure" (p. 298). Jegers and Verschueren (2006) also observed that whether the study is of a nonprofit or for-profit organization, "leverage describes unequivocally the relation between equity and debt… and is generally accepted by financial economists as a genuine measure of

capital structure" (p. 309). Accordingly, leverage allows an "entity to generate extra utility from the pool of available assets" (Massy, 1996a, p. 122) by borrowing funds. Salluzzo et al. (2005, p. 69) define long-term leverage of public colleges and universities as total net assets less nonexpendable net assets divided by long-term debt. A target leverage value is a ratio greater than 1:1 but the degree to which the ratio should be greater than 1:1 varies by institution (Salluzzo et al., 2005). A lower ratio increases the potential for financial difficulty to make debt payments. Accordingly, a higher ratio provides public institutions with operating flexibility and sustainability (Salluzzo et al., 2005).

Capital structure may be measured in the same way for nonprofit and for-profit organizations, but notable differences exist in the components of leverage for each organizational type. For example, while for-profit and nonprofit organizations can have similar types of debt (Jegers & Verschueren, 2006), tax-exempt debt is one type of debt that for-profit organizations cannot borrow (Bowman, 2002). In addition, the equity or net assets of nonprofit organizations differ fundamentally from for-profit organizations (Jegers & Verschueren, 2006). Jegers and Verschueren (2006) explain that for-profit organizations benefit from maximizing shareholder wealth by distributing equity. In contrast, nonprofit organizations are prohibited from distributing funds. The equity that remains is "what was contributed at the foundation of the organization (in cash and in kind), later gifts, contributions and subsidies, and profits/losses" (Jegers & Verschueren, 2006, p. 309). Therefore, net assets are retained to assist the nonprofit entity in carrying out its mission.

In addition to common debt and net assets, nonprofit organizations have similar organizational traits and funding mechanisms. For example, nonprofit organizations may be classified as 501(c)(3) organizations (Bryce, 2000). As noted earlier, this classification allows

nonprofit organizations, with the legal authority, to issue tax-exempt debt. This tax-exempt

status also allows individuals and entities to donate charitable contributions to nonprofit

organizations. In turn, these donations may be used by nonprofit organizations to further their

missions (Bryce, 2000). These gifts may be endowment funds. Bryce explains that endowments

provide financial stability and allow a nonprofit entity to accumulate reserves to fund long-term

debt or other activities. Other forms of financial support that a nonprofit may report include:

fees for services; contracts and grants; investments; royalties; and other related or unrelated

revenues (Bryce, 2000).

Because different types of nonprofit entities exist in the United States, the National

Center for Charitable Statistics (NCCS) created a classification system known as the National

Taxonomy of Exempt Entities (NTEE) (National Center for Charitable Statistics, 2011).

According to the NTEE, nonprofit organizations are classified into ten broad categories that

include organizations classified as: Arts, Culture, and Humanities; Education; Environment and

Animals; Health; Human Services; International, Foreign Affairs; Public, Societal Benefit;

Religion Related; Mutual/Membership Benefit; and Unknown, Unclassified. The IRS uses the

NTEE system to classify new nonprofit organizations (National Center for Charitable Statistics,

2011). Based on the NTEE system, a public college or university would be a specific type of

nonprofit organization within the Education category.

Due to the similar types of debt, net assets, organizational traits, and funding

mechanisms, the review of research of nonprofit organizations is particularly germane to this

study of public colleges and universities.   Because the earliest research on debt for nonprofit

entities concentrated on nonprofit hospitals, these studies will be discussed first. The hospital

studies will be followed by a review of studies that includes all types of nonprofit organizations

based on the NTEE classification, as well as a specific sector of nonprofit organizations—arts, cultural, and humanities. A synthesis of the studies reviewed will complete this section.

Hospital Debt Studies

Noting that the study of capital structure was in the early stages for nonprofit entities, Wedig, Sloan, Hassan, and Morrisey (1988) conducted a study of 1,407 hospitals using data from the annual survey of the American Hospital Association. All data were from 1983 except for cash flow data, which was comprised of years 1978 through 1983. The hospitals were classified as private nonprofit (85%), proprietary (3%), and government district (12%). The purpose of the study was to determine: (a) if hospitals that were reimbursed from third parties had more leverage—defined as the ratio of debt to assets; (b) if hospital ownership influenced leverage; and (c) what other variables influenced leverage.

Regression was used as the methodology for the study. The dependent variable was the ratio of the hospital's long-term debt to assets, or leverage. Key variables of interest included the ratio of cost-based payors to gross patient revenue and hospital ownership (for-profit or nonprofit entity). Numerous variables related to bankruptcy risk also were included. These variables were: (a) cash flow volatility; (b) whether the hospital had a monopoly as the only one in the county; (c) whether the hospital was located in a standard metropolitan statistical area (SMSA); (d) number of delinquent payors based on the ratio of bad debt and charity care expenses to gross patient revenues; (e) ratio of nonpatient revenue to total revenue; (f) size of hospital based on number of beds; and (g) whether a hospital was associated with a medical school as a teaching hospital. Variables related to the facilities of the hospital included the ratio of plant and equipment to total assets, and the age of the facilities computed as accumulated depreciation

divided by depreciation expense. A final variable was the presence of tax credits or tax benefits obtained from debt financing.

Wedig et al. (1988) found that the independent variables explained 24% of the variance in leverage. The independent variables, which were statistically significant and positively correlated with leverage, included percentage of revenue from cost-based payors, location in a SMSA, and the percentage of plant and equipment assets to total assets. These results indicated that hospitals with more revenue from third party payors had more debt. Likewise, hospitals located in a SMSA with more plant and equipment had more debt. The explanatory variables that were statistically significant and negatively correlated included cash flow volatility, age of facilities, and tax credits. These results indicated that hospitals with more volatile revenues and older facilities had less debt. In addition, less tax benefits were associated with less debt. Although statistically significant, the percentage of other revenues to gross patient revenue was negatively correlated with debt, which was not an expected result.

In a similar study, McCue and Ozcan (1992) studied a sample of 414 California hospitals classified as nonprofit, for-profit, and government hospitals. The purpose of the study was to identify the determinants that influence the capital structure of the hospitals. The California Office of Statewide Health Planning and Development provided the data and, unlike the American Hospital Association (AHA) survey data used by Wedig et al. (1988), the study data were extracted from the audited financial statements of the hospitals. Variables for the study covered mainly fiscal years 1985 to 1987. For variables where longer periods of measurement were required, fiscal years 1982 through 1987 were used.

McCue and Ozcan (1992) developed a multivariate regression model to predict short-term and long-term debt. In one model, the dependent variable was short-term leverage

calculated as current liabilities divided by total assets. In a second model, the dependent variable

was long-term leverage calculated as long-term debt divided by total assets. The explanatory

variables focused on asset structure (net fixed assets), growth in revenues and patient services,

and profitability based on the ratios of operating income to total assets and to total revenues.

Two variables for risk based on changes in earnings also were included. Two size variables

included bed count and total revenues. Other variables included measures for system affiliation,

payment system (uncompensated care, Medicare, and Medicaid) and market conditions. As with

Wedig et al. (1988), a tax shield measure was included.

The model explained 29.5% and 24.8% of the variance in short-term and long-term

leverage, respectively. The significant variables that were positively correlated with long-term

debt were system affiliation, ownership, market condition, bed count, growth, risk, and asset

structure. No explanatory variables that were negatively correlated in the long-term debt model

showed significance. For short-term debt, bed count, uncompensated care, and risk were

statistically significant and positively correlated, while payer mix, growth, profitability and asset

structure were statistically significant and negatively correlated.

Based on these findings, McCue and Ozcan (1992) noted that hospitals affiliated with a

system had more long-term debt than nonaffiliated hospitals but had less short-term debt than

nonaffiliated hospitals. Related to ownership, for-profit and nonprofit hospitals had more long-

term debt than government hospitals. For market conditions, a more competitive market resulted

in hospitals having more long-term debt. The authors explained that this result could be due to

hospitals issuing more debt to expand services. McCue and Ozcan also noted that hospitals with

more revenues from Medicaid and Medicare payments had less short-term debt, while those with

more charity care were using debt of a short-term nature. These results contrasted with Wedig et

al. (1988) who found that hospitals with more payments from cost-based payors (i.e., Medicaid, Medicare, and Blue Cross plans) had more debt.

Risk or the changes in revenue in relation to assets was positively associated with long-term and short-term debt indicating that a hospital with higher variability of revenues had more short-term and long-term debt. In addition, growth and asset structure were significant and positively associated with long-term debt but significant and negatively associated with short-term debt. McCue and Ozcan (1992) concluded that hospitals with slower growth and fewer assets used more short-term debt, while hospitals with higher growth and more assets used more long-term debt. Profitability only factored into determining short-term debt with more profitable hospitals borrowing less short-term debt. A result that was not expected was related to bed count. Hospitals with 100 to 249 beds had more short-term and long-term debt in comparison to hospitals with 250-399 beds. Overall, hospitals with 400 or more beds had the least amount of long-term debt.

In another hospital study, Bacon (1992) randomly selected 200 nonprofit hospitals with 100 or greater beds from the 1989 AHA Guide to the Health Care Field. The HFMA Medicare Cost Report Service provided data for fiscal years 1986 through 1989. Using regression as the methodology for the study, Bacon developed a model of variables to determine the debt ratio defined as the proportion of total debt to total assets in the final year (1989). Bacon included similar explanatory variables to those used in previous studies such as measures for profitability, growth, risk, fixed assets, size, and payment systems. Unlike earlier studies, however, he also included a lagged leverage variable defined as the proportion of total debt to total assets for the initial year of data (1986). Because the study covered a short time frame, this measure was included to consider the change in a hospital's leverage. Bacon (1992) faulted the previous work

70

of Wedig et al. (1988) for an autocorrelation problem and not including growth or profitability measures in their model based on previous research as Baskin (1989) indicated that such studies should.

Bacon's (1992) model explained 75.51% of the variation in the debt ratio. Unlike Wedig et al.'s (1988) study, earnings volatility and Medicare payments were not significant predictors of leverage in Bacon's study. However, Bacon indicated that earnings volatility may yield a different result when a longer time frame is studied. Bacon also found that growth, fixed assets, and the lagged leverage variables were positively correlated and statistically significant with debt, while profitability also was statistically significant but negatively correlated. Bacon concluded that more profitable nonprofit hospitals have sufficient funds that reduce borrowing needs, while expanding nonprofit hospitals with less reserve funds need to borrow funds for growth. In addition, the lagged leverage measured suggested that nonprofit hospitals' "capital structures change slowly" (Bacon, 1992, p. 88). Finally, the fact that fixed assets were a significant predictor of debt was not surprising because debt is used to finance these types of assets, and the assets are used to secure the debt.

In a departure from previous studies of nonprofit hospitals, Wedig (1994) used the ratio of debt to fixed assets or leverage as an explanatory variable. The focus of Wedig's study of 117 nonprofit California community hospitals was to explore the relationship between the annual change in net operating income before interest, bad debt, and charity care expenses as the dependent variable and leverage, property, plant, and equipment (also referred to as real investment), and risk based on volatility of earnings as the independent variables. Leverage was defined as the ratio of the book value of long-term debt to property, plant, and equipment. The study included hospital financial data for fiscal years 1984 through 1988. Wedig (1994)

71

specifically excluded government and district hospitals "because fluctuations in their financial performance are absorbed by the governments which control them, making the model developed here inappropriate for these hospitals" (p. 268). Wedig conceptualized that nonprofit organizations were risk averse because the amount of risk they were willing to take when investing in risky assets or using debt hinged on the amount of fund balance or financial surplus, which had accumulated from annual earnings and donations. Accordingly, Wedig hypothesized that a higher marginal return on assets would be required when nonprofits borrowed more debt and invested in more assets as a hedge against risk. He used regression models to test his hypothesis.

Results were obtained for four regression models. Model one estimated earnings based on property, plant, and equipment (real investment) and the interaction between the real investment, leverage, and risk. Model two was the same as model one except that Wedig (1994) controlled for the type of hospital ownership. Model three also included the real investment in assets but tested the interaction with real investment and leverage and risk separately. Model four was the same as model three except for the control by type of hospital ownership.

Wedig reported that earnings were positively correlated and statistically significant with the interaction of real investment and leverage and risk in model one. In models three and four, the interaction of real investment and leverage had positive coefficients that also were statistically significant. Wedig (1994) concluded the nonprofit community hospitals exhibited risk averse behavior because they compensated for the additional risk of increasing leverage by investing in assets that increase marginal earnings. As noted earlier, Wedig's model specifically excluded nonprofit hospitals with governmental support. Therefore, this model may not be

72

generalized to all nonprofit hospitals or other nonprofit institutions such as public universities that receive funding from state appropriations.

In another study, Wedig, Hassan, and Morrisey (1996) studied the data from fiscal years 1986 to 1990 for 155 acute, short-term, voluntary hospitals. The purpose of their study was to provide a theory of capital structure for nonprofit hospitals that demonstrated the use of tax-exempt and taxable debt. Wedig et al. (1996) posited that nonprofit entities have an incentive to use tax-exempt debt that has a lower cost than taxable debt and retain reserves. However, nonprofit organizations have constraints. Nonprofit organizations are constrained by project financing rules whereby projects must meet or exceed the amount of tax-exempt debt issued. If nonprofit organizations do not have projects that meet the tax-exempt requirement, they will have additional debt capacity. In addition, nonprofit organizations may be constrained by limited equity or reserves. Wedig et al. developed regression models to test these constraints.

The regression model included four dependent variables as follows: (a) total long-term debt flow; (b) tax-exempt long-term debt flow was classified as such if the debt had an interest rate less than a government bond interest rate, and the annual flow was the difference in the principal balance of tax-exempt long-term debt outstanding each fiscal year; (c) taxable long-term debt was calculated as total debt flows less tax-exempt long-term debt flows; and (d) fixed investment outlays were based on all project expenditures (taxable and tax-exempt projects) as reported on the hospital's cash flow statement.

Independent variables were based on debt, capital investment, and cash flows targets. Debt targets were computed based on the proportion of average debt to net assets. This debt target was then compared to a lagged debt value based on the debt value from the previous period. The difference between these two measures represented the deviation from target values.

Similarly, the proportion of average net fixed assets to patient services revenue was compared to a lagged level of net fixed assets to measure capital investment deviations from targeted values. Likewise, target cash flows were based on the average proportion of cash and marketable securities to total assets and compared to a lagged level of cash flows to establish the deviation from targeted values. Excess debt capacity was evident where the deviation from target debt was greater than zero, and the differences between debt and capital deviations from targeted values were greater than zero. Size determined by the value of assets and whether the hospital belonged to a multi-hospital system were included as interaction variables with each of the other variables.

As expected, Wedig et al. (1996) found that lower cost tax-exempt debt replaced higher cost taxable debt. They also found that nonprofit hospitals developed debt targets related to tax-exempt debt even if debt capacity remained and cash reserves were sufficient for physical investment (Wedig et al., 1996, p. 1282). Evidence of project financing constraints also was indicated for freestanding hospitals as excess debt capacity was negatively related with tax-exempt debt but positively associated with fixed investment for freestanding hospitals. However, project financing constraints were not evident related to chain hospitals because excess debt capacity was positively related to tax-exempt debt and total debt. Limited cash flows also positively influenced total debt but discouraged physical investment. This effect was more pronounced for free-standing hospitals as compared to chain hospitals.

Another study by Wedig, Hassan, Van Horn, and Morrisey (1998) focused on the debt usage of nonprofit hospitals in California and Florida. The purpose of the study was to determine the effect of hospital affiliation and market risk measures on leverage. The methodology for the study was regression. The dependent variables included total leverage measured as the ratio of total liabilities to total assets, and tax-exempt debt measured as the ratio

74

of tax-exempt debt to total debt. In addition to specific hospital affiliation and market risk measures, the model included the following independent financial variables: the ratio of net fixed assets to total assets; ratio of cumulative depreciation divided by the annual depreciation as a measure of the age of physical assets; and the average volatility of cash flows.

For the California data set, the R^2 values for the total leverage models for 1988 and 1991 was .1971 and .2619, respectively. For the tax-exempt debt models, the R^2 values for 1988 and 1991 were .0982 and .1610, respectively. The results showed that the type of hospital affiliation was statistically significant, and indicated that chain hospitals were able to hold more debt than freestanding hospitals. In addition, market risk variables were positively correlated with debt indicating higher levels of debt. Wedig et al. (1998) surmised that the fact that hospitals with higher risk factors had higher debt was related to types of income. In other words, as hospitals became more dependent on revenue sources that paid less such as Medicaid, the result was lower net income and a need to use debt. As expected, the financial variable of age was negatively correlated and statistically significant with both dependent variables, indicating the repayment of debt. Earnings volatility was negatively correlated and statistically significant with the tax-exempt debt variable, which suggested that a hospital was able to issue less tax-exempt debt with more variation in earnings.

For the Florida data set, a panel set of data that incorporated four years of data was used. The dependent variables remained the same but some of the independent variables changed to be based on "a first-differenced, panel data design" (Wedig et al., 1998, p. 428) to obtain the appropriate number of observations and select the time frame when for-profit hospitals rapidly entered the hospital market in Florida. The focus of the study was the effect of the market

penetration of for-profit hospitals and multi-hospital systems on the leverage of nonprofit hospitals in the Florida market.

Wedig et al. (1998) found that the market share of multi-hospital systems had a significant and negative effect on total leverage and tax-exempt debt. The market share of for-profit hospitals also had a negative effect on total leverage but was not significant. For tax-exempt debt, the level of for-profit market share and the change in market share for multi-hospital systems were negative and significant. Wedig et al. noted that these findings suggested that increased competitiveness reduced the levels of tax-exempt debt that hospitals borrowed. Unexpectedly, the level of market penetration for multi-hospital systems was significant and positively related to tax-exempt debt. The findings also showed a statistically significant and negative correlation between leverage and changes in Medicare and occupancy rate percentages. These results indicated that hospitals had lower leverage with higher level of Medicare and higher occupancy rates. Wedig et al. noted that higher levels of Medicare would lower debt levels because of the additional risk associated with this type of revenue. Wedig et al. (1998) linked the higher occupancy rates with lower leverage to income, explaining that higher occupancy levels provide more income, and therefore, less debt would be needed. Similar to the California study, age of hospital assets was a statistically significant factor with a negative correlation indicating a decline in tax-exempt debt.

In another study of hospitals, Gentry (2002) explored the attributes of not-for-profit hospitals that influence debt. A key variable of interest was endowment assets. Data were obtained from the American Hospital Association (AHA) survey and the IRS returns for not-for-profit hospitals for years 1993 through 1996. Tobit regression was used as the methodology for the study. Gentry included three measures of debt as dependent variables: (a) total debt divided

76

by operating assets—total debt; (b) taxable debt divided by operating assets—taxable debt; and (c) tax-exempt debt divided by operating assets—tax-exempt debt. The independent variables included the financial factors of endowment assets defined as "the year-end value of investment securities, investment real estate and other investment assets, excluding cash and short-term investments…" (Gentry, 2002, p. 855), and revenues from government grants and public contributions. As indicators of hospital size, independent variables included the financial variables of operating assets and program service revenues and nonfinancial variables of beds and admissions. Return on operating assets was included to reflect the creditworthiness of the hospital. Other independent variables focused on demand, organizational attributes, hospital affiliations, market-level conditions, demographics, and competition. Characteristics of tax-exempt debt relative to the state where the hospital was located also were included. These variables included the marginal state income tax rate, state governance, and a debt issuing authority index.

Gentry (2002) found that endowment assets were statistically significant and positively correlated with tax-exempt debt and total debt, but negatively correlated with taxable debt. This finding indicated that not-for-profit hospitals with endowments were more likely to borrow. In addition, tax-exempt debt was influenced by endowment assets. This result occurred before and after controlling for market conditions and hospital characteristics. The measures of size that were statistically significant and negatively related to debt were adjusted admissions and total beds, while the other size measures of program service revenues and operating assets were statistically significant and positively related to total debt. Gentry (2002) noted that this finding indicated that not-for-profit "hospitals that have more assets or revenue for a given level of admissions are more likely to borrow" (p. 863). In addition, system hospitals that have more

resources had higher debt ratios than non-system hospitals. However, hospitals with different missions—those associated with religious entities and medical schools—had lower levels of debt than other hospitals. Hospital characteristics, such as hospitals with trauma centers and neonatal intensive care units also were negatively correlated with total debt. Gentry surmised that the lower debt levels were due to the instability of revenues of these types of hospitals. Based on the governance index, a more stringent governance system resulted in less borrowing. Gentry concluded that tax-exempt debt provided an incentive for nonprofit hospitals to issue debt.

In another model using the same data, Gentry (2002) focused on the effect of the change in borrowing on physical investment and endowment accumulation of hospitals. Physical investment was defined as the change in fixed assets, while endowment accumulation included investments and short-term cash. The independent variables were change in debt, contributions, government grants, realized capital gains, operating cash flows, occupancy rates, and adjusted admissions. He also parsed the data by cash-rich and cash-poor hospitals. Cash-rich hospitals were defined as those having greater than 35% of endowment assets in proportion to total assets, while cash-poor hospitals had an endowment asset to total asset ratio that was less than 19%. Gentry ran two models. The first model used seemingly unrelated regression (SUR) to account for correlation between physical investment and endowment accumulation. In the second model, three stage least squares (3SLS) regression was used to account for endogeneity between borrowing and investment.

The results of the SUR showed that the change in debt was statistically significant and positively related to both endowment accumulation and physical investment for both cash-rich and cash-poor hospitals. In addition, cash-rich hospitals with larger endowments borrowed more than cash-poor hospitals. For cash-poor hospitals, debt had a greater effect on physical

78

investment as opposed to endowment accumulation, whereas the opposite effect resulted for cash-rich hospitals. Furthermore, operating cash flows were positively correlated with similar effects for endowment accumulation and physical investment for both cash-rich and cash-poor hospitals. Gentry (2002) noted that this finding indicated that even cash-poor hospitals were not financially constrained because of the level of physical investment made by cash-poor hospitals, even though they had a smaller endowment than cash-rich hospitals.

In the 3SLS model, Gentry (2002) reported that change in debt was statistically significant and positively associated with physical investment for all hospitals but only at the .10 level. For cash-rich hospitals, change in debt was positively associated with physical investment and endowment accumulation at the .05 level but was not statistically significant for cash-poor hospitals. Based on a larger positive effect between change in debt and endowment accumulation, Gentry concluded that tax arbitrage incentives influenced borrowing decisions. Tax arbitrage was defined by Gentry "as simultaneously borrowing in tax-exempt markets and investing in non-operating assets (presumably with higher after-tax rates of return)" (p. 858). As with the SUR model, operating cash flows also were positively related with investment for all hospitals.

Magnus, Wheeler, and Smith (2004b) focused on predicting the efficiency of 248 nonprofit hospitals based on capital structure. Audited financial statements for 1997 obtained from Merritt Research Services LLC were used as the data source for the study. Magnus et al. posited that nonprofit hospitals were more efficient due to debt but would invest more in capital projects, which in return would result in reduced efficiency. Ordinary Least Squares (OLS) regression was used as the methodology for the study.

In his model, Magnus et al. (2004b) used six measures of efficiency, of which five were financial variables. These financial variables were net operating income divided by revenues, return on assets, return on equity, return on net fixed assets, and expenses per patient admitted. In addition, a measure of staff efficiency was included, which was computed as full-time equivalent employees divided by occupied beds. The independent variables included two financial variables: long-term debt to capitalization or leverage, and net operating income divided by operating revenue for the prior fiscal year (lagged operating margin). Other independent variables included capacity measures based on the number of beds in service and hospital occupancy. Other variables were included based on patient market (severely ill, managed care, Medicare, Medicaid, and uncompensated care). Categorical variables also were included based on the type of hospital.

The R^2 results for each dependent variable were as follows: net operating income to revenues (.6719), expenses per admission (.3887), staff efficiency (.6067), return on equity (.6719), return on assets (.5530), and return on net fixed assets (.5149) (Magnus et al., 2004b). Focusing on only the results of leverage, the results showed that leverage was negatively correlated and statistically significant in predicting the operating efficiency variable of net operating income to revenues. In other words, the efficiency of hospital operations declined with higher levels of debt, which contradicted Magnus et al.'s (2004b) hypothesis that more debt promotes efficiency. The results also showed that leverage was negatively correlated and statistically significant in predicting the financial variables of return on equity and return on net fixed assets. Both of these variables were included to measure the level of capital-investment efficiency. These results indicated that a nonprofit hospital's return on assets and net fixed assets declined with more debt, which supported the researchers' second hypothesis. Magnus et al.

(2004b) contended that the ability of nonprofit hospitals to issue tax-exempt financing resulted in more capital investments as opposed to more efficient forms of investments.

Magnus et al. (2004b) indicated that the study was not without limitations. They noted that other variables may need to be considered in future models. Additionally, the study was limited because the data were cross-sectional and covered only one fiscal year. A longitudinal study could provide additional information about the amount of debt and variance in debt levels that impact performance. Furthermore, evaluating the relationship between performance and debt in bleaker economic times may also provide different results (Magnus et al., 2004b).

In a companion study, Magnus, Smith, and Wheeler (2004a) changed the dependent variables to charity care, bad debt, and uncompensated care (charity care plus bad debt) expenses. Each of these expense measures was computed in proportion to total operating revenues. The explanatory variables were similar to the other study (Magnus et al., 2004b) with additional social, economic, and demographic measures included relative to the county where the nonprofit hospital was located. Magnus et al. (2004a) posited that the relationship between uncompensated care and debt would be negatively correlated based on prior research and financial theory. That is, nonprofit hospitals with higher levels of debt would have lower uncompensated care expenses. The findings contradicted their hypothesis and showed that leverage was positively correlated and statistically significant for uncompensated care and bad debt. Unlike their other study (Magnus et al., 2004b), Magnus et al. (2004a) included two more measures of debt as independent variables: the ratio of total debt to total assets and total debt per bed. These two additional measures were statistically significant and negatively correlated only with bad debt expense. While no empirical proof was available, Magnus et al. (2004a) suggested that a possible explanation for debt predicting higher amounts of uncompensated care may be

81

based on a different interpretation of financial theory, observing that nonprofit hospitals may be rewarded for increasing uncompensated care by donors who consider these type of expenses as "social dividends."

Other Nonprofit Organization Debt Studies

Shifting from specific studies of nonprofit hospitals, Bowman (2002) expanded these previous works to study not only hospitals, but also colleges and universities, arts and cultural organizations, and human services institutions classified as nonprofit entities. Bowman noted that a broader study was needed because the previous work of Bacon (1992) and Wedig et al. (1988) included only nonprofit hospitals and had contradictory results. The data source for the study was the IRS's Statistics of Income (SOI) data from 1991 to 1994. The data were extracted from the IRS Form 990 provided by the National Center for Charitable Statistics. The unit of study included four complete years of data for 1,393 nonprofit institutions. Institutions excluded were those entities with: less than $10 million in revenues; unrelated business income greater than 1% of gross revenues; and whole categories of National Taxonomy of Exempt Entities (NTEE) organizations with less than 40 cases.

Bowman (2002) used ordinary least squares (OLS) regression for the model. He developed two models. The first model included endowment assets and investment income. The second model, referred to as the operating model, excluded quantities associated with endowment assets from total assets and investment income from earnings for all variables, except for the size and fixed assets ratio variables. In the first model, the dependent variable was leverage defined as the ratio of total liabilities to total assets in 1994, which mirrored Bacon's (1992) dependent variable. In the second model, the dependent variable was the same as the first one but excluded endowment assets from total assets. For the independent variables, Bowman

used the same variables as Bacon but made two modifications. Bowman noted that Bacon improved on Wedig et al.'s (1988) model by adding a growth measure. However, Bowman did not agree with Bacon's measure of growth (percent change in total assets) because the measure "…may also depend on debt, which introduces a simultaneous equations problem" (p. 303). Bowman (2002) proposed growth in earnings or return on assets (ROA) as the growth indicator. For the second modification, Bowman noted that the lagged leverage value that Bacon used was more suitable when several years of data were studied, and therefore, excluded the value. Bowman also added variables including: the ratio of public support revenue to operating revenue; the ratio of endowment assets to total assets; and dummy variables that indicated whether the nonprofit entity had positive equity and the NTTE classification for hospitals, colleges and universities, arts and cultural, and human services nonprofit entities.

The first model and second model had adjusted R^2 values of .539 and .45, respectively (Bowman, 2002). In both models, the fixed asset ratio was statistically significant and positively correlated with leverage. The percentage of public support revenues to total revenue and positive equity were statistically significant and varied negatively with debt. Bowman (2002) noted that these results suggested that nonprofit entities with more public support and equity greater than zero required less debt. Other variables that were statistically significant in both models were profitability (measured as return on assets), risk (based on variations in earnings), and the endowment ratio. However, the variables were correlated differently with debt. Profitability was negatively correlated with debt in model one but positively correlated with debt in model two. Similarly, risk was positively correlated with debt in model one but negatively correlated with debt in model two. In addition, the endowment variable was significant in both models but correlated differently with debt. Bowman observed that the negative coefficient for

83

debt in the first model was unusual because the expectation was that nonprofit entities with

endowments would be more secure in borrowing funds and lenders more inclined to lend.

Bowman (2002) concluded that "nonprofit managers optimize debt relative to the assets they use

in operations…" (p. 308) because the endowment ratio was positively correlated with debt in the

operating model.

Noting the paucity of research on capital structure for nonprofit entities, Jegers and

Verschueren (2006) conducted a study of California nonprofit organizations for 1999. The final

data set included 22,766 nonprofit organizations. Using financial data from the National Center

for Charitable Statistics (NCCS) of the Urban Institute, they made a distinction between two

types of debt: total debt and financial debt. Total debt included all liabilities, while financial

debt included only mortgages, other notes payable, and tax-exempt bonds. Jegers and

Verschueren ran two logit models to determine if an organization had liabilities or financial debt.

Then, OLS regression was used to predict the determinants of capital structure, with two

dependent variables—the ratio of total liabilities to total assets—referred to as the liability

ratio—and the ratio of the sum of tax-exempt bonds, mortgages, and other notes payable to total

assets—referred to as the debt ratio.

Jegers and Verschueren (2006) included several explanatory variables in their model.

One explanatory variable was cash flows, which was used to measure organizations that had less

equity, and was calculated by taking the sum of net income plus non-cash expenses and

deducting non-cash income. Another explanatory variable was related to agency problems.

Jegers and Verschueren noted that agency problems could exist between nonprofit boards and

management when the number of employees increases. As such, nonprofit boards with greater

agency conflicts might use the issuance of debt as an oblique way to observe management's

performance through lender reviews and the requirement to repay the debt. Because the number of employees was not available in the dataset, total executive compensation and other salaries and wages were included as a proxy for agency conflicts. Both cash flows and compensation variables were computed in proportion to total assets. Another explanatory variable used to assess borrowing constraints was based on whether an organization was part of a group or independent. A control variable for size based on the log of the entities' assets also was included. Other control variables included the type of organization, whether the entity was a public or private entity, and the NTTE classification.

For those nonprofit entities that borrow, the results of the OLS regression showed that the model explained 6% and 13% of the variation in the liability ratio and the financial ratio, respectively. Related to testing for equity constraints, Jegers and Verschueren (2006) found that "more equity-constrained organisations have, *ceteris paribus*, higher liabilities and debt ratios. Thus it seems that more equity constrained organisations are less likely to borrow, but those that do borrow generally have higher leverage levels than less equity constrained" (p. 322-323) nonprofit organizations. Regarding the assessment of agency conflict, the results were divergent with a positive coefficient for the liability ratio and a negative coefficient for the financial ratio. The financial ratio result contradicted the researchers' hypothesis that nonprofit organizations with higher levels of compensation would have more debt because boards of nonprofit organizations would "issue debt in order to have the organisation's behaviour monitored" (Jegers & Verschueren, 2006, p. 317) because of lender scrutiny and the responsibility of management to repay the debt. Finally, the size variable was statistically significant and negatively correlated with both debt ratios.

Like Jegers and Verschueren (2006), Denison (2009) noted the lack of research related to the capital structure of nonprofit entities. Denison focused on the factors that affect the probability that a nonprofit entity will borrow long-term debt, specifically, tax-exempt bonds and mortgages. Probit models were developed using data from IRS 990 forms that were merged for years 2000 and 2004. The two dichotomous dependent variables were based on whether the nonprofit entities had reported mortgages or tax-exempt bonds. The independent variables, which were the same for both models, were financial variables and included: total assets; total revenues; program revenues; investment income; fund-raising for special events; grants and contributions; dues; other income; the proportion of fixed assets to total assets; and executive compensation. The variables for revenue types were computed based on the proportion of each revenue type to total revenues. Two other variables were based on whether the nonprofit entity had filed a Form 990T and the amount of any unrelated business income. Nonprofit entities must complete a Form 990T annually with the IRS and compute taxes owed on revenue earned from unrelated business activities that exceed $1,000. These variables were included because Denison posited that those nonprofit entities that had greater amounts of unrelated business income would elect to borrow long-term debt in order to decrease taxes. The classification of the nonprofit entity based on the NTEE code was considered. The arts sector was excluded for comparative purposes.

Denison (2009) reported that both models were statistically significant at the .001 level. Those nonprofit entities categorized as public safety, employment, human services, community improvement, education, mental, and housing were more likely to have mortgages compared to the arts sector, while those entities classified as philanthropy animal, medical research, mutual membership, disease, recreation, international, health, and science and technology, were less

likely to have mortgages compared to the arts sector. In comparison, nonprofit entities classified as human services, animal, civil rights advocacy, health, mental, education, and medical research were more likely to issue tax-exempt bonds compared to the arts, while entities classified as environment, crime, international, philanthropy, public society benefit, religion related, mutual membership, and other were less likely to issue tax-exempt bonds compared to the arts.

In the mortgage model, Denison (2009) found that specific revenue variables (program revenues, contributions, other income, fundraising, and dues) increased the probability that a nonprofit entity would have a mortgage. Program revenues had the largest coefficient followed by contributions. The bond model showed different results. While program revenues had a positive coefficient, contributions and fundraising had negative coefficients. Denison surmised that these findings suggested that the financial risk associated with bonds, as opposed to mortgages, may be troublesome to contributors. Dues also showed a negative association but were not statistically significant. Denison also noted that investment income was the only revenue that showed a negative relationship with both mortgages and bonds, which suggested that nonprofit entities with endowments that generate cash may not need to borrow or that they do not subject the endowments to markets during a decline. Investment income was significant in the bond model but not the mortgage model.

In addition, Denison (2009) reported that total assets, executive compensation, the fixed asset ratio, and program revenues increased the likelihood a nonprofit entity would have mortgages and tax-exempt bonds. Total revenue had a positive coefficient for mortgages and bonds but was significant only for mortgages. Filing a form 990T also was significant and indicated an increased probability of having mortgages and bonds. However, the presence of

unrelated business income showed a decreased probability of having mortgages and bonds. Unrelated business income was only significant at the 0.10 level for bonds.

Yan, Denison, and Butler (2009) focused specifically on the arts, cultural, and humanities sector to examine the relationship between revenue composition and leverage. Using microdata from the IRS Statistics of Income (SOI) for the years 2000 to 2003, a total of 3,840 observations from 1,387 organizations were analyzed. This data set included all organizations with gross receipts greater than $25,000 that were required to file a Form 990 with the IRS, with the exception of religious organizations. To establish a structure of revenues, Yan et al. (2009) defined four types of revenues for arts, humanities, and cultural organizations: government grants, donations, program revenue, and investment income. Based on this classification, a Hirschman-Herfindahl Index (HHI) as utilized by Suyderhoud (1994) was calculated. A higher HHI denoted a higher diversification of revenues and therefore lower risk, which meant that an entity would be more likely to borrow more debt or be more leveraged.

Yan et al. (2009) indicated a two-stage model was necessary because only 44% had debt but 86% had either positive or no leverage (p. 57). In the first stage, a probit model estimated the probability that an entity would issue debt. Entities were categorized as debt issuing if they had any long-term debt during the period. The independent variables related to the entities' revenues were the revenue diversification index, percentage of revenue from government grants, percentage of revenue from public support, and percentage of revenue from goods and services. Related to expenditures, the percentage of salaries and wages to total expenses was included. Independent variables that indicated size and growth of the entities also were included. A measure for size was based on the log of total assets, while the measure for growth was based on the log of total revenue. Yan et al. found that the overall model was statistically significant and

the probability of issuing debt increased based on the diversification index and the percentage of revenues that came from public donations, goods and services, and government sources. In other words, these factors contributed to the likelihood that an arts organization will borrow funds if they generate revenues from these sources. Additionally, a more diversified mix of revenue sources (by number of revenue types and their proportion to the total amount of revenues) will increase the probability that an arts entity will hold debt.

In the second stage, Yan et al. (2009) used a Heckman selection model to control for selection bias in the regression model. The purpose was to see what factors influenced the amount of leverage, where the dependent variable was defined as long-term debt divided by total assets. The explanatory variables were the same as in the first model except that the percentage of the entity's operating surplus or loss to total revenues, and the ratio of fixed assets (facilities and equipment) to total assets were added, while the ratio of compensation to total expenses was removed. Indicators that were statistically significant and positively correlated with leverage in the second model were: the percentage of revenues that came from public donations; goods and services; government grants; the size of the entity, and the percentage of fixed assets to total assets. Yan et al. noted that the results that showed more revenue from public donations as indicative of more debt was unexpected and different from Bowman's (2002) finding that public donations had a negative effect on the amount of debt. Yan et al. concluded that revenue diversification was an important influence in whether an entity issued debt, while revenues from government sources affected whether debt was issued and the amount of debt that was issued.

Yan et al. (2009) noted that a limitation of the study was the data source used was slanted towards larger entities, and future research should consider including more small organizations. They also recommended that a study similar to this one could be performed using the data of

other nonprofit sectors to examine the influence of revenue diversification and government support. Because revenue volatility was not a factor in this study, they also recommended studying the relationship between revenue volatility and diversification and revenue volatility and leverage.

Smith (2010) also explored the determinants of capital structure for tax-exempt entities. He used Form 990s and business information obtained from the IRS for years 1998 to 2003 provided by Philanthropic Research Inc. The final data set included 63,970 entities and 225,143 observations. Smith used the NTEE classification system to categorize the organizations according to the three core codes of supporting, operating, and mutual benefit. The methodology for the study was a type I tobit regression.

In his regression models, Smith (2010) included four dependent variables that were forms of debt ratios. In selecting dependent variables for the study, Smith referenced the work of Welch (2010) who reported that the variables used to represent leverage should equal the opposite of equity. Accordingly, in addition to a debt to assets ratio, Smith incorporated leverage measures based on the ratio of debt to net assets plus debt. Specifically, these ratios were: (a) the total liabilities ratio computed as total liabilities divided by total assets; (b) the financial debt ratio computed as the sum of tax-exempt bonds, mortgages, other notes payables, and loans payable to insiders (financial debt) divided by financial debt plus total net assets; (c) the outside debt ratio calculated as tax-exempt bonds and mortgages and other notes payable divided by financial debt plus net assets; and (d) taxable debt ratio based on insider loans plus mortgages and other notes payables divided by financial debt plus net assets. Smith originally included a debt ratio for tax-exempt debt but excluded the variable when descriptive statistics showed that the majority of entities did not have tax-exempt debt. The explanatory variables included

measures for the age; size; tangible assets; revenue from gifts, contributions, and grants from the general public, as well as government and charitable organizations; governance index; percentage of insider employees defined as directors, officers, trustees and key employees; compensation paid to insiders; growth; liquidity; and profitability of an organization.

Like Bacon (1992) and Bowman (2002), Smith (2010) found that growth and tangible assets positively influenced debt. The greatest financial effect was determined by tangible assets. The positive relationship between debt and growth was not unexpected because growing nonprofit entities may not have sufficient reserves to finance expanding operations, and therefore, require more debt than those nonprofit entities that are growing at a slower rate. Consistent with Bowman (2002), size also positively influenced debt. Other determinants specific to nonprofit organizations that were statistically significant and positively correlated were governance and insider pay.

Smith (2010) found that the variables that were statistically significant and negatively correlated with debt ratios were liquidity, profitability, age of the entity, and support from gifts, contributions, and grants. Smith found that liquidity had the largest financial effect on debt and noted that a negative relationship between debt and liquidity indicated the use of available reserves as opposed to obtaining debt financing. Higher profit margins also would generate additional reserves that would reduce the need for debt. Bacon (1992) and Bowman (2002) also found that profitability had a negative relationship with debt. Related to age, the negative coefficient for age suggested that debt was being repaid or that older organizations were less inclined to take on the additional risk of debt. Similar to Bowman's finding related to public donations, Smith found that support from gifts, contributions, and grants also negatively

influenced debt indicating that contributions reduced the need for debt. However, this finding contradicted Yan et al.'s (2009) results related to public donations.

In addition to the attribute effects noted, Smith (2010) found significant industry effects, which were consistent with Bowman's (2002) study. The most notable effect was that public and societal benefit organizations had the largest ratio for financial debt, outside debt, and taxable debt. For the liability ratio, public utilities organizations had the largest value.

Synthesis of Hospital and Other Nonprofit Organization Debt Studies

Prior debt studies of nonprofit organizations have focused on specific types of entities such as hospitals (Bacon, 1992; Gentry, 2002; Magnus et al., 2004a; Magnus et al., 2004b; McCue & Ozcan, 1992; Wedig et al., 1988; Wedig, 1994; Wedig et al., 1996; Wedig et al., 1998) and arts, cultural, and humanities organizations (Yan et al., 2009). In addition, studies have been comprised of data from several sectors of nonprofit organizations (Bowman, 2002; Denison, 2009; Jegers & Verschueren, 2006; Smith, 2010). When evaluating the studies, several common elements surfaced. These similarities included the methodology, dependent variables, and independent variables and are summarized below.

First, the statistical approach used for all of the studies reviewed was regression. The most common form of regression used was OLS (Bowman, 2002; Gentry, 2002; Jegers & Verschueren, 2006; Magnus et al., 2004a; Magnus et al., 2004b). Other types of regression that were used included probit (Denison, 2009; Yan et al., 2009), tobit (Gentry, 2002; Smith, 2010), logit (Jegers & Verschueren, 2006), SUR (Gentry, 2002; Wedig et al., 1996), general least squares (Wedig et al., 1996), and 3SLS (Gentry, 2002). Second, in the study of debt, a common focus was to understand the determinants of capital structure or the financing methods used by entities, such as debt and net assets. A leverage formula was used as the dependent variable to

measure capital structure. The most common formula for leverage found in nonprofit studies was based on the ratio of total liabilities or debt to total assets (Bacon, 1992; Bowman, 2002; Jegers & Verschueren, 2006; Smith, 2010; Wedig et al., 1998). Another common formula for leverage was the ratio of long-term debt to total assets (McCue & Ozcan, 1992; Smith, 2010; Wedig et al., 1988). In addition, some studies had other versions of leverage that were delineated by a specific type of debt (i.e., tax-exempt, taxable, mortgages, bonds) (Denison, 2009; Gentry, 2002; Jegers & Verschueren, 2006; Smith, 2010). Unlike other researchers, Smith also included leverage that was based on a ratio of debt to net assets plus debt.

Third, the studies shared many common independent variables. Size of the organization was found to be statistically significant in studies by McCue and Ozcan (1992), Gentry (2002), Bowman (2002), Jegers and Verschueren (2006), and Yan et al. (2009). The most common finding was that size was positively correlated with debt, except Jegers and Verschueren found contradictory results. In addition, Gentry used multiple measures as indicators of size and had mixed results. The log of total assets was a common proxy to denote size.

Risk was another variable of interest in predicting leverage. A common proxy for risk was a calculation based on the variability of earnings. Wedig (1988), Wedig et al. (1998) and Bowman (2002) found that risk was statistically significant and negatively associated with debt, indicating that nonprofit entities with more variability in earnings had less debt. Conversely, McCue and Ozcan (1992) found that risk was a positive predictor of leverage.

Another variable of interest was growth. Bacon (1992) and Smith (2010) found growth to be positively correlated with leverage. McCue and Ozcan's (1992) findings showed that growth was positively correlated with long-term debt but negatively correlated with short-term

93

debt. Bowman found that growth was negatively correlated with debt when endowment values were included with operations but positively correlated when endowment values were excluded.

Variables associated with physical assets and the age of physical assets also were commonly studied. A ratio of fixed assets, also referred to as tangible or physical assets, was a common independent variable. Fixed assets were found to be statistically significant and positively correlated with debt (Bacon, 1992; Bowman, 2002; McCue & Ozcan, 1992; Smith, 2010; Wedig et al., 1988; Yan et al., 2009). This finding was not surprising as these assets are used to collateralize debt. Only in one instance was fixed assets negatively correlated with debt. McCue and Ozcan (1992) found that fixed assets were negatively correlated with short-term debt but positively correlated with long-term debt. In addition to fixed assets, the age of facilities was included in several studies. Wedig et al. (1988), Wedig et al. (1998), and Smith (2010) found that age of facilities was statistically significant and negatively correlated with debt.

Furthermore, different types of revenues were considered in studies of the determinants of debt. The findings showed mixed results. Smith (2010) found that support from gifts, contributions, and grants was negatively related to specific forms of debt. Yan et al. (2009) found that revenues from goods and services, government grants, and public support were statistically significant and positively related to debt. Conversely, Bowman (2002) found a negative relationship between public support revenues and debt. In addition, Denison (2009) and Smith (2010) found total revenue was positively correlated with debt.

Other independent variables included in studies were profitability, equity, and endowments. Profitability was based on earnings and found to be negatively related with debt (Bacon, 1992; Bowman, 2002; McCue & Ozcan, 1992; Smith, 2010). Along those same lines,

94

Bowman found that equity was negatively correlated with debt. Additionally, both Gentry (2002) and Bowman (2002) included endowment values in their regression models.

Control variables also were commonly used to understand either industry or organization mission effects. For example, in studies of multiple sectors of nonprofit organizations, the NTEE code was used to understand industry effects (Bowman, 2002; Gentry, 2002; Jegers & Verschueren, 2006). In studies of nonprofit hospitals, ownership (i.e., part of a system) (Gentry, 2002; Wedig, 1994; Wedig et al., 1998) and affiliation (i.e., medical school) (Gentry, 2002; McCue & Ozcan, 1992; Wedig et al., 1988; Wedig et al., 1998) were factors that were considered.

This section focused on previous debt studies of hospitals and nonprofit organizations and the common elements associated with the studies. The next section concentrates on a specific sector of nonprofit entities, the education sector. Within this section, studies of debt related to K-12 schools and colleges and universities are discussed.

Education

In this section, prior debt studies of K-12 schools and higher education institutions were examined. Studies associated with debt for K-12 schools, also referred to as school districts, focused on the demographic, financial, and socio-economic variables that influence credit ratings, borrowing costs, and school bond referendums of K-12 schools. For higher education, early studies that focused on the characteristics of debt for different types of higher education institutions were reviewed. More recent studies have examined the relationship between higher education debt and financial and nonfinancial factors.

K-12 schools. K-12 schools, like higher education institutions, are part of the education sector. Both K-12 schools and public higher education institutions are affected by the social,

economic, demographic, and financial issues particular to their states. Therefore, a review of the literature was conducted for prior debt studies of K-12 schools. Prior to discussing these studies, a brief comparison of the procurement of debt by K-12 schools and higher education institutions is provided.

K-12 schools and higher education institutions use similar types of funding for capital projects. Like higher education institutions, K-12 schools may use internal funding, fundraising, state sources, and debt to fund capital projects (Crampton, Thompson, & Vesely, 2004). Similarly, K-12 schools may issue bonds and participate in lease purchase arrangements (Bunch & Smith, 2002; Crampton et al., 2004; Gamkhar & Koerner, 2002), with bonds being the most common funding mechanism (Crampton et al., 2004; Sielke, 2001). However, a distinct difference exists between higher education institutions and K-12 schools related to issuing debt. Unlike most higher education institutions, K-12 schools must seek voter approval from their districts to issue debt for new construction or capital improvement projects (Crampton et al., 2004). This approval is required because the repayment source for the bonds is property tax revenue, which the voter must pay.

The review of the literature showed common themes in the studies associated with debt of school districts. These themes included a focus on voter approved bond referenda, capital outlay expenditures, academic progress, credit ratings, and borrowing costs. The following provides a brief discussion of the research methodology and the significant variables of interest for these studies.

Logistic and probit regression were used as common statistical approaches for research studies focused on the parameters that indicated successful passage of a bond issue for a school district. Zimmer and Jones (2005) used probit regression to estimate the probability that school

96

districts in Michigan would issue more debt after a change in state funding centralized the control of financing school operations. They posited that high-spending school districts would be constrained by this change and would circumvent the funding change by issuing more bonds that were locally controlled to maintain spending levels. The independent variables included high-spending and low-spending school districts, previous years' total outstanding debt, average income of residents by county, enrollment growth rate, percentage of the population ages five to 15 and 65 and older, unemployment rate, and geographic characteristics of the school district (city, suburb, town, or rural). The results showed that high-spending school districts were 47% more likely to issue bonds after the state funding change. The state funding change had little impact on low-spending districts. Outstanding debt also was statistically significant with a positive coefficient. Zimmer and Jones (2005) noted that this indicated that voters in school districts with higher debt levels had "greater tastes for debt" (p. 541). In addition, the geographic characteristics of town and rural were significant but had negative coefficients indicating that voters in towns and rural areas were less likely to vote for a bond issue in comparison to those voters located in the suburbs and larger cities.

In a similar study, Bowers, Metzger, and Militello (2010a) used logistic regression to determine the likelihood of a successful bond passage for school districts in Michigan from 2000 to 2005. The independent variables included the amount of the bond, school district enrollment, urbanicity of school district (small town or rural), and the number of times the school district attempted to pass the bond. The amount of the bond, urbanicity, and first attempts to pass bonds were statistically significant. These results indicated that as the amount of the bond increased, the likelihood that the bond would pass decreased. Bonds also were more likely to pass on the first attempt. In addition, school districts that were in rural areas or small towns were less likely

97

to pass a bond than urban and suburban districts. The total district enrollment of students also was positive and statistically significant but at the .10 level.

In another study, Bowers, Metzger, and Militello (2010b) expanded their initial model to include years 1998 to 2006. The model included the same variables as the study of Michigan school districts' bond issues from 2000 to 2005 but added percentage of students who receive free lunch, percentage of population with high school degrees, total existing long-term debt, percent voter turnout, election day of the year, proposed ballot number, and the use of the word technology on the voter ballot. All additional variables were statistically significant except for the use of the term "technology" on the voter ballot. Unlike their previous study, school district enrollment was not significant.

In another study of factors that influenced bond referenda, Strand, Giroux, and Thorne (1999) used ordinary least squares regression as the methodology. They developed two models to study bond referenda in Texas school districts from 1990 to 1995. In one model, the dependent variable was the percentage of voters in favor of a bond issue and the independent variables were total bond amount per voter, prior year state and federal aid per student, percentage of houses rented, ratio of median house value to taxable property value per student, percentage of nonwhite residents, and whether the school district was audited by a "Big Six" audit firm. All variables were statistically significant. The model was repeated with the same variables except that audit firm was replaced with the number of students passing a standardized test. As with the first model, all variables were significant, except for the number of students passing the standard test. Both models explained approximately 9% of voter behavior. Strand et al. (1999) noted that a reduced explanatory value was not unusual based on prior research.

98

In a second model developed by Strand et al. (1999), the dependent variable was the log of capital outlay expenditures. The assumption was that capital outlay spending would be associated with previous bond approvals. Independent variables included the variables from the first model plus the ratio of student enrollment to district population, median household income, taxable property value per student, and the percentage of economically disadvantaged students. The model was run initially excluding the percentage of students who passed the standardized exam and the percentage of economically disadvantaged students. All variables were significant. The model was repeated except the audit firm variable was removed and the percentage of students who passed the standardized test and the percentage of economically disadvantaged students were added. All variables of interest were significant except for the percentage of students who passed the standardized test. Both models explained greater than 60% of capital outlay spending.

Other studies also have focused on capital outlay expenditures of school districts. Using two stage least squares regression, Plummer (2006) focused on the impact of a state funding program and demographic, economic, and financial variables on the change in capital outlay expenditures per student of school districts in Texas from 1996 to 2000. In addition to the state funding program, Plummer included the change in the property values per student, estimated tax price of the median voter, taxable property value per student, median income per student, percentage change in district enrollment, percentage of economically disadvantaged students in the district, and percentage of the property in a school district classified as single-family residential property. All variables were statistically significant except for the percentage change in district enrollment.

In another study, Johnson and Maiden (2010) focused on the factors that influenced capital outlay expenditures and academic performance in Oklahoma school districts from 2001 through 2005. Like previous studies, Johnson and Maiden used certain demographic, socioeconomic, and financial variables in multiple linear regression models. One model used capital outlay expenditures as the dependent variable and bond passage rates, rurality (non-rural or rural), net assessed valuation per student, and the socioeconomic status (SES) of the school district as the independent variables. Johnson and Maiden found that as predictors of capital outlay expenditure, only SES was statistically significant and negative in all years except for 2005, while school districts that were classified as rural were statistically significant and negative only in years 2001 and 2004. Net assessed valuation per student and bond passage rates were not significant in any year. The model indicated that a school district with a lower SES and classified as rural will spend less on capital outlay expenditures.

In the second model, Johnson and Maiden (2010) used an academic performance index (API) as the dependent variable. Independent variables remained the same as in the first model with the addition of capital outlay expenditures per student. As with the first model, only SES was negatively correlated and statistically significant for years 2001 through 2004 plus 2005. Capital outlay expenditures were statistically significant and positively related to school performance but only in fiscal year 2002. Likewise, net assessed valuation per student was statistically significant and positive but only in fiscal year 2003.

Another theme associated with the study of debt of K-12 schools was credit ratings. In an early study, Bolten and Stansell (1978-1979) studied the bonds issued by 50 Texas school districts. Factor analysis was used to evaluate whether the credit rating or the yield to maturity of a bond was a better indicator of risk for investors. They found that Moody's credit rating was

a better gauge of economic and financial differences of school bonds than market yield. In addition to certain bond characteristics, Bolten and Stansell (1978-1979, p. 64) found that the demographic, financial and economic factors that were most important in explaining quality differences in bond ratings were the issuing district and size of the district; debt service coverage; debt capacity; reserve taxing power (comprised of the tax rate on debt service, ratio of unlimited tax bonds to actual value, and ratio of debt to assessed values); tax collection procedures (including collection efforts and restrictions on collections); taxpayer income; tax base and tax rate policy; special obligations and fund balances; and variable rate debt.

In another study, Harris and Munley (2002) reviewed bond issues for 148 school districts across 10 states. They developed three models that represented each stage of the decision-making process when bonds were issued. For the first model, the dependent variable was to obtain a credit rating for the bonds. For the second model, for those bonds that were to be rated the dependent variables was whether to obtain bond insurance to improve the credit rating. The third model was to estimate the bond rating of the bonds issued. Because the dependent variables were dichotomous, a Logit estimating procedure was used. The economic and demographic factors included median household income of the district's residents, the percentage of nonwhite district residents, student enrollment, and urbanicity (urban or rural) of the school district. Financial factors included the ratio of tax revenue per student to median district household income, end of year district cash fund balance, gross debt, and the percentage of revenues from federal and state sources. In addition, the size (par value) of the bond issue was included. All independent variables were the same in each model, except that in the third model, whether bond insurance was obtained, was added.

In determining whether to obtain a credit rating, the findings showed that the size of the bond issue was significant and positively correlated with obtaining a credit rating. Rural districts were significant and negatively correlated, suggesting that rural districts might sell their bonds to local investors and eliminate the expense of obtaining a credit rating. The end of year cash fund balance also was statistically significant and negatively correlated. Harris and Munley (2002) noted that a negatively correlated end of year cash fund balance was unexpected as a large cash balance would appear to be a positive indicator about the financial condition of a district and increase the likelihood of having bonds rated. Of note, none of the variables that indicated poor economic conditions were statistically significant.

Related to the decision to purchase bond insurance, Harris and Munley (2002) found that the percentage of nonwhite residents and gross debt were statistically significant and positively correlated, that is, poorer districts with larger amounts of debt and greater reliance on federal and state sources were more likely to purchase bond insurance to improve their credit rating. The percentage of revenues from federal and state sources also was significant and positively correlated, suggesting that school districts with greater reliance on governmental revenues would be more likely to obtain bond insurance, but only to a certain point.

For the final model that estimated the credit rating received by a district, Harris and Munley (2002) found that as expected, obtaining bond insurance was significant and positively correlated with the credit rating. Total enrollment and median household income also were statistically significant and positively correlated indicating that districts with more students and wealthier residents were more likely to obtain a better credit rating. The percentage of district students that were nonwhite was significant and negatively correlated. Gross debt also was statistically significant and negatively correlated with the credit rating, which suggested those

districts with large amounts of district debt would be viewed as riskier, and therefore, more likely to receive a lower credit rating. Similar to the decision to obtain a credit rating, end of year cash fund balance was statistically and negatively correlated.

Using a probit model, Denison, Wen, and Zhao (2007) explored the influence of school performance on the bond credit ratings of school districts in Texas. They used similar variables to those used by Harris and Munley (2002) for their study but with slight differences. Their financial variables included property taxes per student, the percentage of revenue from local sources, the ratio of total debt to total tax base (debt burden), and surplus funds balance as a percentage of total expenditures. Similar to Harris and Munley's (2002), enrollment and the percentage of nonwhite students were used but the percentage of low income students also was added. Total enrollment and percentage of revenues from local sources were statistically significant and positively correlated indicating that school districts with higher enrollments and revenues from local sources were more likely to receive a higher credit rating. In contrast, school districts with a higher percentage of students receiving free lunches were more likely to receive a lower credit rating. Paradoxically, the percentage of white students also was statistically significant and negatively correlated indicating that a higher percentage of white students in a school district also was more likely to result in a lower credit rating.

Other studies associated with the debt of K-12 schools have focused on the borrowing costs of debt. In regression models, researchers (Benson & Marks, 2005; Hsueh & Kidwell, 1988; Stevens & Wood, 1998) used market factors and bond characteristics as explanatory variables for the interest rates of school district debt. Gist (1992) also used market factors and bond characteristics but incorporated additional socioeconomic, demographic, and financial variables in his regression model. The socioeconomic and demographic variables in the Gist

103

study included the average property value per student, average daily attendance (school district size), and the percentage of nonwhite students in the school district. The financial variables included in the model were the estimated spending rate defined as the ratio of total revenue to the sum of operating expenditures, debt service costs, and capital outlays. The socioeconomic variables that were statistically significant were the average daily attendance and percentage of nonwhite students. The estimated spending rate also was statistically significant.

Synthesis of debt studies of K-12 school districts. Comparisons can be made that illustrate the similarities that exist between studies associated with debt of K-12 school districts. These similarities include methodological design and dependent and independent variables. Each of the common elements is discussed further.

First, the methodology used for the majority of the studies reviewed was regression. These forms of regression include probit (Denison et al., 2007; Zimmer & Jones, 2005), logistic (Bowers et al., 2010a; 2010b; Harris & Munley, 2002), OLS (Benson & Marks, 2005; Hsueh & Kidwell, 1988; Strand et al., 1999), multiple (Gist, 1992; Johnson & Maiden, 2010), and two-stage least squares (Plummer, 2006). Second, similar dependent variables were studied. One common focus was to understand the determinants related to the issuance of new debt (Bowers et al., 2010a; 2010b; Strand et al., 1999; Zimmer & Jones, 2005). Other common dependent variables included capital outlay expenditures (Johnson & Maiden, 2010; Plummer, 2006; Strand et al., 1999), credit ratings (Denison et al., 2007; Harris & Munley, 2002), and borrowing costs (Benson & Marks, 2005; Gist, 1992; Hsueh & Kidwell, 1988; Stevens & Wood, 1998).

Third, the studies shared many common independent variables. Those variables that were statistically significant related to debt included the amount of outstanding debt (Bowers et al., 2010b; Harris & Munley, 2002; Zimmer & Jones, 2005) and value of bonds issued (Bowers

et al., 2010a; 2010b; Harris & Munley, 2002; Strand et al., 1999). Student attributes such as enrollment (Bowers et al., 2010a; Strand et al., 1999), percentage of nonwhite students (Denison et al., 2007; Gist, 1992; Harris & Munley, 2002) or economically disadvantaged students (Bowers et al., 2010b; Denison et al., 2007; Plummer, 2006; Strand et al., 1999) also were found to have significance in several studies. In addition, other significant independent variables included characteristics associated with the financial wealth of school districts such as type of dwellings (Plummer, 2006; Strand et al., 1999), governmental sources of aid or income (Harris & Munley, 2002; Strand et al., 1999), taxable property value (Plummer, 2006; Strand et al., 1999), median household income (Harris & Munley, 2002; Plummer, 2006; Strand et al., 1999) and fund balances (Bolten & Stansell, 1978-1979; Harris & Munley, 2002). Moreover, the location of the school district (i.e., rural, urban, etc.) was found to be statistically significant in several studies (Bowers et al., 2010a; 2010b; Harris & Munley, 2002; Johnson & Maiden, 2010; Zimmer & Jones, 2005).

This section focused on previous debt studies of K-12 school districts and the common elements associated with the studies. The next section concentrates on the higher education sector. Within this section, studies of debt related to colleges and universities are discussed.

Higher education. Early studies of debt in higher education were descriptive in nature due to the lack of a central repository for data. Stewart and Lyon (1948) sent a survey questionnaire to 102 U.S. state colleges and universities and one Canadian institution. They received 83 responses and subsequently expanded the sample to include an additional 42 institutions not initially contacted. The purpose of the study was to provide descriptions of debt instruments outstanding as of June 30, 1946, including the amount of debt outstanding, interest rates, loan provisions, pledges of security for the debt, lenders, and the projects funded by the

105

debt. The study also gathered data about the authority of state colleges and universities to borrow, either directly or through an affiliated entity, and the process for borrowing funds. Stewart and Lyon (1948) found that almost 50% of total borrowing was to construct dormitories, classified as a self-liquidating plant project, which was defined as a project that can generate income to repay the debt without having to assess tuition or use other sources of institutional funds. All of the dormitory bonds, except for one, were supported by a security pledge of gross revenues of the project. In addition to the dormitory projects, institutions also borrowed funds for other self-liquidating projects that included student unions, field houses, stadia, music halls, and healthcare facilities. They noted that only 10 out of 440 debt issues had defaulted. Stewart and Lyon (1948) also found that 43 out of the 48 states had constitutional restrictions on the creation of debt that did not allow the debt payments to be supported by the full faith and credit of the state. These constitutional limitations would apply to state supported colleges and universities as agents of the state. Hence, they found colleges and universities issued limited obligation debt (revenue bonds), or provided a mortgage as security to avoid constitutional debt restrictions. However, they cited several legal cases that challenged the validity of revenue bonds. Only two states supported university bonds for facilities with the full faith and credit of the state through general obligation bonds. They also found that a common practice was the creation of separate nonprofit authorities or corporate affiliates by states to assist colleges and universities with debt issuance.

Murphy (1959) continued the work of Stewart and Lyon (1948) to provide descriptive information about long-term debt of state institutions that covered the period from 1947 to 1953. He also provided information about the entities or owners that held university debt and used institutional and state characteristics for comparison. His study of 135 state colleges and

universities, including their associated building authorities, found that annual debt issues increased over the seven year period and in the aggregate exceeded the debt reported by Stewart and Lyon. State college debt increases were also found in all geographical areas. Consistent with Stewart and Lyon's (1948) study, Murphy (1959) found that dormitories were the most common type of project financed with debt. He also reported that large institutions were more apt to borrow and received lower interest rates than smaller institutions. However, for the period of this study, all institutions, regardless of enrollment size, had issued debt. He concluded that state restrictions allowed state supported institutions to issue only special obligation or revenue bonds. This restriction resulted in institutions paying a higher interest rate than if general obligation bonds backed by the state had been issued.

Long and Weimer (1957) also conducted a survey of 971 accredited public and private four-year colleges and universities and received data for 733 institutions. The purpose of their study was to determine the sources of funding for permanent student housing. The study provided descriptive information about the debt specifically incurred to finance permanent student housing from 1920 to 1950 and from 1951 to 1955. They also sought information regarding the future financing plans of institutions for student housing. The delineation of data across the two time periods allowed the researchers to determine the effect of the implementation of the College Housing Program that was established by the federal government in 1950 to provide loans to colleges and universities for student and faculty housing. To obtain the financing, public and private colleges and universities issued bonds that were purchased by the federal government. They found that over the period of study, gifts and state appropriations declined as funding sources for projects, while bond financings increased as a result of the purchase of college and university bonds by the federal government. In addition, institutions

107

reported that bonds would continue to be a primary funding source in the future. As with Stewart and Lyon's (1948) study, Long and Weimer focused on state restrictions for borrowing. Even though around one third of the states had passed legislation that facilitated borrowing for projects, Long and Weimer reported that legal issues remained unresolved in some states and could potentially hinder the legal borrowing of state supported colleges and universities.

After Long and Weimer's (1957) study, little to no research could be found that discussed higher education debt until 1970. Research by Hopusch (1970) entailed case studies of three public universities: University of New Mexico, University of Colorado, and University of Wyoming. He conducted interviews with institutional financial officers and performed document analysis at each institution. His study was designed to determine trends and financial terms of the institutions' bond issues. Hopusch's study differed from previous studies because he examined the roles that external parties (bond counsel, financial advisors, and investment bankers) played in the issuance of bonds.

Hopusch (1970) reported that the institutions had issued larger-sized bond issues in recent years compared to the prior five years. Bonds were issued for academic facilities, dormitories, dining facilities, and advance refundings. The advanced refundings accounted for a large portion of the bonds issued. The advanced refundings allowed the universities to consolidate previous bond issues and take advantage of arbitrage by earning more interest on the proceeds of the advance refunding than had to be paid on the outstanding bonds. The majority of the bonds were sold publicly. Bonds also were sold to the federal government and state treasurers. The interest rates charged by the federal government were notably lower than interest rates from other purchasers. Hopusch noted a trend towards state higher education systems borrowing funds as opposed to individual institutions. Hence, he anticipated larger-sized bond issues in the future.

Finally, he concluded that bond counsel did not influence bond terms; however, financial advisors were well versed in obtaining the best financial terms for bond issues.

Felix (1979) conducted descriptive research to determine the financing methods available to four-year state supported higher education institutions in the 50 states for the funding of facilities' needs. In addition, he also reviewed state tax reductions, spending limitations, fiscal accountability measures, and the projected higher education enrollment by state. Felix collected the data through a review of state statutes, Education Finance Center publications, and the U.S. Bureau of Census. Felix found that the financing methods available to the states were state appropriations, general obligation bonds, revenue bonds, special tax revenue bonds, and state and industrial development authorities. State appropriations were available as capital funding sources in all 50 states, and revenue bonds were allowed in 31 states. The least prevalent financing method was specific tax revenue bonds. In addition, 10 states that had borrowing restrictions had projected enrollment increases. These states disallowed the issuance of general obligation bonds that provide the backing of the full faith and credit of the state. Felix concluded that this restriction would hinder those state institutions that needed additional facilities to support enrollment growth from financing capital projects at the lowest possible cost.

Libby (1984) studied long-term debt financing from 1972 through 1983 at five large research universities, of which three were private and two were public institutions. Across the five institutions, 77 separate debt issues were analyzed. For the comparative and quantitative analysis, she analyzed documents obtained from the institutions and supplemented this information with interviews of institutional personnel and other experts to provide data for the study. The data were coded according to the components of debt financings developed from a framework derived from the literature review and were statistically analyzed using two-way

109

ANOVA and chi-square testing where applicable. The purpose of the study was to document the components of debt financing, the change in these components over time, and the relationships between the various components.

Libby (1984) documented that debt financing had changed during the twelve-year period of study for the majority of the components, noting that the debt issues had increased in number, amount, and complexity, and were more varied than from previous studies. She reported that the size or amount of the debt issue had the most influence on the other variables in the debt process. In addition, she found that the size of the debt issue was most closely associated with how the debt was sold or placed. In addition, the manner in which the debt was placed—through competitive or negotiated sales, or a hybrid of the two—was strongly associated with the type of debt instrument, which in turn was influenced by financial and operational restrictions. Moreover, she found that differences existed in the debt process based on the type of institution. The private institutions used state bond authorities, which resulted in less constraint related to pledging revenue and collateral in comparison to state universities. On the other hand, the public institutions had the freedom to issue tax-exempt debt directly while private institutions did not. She concluded that debt issued by private institutions appeared to be less financially risky due to higher credit ratings, and accordingly, they had lower borrowing rates in comparison to public institutions.

In a similar study, through interviews with financial officers and document analysis, Gould (1986) conducted descriptive research to report on debt that was issued by three nonprofit private universities in New York (Columbia, Cornell, and the University of Rochester) from 1983 to 1985. The study was designed to provide information about the New York State Dormitory Authority, a public entity through which the institutions issued debt, determine what

debt was issued, and determine the steps involved in the process. In addition, the study focused on the debt covenants of the universities in comparison to those of for-profit corporations. Gould reported that the institutions issued six tax-exempt fixed rate bond issues over the period of study along with variable rate and pool insured bonds. Gould also found differences between the bond covenants for the for-profit sector debt in comparison to the nonprofit universities. The institutions with nonprofit debt were required to use the bond proceeds only for tax-exempt purposes. This limitation meant that nonprofit universities could not borrow funds for projects that were for noneducational purposes. Additionally, earnings on investments were limited so that the institution could not earn more on the bond proceeds than the interest paid for the debt. Unlike for-profit companies, the nonprofit institutions did not have to maintain covenants related to dividend payments to shareholders and conversions of bonds to stock.

In another study of specific universities, Sturtz (1990) focused on 15 public research institutions and the debt they issued for auxiliary facilities from 1975 to 1987. Sturtz surveyed the institutions' chief financial officers and their external financial advisors to assess the use of traditional standards of practice, debt policies, and the policy issues associated with nontraditional debt financing during a period of changing economic conditions. He posited that universities had shifted from issuing traditional long-term fixed rate debt to issuing nontraditional or creative short-term variable rate debt for facilities projects during this time.

Sturtz (1990) found that all of the institutions had used nontraditional forms of debt financing with cost savings cited as the main reason for the use. In addition, the standards of traditional debt management had allowed the institutions to manage nontraditional financing effectively. However, some standards were lacking for some of the institutions. Institutions relied on external financial advisors to navigate the debt process and did not seek guidance from

others professional organizations. Regarding debt policies, Sturtz found that the institutions did

not have formal board policies related to the planning and use of debt. Instead of using a

continuous systematic process, the institutions managed debt on a single-issue basis. The

greatest limitation of this study, as noted by the researcher, was that the sample size was not

sufficient for the results to be deemed statistically valid.

In a departure from the descriptive studies, Posey (1980) examined differences in the

required disclosures for debt financing of public and private universities. Posey noted that

previous research had shown a positive relationship between risk and information required, that

is, more information was required when risk or uncertainty was greater. He also noted that

previous research had shown that governmental support provided by a public institution's

controlling organization improved the financial condition of public institutions. As such, "the

average public college appears to be financially stronger than the average private college"

(Posey, 1980, p. 12). Therefore, he posited that private institutions would be required to disclose

more information related to debt financing than public institutions. To test his hypothesis, a

questionnaire was sent to Oklahoma bond experts to rank the importance of various bond

disclosure requirements for public and private institutions.   In addition, Posey (1980) requested

bond prospectuses for bonds issued after January 1967 from a sample of colleges and universities

in the south central region of the U.S. Prospectuses were received from 10 public and 14 private

universities, which equated to an 80% response rate. Based on the results of the questionnaire,

he found that a statistically significant difference existed between the information required for

disclosure by potential bondholders for public and private institutions. The survey results

showed that potential bondholders expected private institutions to provide additional financial

statement information and an auditor's report when general obligation bonds were issued but did

not have the same requirement of public institutions. In contrast, Posey found no statistically

significant difference between public and private institutions for potential bondholder disclosure

requirements when revenue bonds were issued. Furthermore, he found that the bond

prospectuses of private institutions disclosed more information regardless of type of bond issued.

Because of these differences in the degree of disclosure, Posey (1980) concluded that "the

difference in risk between the public and private colleges appeared to be partly due to college

control" (p. 110). However, Libby (1984) reached a different conclusion related to the riskiness

of institutions. Based on the higher credit ratings of the two private institutions in her study, and

the fact that private institutions were able to issue general revenue bonds, Libby (1984)

concluded that private institutions were perceived to be less risky.

Recent studies have focused on long-term debt and its correlation or relationship with

various institutional financial variables, as well as nonfinancial variables. McFall (2000)

explored the viability of using financial ratio analysis for debt management purposes. Financial

statements for fiscal year 1998-1999 were requested from 49 public universities accredited as

Level VI by the Southern Association of Colleges and Schools. Level VI institutions must offer

four or more doctoral degrees. Of those 49 universities, 44 provided their financial statements

for the study. Nonfinancial data for the study, which included the age of the institution and

student full-time equivalent, were obtained from the 2000 Directory of Higher Education. The

research included descriptive statistics of financial variables derived from the institution's

financial statements. Additionally, bivariate correlation was used to determine the relationship

between total institutional debt and nonfinancial and financial variables. The .05 level was used

to determine statistical significance.

113

McFall (2000) found that both nonfinancial variables of enrollment or size and the age of the institution were positively correlated with total debt. He surmised that the older institutions would have more facilities that would allow them to leverage more debt. He also noted that prior industry research indicated that large entities borrowed more long-term debt. The financial variable of expendable net assets (also referred to as the viability ratio) also was positively correlated with total debt. McFall noted that the viability ratio measures the financial strength of an institution. McFall concluded that debt ratio analysis was a useful tool that could be used by institutions to assess their financial condition and meet financial accountability expectations.

In another study, using data from the annual finance survey provided by the Integrated Postsecondary Educational Data System (IPEDS) for fiscal years 1989 to 1996, Shultz (2000) conducted a cross-sectional and longitudinal study of approximately 730 private and 370 public U.S. four-year colleges and universities. The purpose of the study was to explore the relationship between long-term debt and leverage as dependent variables, and endowment values, total revenues, the estimated replacement value of buildings, and the years under study as independent variables. For purposes of his study, Shultz defined leverage as the ratio of long-term debt to the sum of long-term debt plus institutional fund balances. Shultz applied the model developed for nonprofits by Wedig et al. (1996) and Wedig (1994) to determine the dependent and independent variables for his study. Results were reported for public and private institutions in total and separately by Carnegie classification. Data for each institution were reported by each fiscal year. Accordingly, if an institution reported data for each of the eight years, then data would be analyzed in eight instances for an institution. The long-term debt variable was adjusted for inflation using the Higher Education Price Index (HEPI). The research methodology

114

employed bivariate correlation and multiple linear regression analysis using a .05 level to determine statistical significance.

Shultz (2000) reported that the bivariate correlation between total revenue and long-term debt had the strongest relationship for all institutions for all years with a Pearson's *r* value of .812. The correlation between endowment values and long-term debt also was strong with a Pearson's *r* value of .738. In contrast, estimated replacement value of buildings and equipment and reporting year were the weakest correlations with long-term debt with Pearson's *r* values of .138 and .020, respectively. For the correlations with long-term debt, reporting year was the only variable that was not statistically significant at the .05 level. In addition, all four predictor variables were weakly correlated with leverage.

Shultz (2000) reported that the multiple linear regression testing showed that the four predictor variables explained 77.18% of the amount of long-term debt. The predictor variables of annual total revenues and endowment value were the only variables that were statistically significant for public and private institutions. The exception to this finding was that long-term debt for public comprehensive colleges and universities was influenced more by the replacement value of buildings and equipment than by endowment values. The multiple linear regression analysis for the second dependent value, leverage, was also conducted. Although the model was statistically significant at the .05 level, the four predictor variables explained only 1.2% of leverage for all universities.

Shultz (2000) found that leverage was higher in fiscal year 1996 in comparison to 1989. A higher ratio meant that more debt was issued over the period of the study. Shultz concluded that institutions made the decision to increase debt levels in a period when higher education finances were constrained, even though long-term debt represented a fixed commitment. Shultz

115

also reported that the ratio of the replacement value of buildings and equipment to debt decreased for several of the Carnegie classification categories, indicating that debt was increasing at a higher rate than the assets that generally are financed with debt. However, Shultz noted that a limitation of the study was the replacement value for buildings and equipment was reported as an estimate, and therefore, may not be accounted for consistently by all institutions.

For future research, Shultz (2000) recommended that studies explore whether these predictor variables or other variables are strong predictors of debt in future periods. He also proposed further theoretical and empirical work that explored debt and resource dependency and the institutional resource allocation process that leads to the use of long-term debt. Shultz's study brought awareness to the use of debt at both four-year public and private institutions and the implications for institutional finances.

In another financial study, Stump (2002) explored the relationship between endowments, long-term debt, current fund revenues, and current fund expenditures at public institutions. The researcher justified these four variables because they represented the basic financial components of public higher education. The data from the study were compiled from the IPEDS finance survey for fiscal years 1992 through 1997 and included institutions that ranged from 294 in 1992 to 348 in 1997. Each of the four variables in the study was adjusted for HEPI for the period of the study. Descriptive statistics of the mean and standard deviation were provided for each variable. Stump used a hierarchical cluster analysis to group the institutions by the four variables in the study by year. This analysis produced five clusters for fiscal year 1992 to1996 and six clusters for 1997. Only the five clusters available for the five years were used. The cluster results were analyzed using ratios (i.e., long-term debt as a function of expenditures).

Stump (2002) reported results after adjusting for HEPI. He found that long-term debt increased in two of the clusters and decreased in the remaining clusters during the study period. As a percentage of expenditures, debt remained constant in all clusters other than cluster five, in which debt declined by greater than 20%. Revenues increased in every cluster. Similarly, expenditures increased for all clusters, except cluster four, which had a slight decrease. Endowment values increased significantly for all five clusters. As a percentage of endowments, long-term debt decreased for all five clusters. Stump noted that the study was completed during a time when endowment earnings were strong, and different outcomes could result during another period of study. Recommendations for future research included replicating the study with private colleges and universities and determining whether public universities use authorities to issue debt, which could result in debt not being recorded as part of the financial statements of public universities. While Stump's study showed the mathematical relationships and a five-year trend between long-term debt and the other financial variables, the comparative data were not delineated by institutional type and were limited to broad financial variables. In addition, of the five clusters, two clusters contained only one large institution each, and another cluster contained only four large institutions.

While earlier studies focused on public universities' authority to issue bonds (Felix, 1979; Stewart & Lyon, 1948) and university debt policies (Sturtz, 1990), a recent study by Moody (2006) also focused on these concepts. Moody (2006) conducted a survey of all public research extensive universities as classified by the Carnegie Foundation in 2000 to gather information about outstanding debt and policies of the universities, and state policies that affect university debt. Of the 102 universities in 46 states, 53% responded. Respondents included institutions from 35 states.

117

Moody (2006) reported that 83% of the responding universities have the authority to issue bonds while the remaining public universities must use a public authority or corporation to issue bonds. The most common type of debt issued included traditional revenue bonds that require a specific revenue source to repay the debt. Five universities issued general revenue bonds that pledged all unrestricted university revenue sources for the debt obligation. Some universities issued a hybrid type of bond that was repaid with a specific revenue source that was not necessarily project specific such as student fees, aggregated revenues for student facilities, or tuition.

Related to debt policies, approximately 59% of the responding universities had a debt policy, but only 24% of these were formal policies. More of the responding universities computed debt capacity (65%) as part of their debt policy as opposed to debt limits (31%). Moody defined debt capacity as the optimal amount of debt an institution implements for borrowing to avoid financial distress. In comparison, a debt limit is the maximum amount of debt a university can issue. Of interest, Moody reported that universities with debt policies have greater debt levels as a percentage of revenues. In addition, 61% of the responding universities reported that state debt policies impacted their debt issuances with approval of the debt issue by the state as the most common requirement. Even though approval by the state was required, state policies did not allow the debt to be an obligation of the state. This study provided information related to the types of debt public research universities issue, and whether institutional or state debt policies impact these debt issues.

Recent studies by Moody also have expanded to examine the impact of variables extraneous to public higher education finances. In another study that included 90 public research extensive universities, Moody (2007) explored the relationship between the amount of long-term

debt outstanding and various measures of university debt issuance constraints, higher education demand, and other state and university characteristics for fiscal years 2002 through 2004. Data were extracted from the following sources: IPEDS, a 2003 University of Kentucky survey related to state constraints on debt issuance, and a 2002 North Carolina Center for Public Policy Research related to higher education governance structures. The study provided descriptive statistics, and a multiple regression analysis was conducted to determine those variables that have the greatest influence on public university long-term debt.

Contrary to McFall's (2000) finding, Moody (2007) found that age of plant was negatively related to debt. In addition, the presence of a regulatory coordinating board was negatively related to debt. Both consolidated governing boards and advisory governing boards also were negatively related to debt but at the .10 level. Moody noted that these results indicated that the governance structure of universities affected the amount of debt borrowed, and a university that had a coordinating board borrowed less than those with other types of boards. Variables that were positively related to debt and statistically significant at the .05 level were the presence of a university-connected hospital, and a university located in or near a mid to large sized city. Moody explained that hospitals would take advantage of bond financing and acquire more debt to finance intense capital needs. However, Moody was surprised that a university's location in a mid to large sized city resulted in more debt. Still, he explained that more debt may be required due to a shortage of space in urban areas, which would result in higher land and construction costs. A positive relationship also was found related to the amount of university debt supported by the full-faith and credit of the state, indicating that this backing allowed universities to borrow more. Full-time equivalent enrollment also was positively related at the .10 level. Moody noted that the determinants in this study were fairly broad and future research

119

should focus on differences between states. A limitation of the study is that the results cannot be generalized to public universities other than research extensive institutions.

In a similar study, Moody (2008) explored the determinants of the credit ratings of public universities as assigned by Moody's Investors Service for fiscal years 2002 through 2004 for 64 institutions. The panel was not balanced with sixty-two observations in 2002 and 2003 and only 18 observations in 2004. The determinants used in the study specific to public universities were direct debt per student, expendable financial resources per student, the freshmen selectivity ratio, and percentage of revenue from the state. Dummy variables also were created for the following: whether legislative approval was required for a public university to issue bonds and whether university debt was subject to the state's debt capacity. In addition, a dummy variable was established to indicate whether a university had a hospital. The model also included determinants related to the state's creditworthiness: per capita income of the state, the state population, and the amount of outstanding full-faith and credit debt. The research design included descriptive statistics, and an ordered probit analysis was used to determine the relationship between the credit ratings of public universities and the determinant variables.

Moody (2008) found that the model was statistically significant and explained more than 31% of the variations in credit ratings. In addition, the model accurately predicted 49% of the actual ratings. The specific determinants that were statistically significant and positively related to credit ratings at the .05 level were expendable financial resources per student, state population, and state credit ratings. Higher levels of these variables were indicative of a stronger credit rating. In contrast, direct debt per student and the requirement for the state legislative to approve the issuance of the debt of institutions were statistically significant but negatively related to university credit ratings at the .05 level. These findings suggested that a higher level of debt

outstanding will result in a lower credit rating. Likewise, legislative approval lowered the credit rating. The fact that a university had a hospital was not statistically significant. Moody concluded that state requirements can lower the credit ratings of public universities and surmised that this impact can increase the cost of university borrowing.

The study also provided estimated marginal impact calculations for each level of credit rating. For example, Moody (2008) noted that for a public university with an Aa2 credit rating, the requirement for legislative approval decreased the probability of sustaining the Aa2 credit rating by 20%. In quantifiable terms, Moody (2008, p. 305) calculated that a public university with an Aa2 credit rating would need to generate an additional $6,300 per student of expendable financial resources to counterbalance the requirement for legislative approval.

Moody (2008) provided new information about the impact of state policy and finances at the institutional level on the credit ratings of universities. A limitation of this study was the lack of clarification by the researcher as to how the public universities in the study were selected other than to indicate that the data were collected from Moody's Investors Service. In addition, the results were reported in the aggregate. Reporting by institutional classification and state would have provided additional information.

Synthesis of higher education debt studies. Many of the early debt studies of higher education organizations were descriptive in nature to gather information about the characteristics of debt that colleges and universities owed. Some studies focused on only state supported colleges and universities (Felix, 1979; Long & Weimer, 1957; Murphy, 1959; Stewart & Lyon, 1948; Sturtz, 1990). Others focused on both private and public universities (Libby, 1984; Long & Weimer, 1957), and one study focused on only private institutions (Gould, 1986). A common methodology for these studies was surveys (Murphy, 1959; Posey, 1980; Stewart & Lyon, 1948;

Sturtz, 1990). Interviews (Hopusch, 1970; Libby, 1984; Sturtz, 1990) and document analysis (Felix, 1979; Hopusch, 1970; Libby, 1984) also were used.

More recent studies have focused on long-term debt and its relationship to other financial variables and nonfinancial variables. When evaluating the studies, several common elements also surfaced. Linear regression was used by Shultz (2000) and Moody (2007) to analyze the determinants of long-term debt. Shultz focused on four-year public and private institutions, while Moody focused on only public research universities. In another study to predict credit ratings of public research universities, Moody (2008) used ordered probit analysis. Ratio analysis was another common methodology. Both Stump and McFall used ratio analysis for their studies of long-term debt. As with earlier studies, Moody (2006) used a survey questionnaire of public research universities to obtain information about debt policies and their authority to issue debt.

For the regression studies, a mutual dependent variable was the amount of long-term debt (Moody, 2007; Shultz, 2000). No commonalities existed between independent variables. Stump also used long-term debt in his ratio analysis study, while McFall (2000) used total debt. In addition to debt, other data elements in the studies were similar. Shultz and Stump used endowment values and revenues in their studies while Moody (2007) and McFall (2000) included expendable net assets, age of facilities, and student enrollment in their studies.

This section has focused on previous debt studies of higher education organizations and illuminated some similarities between the studies. In the next section, the prior debt studies for hospitals, nonprofit entities, K-12 schools, and higher education organizations will be summarized. A focus of this upcoming section will be to encapsulate the common elements between the debt studies that are relevant to this study.

122

Synthesis of Prior Debt Studies

This section will provide a synthesis of the prior debt studies of higher education institutions, K-12 schools, hospitals, and other nonprofit organizations previously discussed. Included in this synthesis will be a condensed discussion of the dependent and independent variables that were found to be statistically significant in prior debt research. In addition, the common statistical approaches used in the study of debt will be provided.

Table 3 provides a summary of the variables and statistical approaches used in prior debt studies by setting. The most commonly occurring dependent variable across sectors was leverage. Leverage was studied as a dependent variable in all sectors except for K-12. The most common formula for leverage found in hospital and other nonprofit studies was based on the ratio of total liabilities or debt to total assets (Bacon, 1992; Bowman, 2002; Jegers & Verschueren, 2006; Smith, 2010; Wedig et al., 1998). Another common formula for leverage was the ratio of long-term debt to total assets (McCue & Ozcan, 1992; Smith, 2010; Wedig et al., 1988). In addition, some studies had other versions of leverage that were delineated by a specific type of debt (i.e., tax-exempt, taxable, mortgages, bonds) (Denison, 2009; Gentry, 2002; Jegers & Verschueren, 2006; Smith, 2010). Shultz (2000) also used leverage as a dependent variable in his higher education study but defined leverage as the ratio of long-term debt to the sum of long-term debt plus institutional fund balances (now net assets). Similarly, Smith (2010) included a version of leverage that was based on a ratio with a numerator of debt and a denominator of the sum of net assets plus debt in his study of nonprofit organizations.

The likelihood of issuing debt was the second most commonly occurring dependent variable and was found in nonprofit and K-12 studies. In nonprofit studies, Yan et al. (2009) determined the probability that an arts, cultural, and humanities sector of nonprofit organization

would issue debt, and Denison (2009) studied the likelihood a nonprofit organization would issue tax-exempt bonds and mortgages. For the K-12 sector, the likelihood of a successful bond passage for school districts in Michigan was the focus of a study of Zimmer and Jones (2005) and two studies by Bowers et al. (2010a; 2010b).

Two other dependent variables, long-term debt and credit ratings, were found in two settings but were not as numerous. Long-term debt was the focus of studies by Shultz (2000) and Moody (2007) in higher education and Wedig et al. (1996) in hospitals. A credit rating was the dependent variable in one higher education study (Moody, 2008) and three K-12 studies (Bolten & Stansell, 1978-1979; Denison et al., 2007; Harris & Munley, 2002).

Each setting had a multitude of independent variables that were statistically significant. These commonly and infrequently occurring independent variables by setting are shown in Table 3. For brevity, only those independent variables that were commonly found across more than one setting will be discussed. These independent variables can be grouped into three categories: revenue, assets, and organizational effects.

Different types of revenues were considered as determinants of debt. For nonprofit studies, Smith (2010) found significance related to support from gifts, contributions, and grants while Yan et al. (2009) found significance related to revenues from goods and services and government grants. In addition, public support was significant for nonprofit entities (Bowman, 2002; Yan et al., 2009). The percentage of revenue from prior year government aid was a significant independent variable in K-12 studies (Harris & Munley, 2002; Strand et al., 1999). Although not as common, total revenues also were included as an independent variable in nonprofit studies by Denison (2009) and Smith (2010). They found total revenue was positively

124

correlated with debt. Shultz also (2000) found that total revenues were a significant predictor of long-term debt for public and private colleges and universities.

Independent variables that were based on formulas including net revenue also were used. For example, a common proxy for risk was based on the variability of earnings in hospital studies (McCue & Ozcan, 1992; Wedig et al., 1988; Wedig et al., 1998) and nonprofit studies (Bowman, 2002). Profitability also was a common independent variable that was based on a ratio of net income to total assets in hospital (Bacon, 1992; McCue & Ozcan, 1992) and nonprofit (Bowman, 2002; Smith, 2010) studies. Growth also was based on changes in revenues in studies by McCue and Ozcan (1992) and Bowman (2002).

In addition to revenue variables, independent variables based on physical assets, total assets, and financial assets also were common in studies. For physical assets, a ratio of fixed assets to total assets was the most common measure in nonprofit (Bowman, 2002; Smith, 2010; Yan et al., 2009) and hospital (Bacon, 1992; McCue & Ozcan, 1992; Wedig et al., 1998) studies. In addition to fixed assets, the age of facilities was included in studies by Wedig (1988), Wedig et al. (1998), Smith (2010), McFall (2000), and Moody (2007). Similar to revenues, nonprofit (Bowman, 2002; Smith 2010) and hospital (Bacon, 1992) studies also included independent variables based on the change in total assets. Although not commonly occurring, endowment value, as a financial asset, was significant in higher education (Shultz, 2000), nonprofit (Bowman, 2002), and hospital studies (Gentry, 2002).

Another way in which assets were used as an independent variable was to denote size. The log of total assets was a common proxy to denote size of an organization and was found to be statistically significant in hospital studies by McCue and Ozcan (1992) and Gentry (2002) and nonprofit studies by Bowman (2002), Jegers and Verschueren (2006), and Yan et al. (2009).

Although not based on assets or found in other studies, another common measure for size in K-12 studies was student enrollment (Bowers et al., 2010a; Denison et al., 2007; Harris & Munley, 2002). Full-time equivalent student enrollment was statistically significant in two higher education studies (McFall, 2000; Moody, 2007).

In addition, independent variables were commonly used to understand industry, organization mission, or location effects. For example, in studies of multiple sectors of nonprofit organizations, the NTEE code was used to understand industry effects (Bowman, 2002; Jegers & Verschueren, 2006; Smith, 2010) and Carnegie classification was used to differentiate higher education institutions (Shultz, 2000). In studies of nonprofit hospitals, ownership (i.e., part of a system) (Gentry, 2002; Wedig, 1994; Wedig et al., 1998) and affiliation (i.e., medical school) (Gentry, 2002; McCue & Ozcan, 1992; Wedig et al., 1988; Wedig et al., 1998) were factors that were considered. Similarly, district characteristics were considered in K-12 studies (Bolten & Stansell, 1978-1979; Zimmer & Jones, 2005). Moreover, the location of the school district (i.e., rural, urban, etc.) was found to be statistically significant in several studies (Bowers et al., 2010a; 2010b; Harris & Munley, 2002; Johnson & Maiden, 2010; Zimmer & Jones, 2005). Location also was significant in hospital studies by Wedig et al. (1988) and Gentry (2002).

Finally, the statistical methods used in the studies also had common approaches. The most common form of regression used was OLS for hospital and nonprofit studies (Bowman, 2002; Gentry, 2002; Jegers & Verschueren, 2006; Magnus et al., 2004a; Magnus et al., 2004b), higher education studies (Moody, 2007; Shultz, 2000), and K-12 studies (Benson & Marks, 2005; Hsueh & Kidwell, 1988; Strand et al., 1999). Probit regression was used as a statistical approach in three of the four settings: K-12 (Denison et al., 2007; Zimmer & Jones, 2005), higher education (Moody, 2008), and nonprofit organizations (Denison, 2009; Yan et al., 2009).

Table 3

Summary of Variables and Statistical Approaches in Prior Debt Studies by Setting

Setting	Dependent Variables		Independent Variables		Statistical Approaches
	Commonly Occurring	Infrequently Occurring	Commonly Occurring	Infrequently Occurring	
Higher education	Long-term debt	Leverage	Expendable financial Resources	Physical assets	OLS regression
		Credit rating	Age of facilities	Full faith & credit	Bivariate correlation
			Enrollment	Legislative approval	Ratio analysis
				State credit rating	Ordered probit analysis
				Governance	
				Location	
				Hospital (Yes/No)	
				State population	
				Endowment value	
				Direct debt per student	
				Year	
				Revenues	

| Setting | Dependent Variables | | Independent Variables | | Statistical Approaches |
	Commonly Occurring	Infrequently Occurring	Commonly Occurring	Infrequently Occurring	
K-12	Credit rating	% voters in favor of a bond	Outstanding debt	District attributes	Probit regression
	Likelihood of issuing debt	Academic performance index	Location	Median home values	Logistic regression
	Borrowing costs	Purchasing bond insurance	Amount of the bond		OLS/Linear regression
	Capital outlay expenditures		% of economically disadvantaged students or SES		2 stage least squares regression
			Type of revenue		Factor analysis
			% of nonwhite residents or students		Logit estimating
			Bond attributes		
			Market factors		
			Enrollment		
			Tax rates and taxable property values		
			% of single family homes rented		

| Setting | Dependent Variables | | Independent Variables | | Statistical Approaches |
	Commonly Occurring	Infrequently Occurring	Commonly Occurring	Infrequently Occurring	
Other nonprofits	Leverage	Mortgage debt	Size	Cash flows	OLS regression
	Likelihood of issuing debt	Bond debt	Compensation	Assets	Logit regression
			Growth	Age of facilities	Probit regression
			Physical assets	Governance and state laws	Tobit regression
			NTEE Class	Endowments	
			Total revenues	Institutional attributes	
			Types of revenues	Risk	
			Profitability	Positive equity	
			Ownership	Net surplus	

Setting	Dependent Variables		Independent Variables		Statistical Approaches
	Commonly Occurring	Infrequently Occurring	Commonly Occurring	Infrequently Occurring	
Hospitals	Leverage	Long-term debt	Size	Endowments	OLS regression
		Tax-exempt long-term debt	Risk	Occupancy rate	Tobit regression
		Taxable long-term debt	Growth	Governance and state Laws	Seemingly unrelated Regression
		Fixed investments	Physical assets	Types of revenues	General least squares regression
			Ownership		Three stage least squares regression
			Affiliation		
			Age of facilities		
			Profitability		
			Payment systems		
			Institutional attributes		
			Location		

This section concludes the literature review for the study. In Chapter III that follows, the methodology for the study is discussed. This discussion includes the research approach, theoretical framework, study population, data source and collection, variables of interest, and statistical analysis.

CHAPTER III:

METHODOLOGY

Introduction and Overall Research Approach

The purpose of this quantitative study was to explore the financial factors and

institutional characteristics that relate to long-term debt and leverage of U.S. four-year public

colleges and universities. Understanding these relationships is needed to determine factors that

enable or constrain public higher education's ability to borrow funds and carry debt in the future

to meet organizational goals. Public higher education is subject to intense scrutiny by both its

internal and external stakeholders including federal, state, and local governments and students

and their families. As such, public higher education is expected to be affordable and accountable

to all of its constituencies. Accordingly, this study informs policy makers and legislators, who

are responsible for regulations that have both negative and positive consequences for the

finances of public higher education institutions. In addition, previous higher education debt

studies have not investigated the connection between long-term debt and specific revenue

sources, which leaves a gap to be explored. Furthermore, an analysis of debt with more recent

data is needed in the current economic environment. Finally, this study provides information

about long-term debt and leverage that may be used by financial administrators for

benchmarking purposes.

This chapter discusses the methodology used to conduct the study. Included in this

discussion are the research approach, research questions, theoretical framework, study context,

131

data source, data collection, variables of interest, and statistical analysis. This discussion also includes information regarding ethical and security considerations and researcher positionality.

The research approach for this study employed a positivist epistemology. Gall, Gall, and Borg (2005) explain that researchers who subscribe to a positivist approach believe that an objective social reality exists, and a real world is "out there" "available for study through scientific means similar to those that were developed in the physical sciences" (p. 14). Quantitative research is the method used by positivists (Gall et al., 2005) and involves the collection of numerical data that is analyzed using statistical methods in order to explain phenomena (Muijs, 2004).

The specific category of quantitative research used for this study was relationship research. Gall et al. (2005) note that relationship research "explores relationships among variables that have not been manipulated by the researchers" (p. 179) and enables a researcher to understand the factors that influence different variables "at the same point in time" (p. 226). The use of relationship research also is supported by a review of the extant literature, which shows that relationship research has been the predominant approach used to explore relationships among variables in nonprofit and educational organizations (Bacon, 1992; Bowman, 2002; McCue & Ozcan, 1992; Moody, 2007; Shultz, 2000; Smith, 2010; Yan et al., 2009). Because the data were not altered by the researcher, this study was a nonexperimental study (Gall et al., 2005). Furthermore, this study primarily was a cross-sectional study because data were analyzed at a point in time (Gall et al., 2005). However, the study also included trend data of more than one year of data of certain variables of interest.

Relationships among variables were analyzed using descriptive and inferential statistics. Descriptive statistics were used "to tabulate, summarize and depict a collection of data in an

abbreviated fashion" (Lomax, 2007, p. 6). In addition to describing the data, inferential statistics were used to explain the relationships between variables of interest (Muijs, 2004) and evaluate differences between the mean scores of variables (Gall et al., 2005).

Intent of Study and Research Questions

Two major factors led to the research questions posed by the researcher. One factor was the lack of recent studies of long-term debt. The last research study that showcased trends in long-term debt in higher education was conducted with data from 1995 and prior. Therefore, a gap existed in studies that explored recent trends in long-term debt and leverage, and in particular, trends during a recessionary period.

A second factor that influenced the research questions was the need to study different variables that had had not been previously studied. Prior research studies of higher education institutions focused on the relationship between long-term debt or leverage and other nonfinancial and financial factors (McFall, 2000; Moody, 2007; Shultz, 2000; Stump, 2002). These prior research questions led the researcher to ask similar questions but explore the relationship between different variables of interest than previously studied in the higher education sector. Accordingly, these two factors led to the following research questions that were addressed in this study:

1. What was the long-term debt profile of U.S. four-year public colleges and universities from 2005 to 2009 in terms of:

   a. Mean total long-term debt by year

   b. Mean five-year change in total long-term debt

   c. Mean year-to-year change in total long-term debt

   d. Mean leverage

133

e. Mean five-year change in leverage

f. Mean year-to-year change in leverage

2. How did the long-term debt of U.S. four-year public colleges and universities from question one differ based on:

a. Simplified Carnegie classification (i.e., baccalaureate, master's, and doctoral/research)

b. Geographic region

3. How did the leverage value of U.S. four-year public colleges and universities from question one differ based on:

a. Simplified Carnegie classification (i.e., baccalaureate, master's, and doctoral/research)

b. Geographic region

4. What institutional characteristics and financial factors of U.S. four-year public colleges and universities were related to long-term debt?

5. What institutional characteristics and financial factors of U.S. four-year public colleges and universities were related to leverage?

Conceptual Framework

Massy (1996b) explains that when applying the theory of the business firm, differences exist between for-profit and nonprofit entities. For-profit entities focus on maximizing profit, while nonprofit entities focus on maximizing utility or the contribution they make to society. In addition, for-profit entities may use their profits to distribute excess funds to stakeholders, whereas nonprofit entities cannot distribute surplus revenues to stakeholders. Therefore, because maximizing profit is not their primary goal, nonprofit entities maximize the quantity and quality

of services provided. Only the revenues and expenditures of a nonprofit entity constrain the utility that is optimized (Massy, 1996b).

Basic economic concepts can be used to provide insight into higher education research (Cheslock, 2006; Paulsen & Toutkoushian, 2006). Cheslock (2006) stated that "economists model colleges and universities as seeking to maximize certain objectives given a set of financial constraints" (p. 25). He also noted that "revenues are simply the constraint that prevents the institution from making further strides toward educational excellence, prestige, and influence" (p. 25). Similarly, Paulsen and Toutkoushian (2006) indicate that decision-makers maximize goals that are dependent on available resources.

The economic concept of utility maximization has been used in previous research of higher education and nonprofit entities as a lens for understanding certain relationships (DesJardins & Bell, 2006; Hughes, 2006). DesJardins and Bells (2006) applied the concept of utility maximization to students selecting a college or university to attend. In addition, they indicate a utility maximization framework could be applied to the college or university unit. Hughes (2006) also notes that the concept of maximization of goals may be applied to nonprofit entities. She further explains that nonprofit entities maximize social value subject to funding, competition, and legal constraints. She applied an economic model of demand for the service of a nonprofit entity related to the amount of donations provided. This model was used to estimate donations based on the income and wealth of a donor and other personal characteristics.

Hence, the economic lens of utility maximization can be used to understand the use of debt by a public college or university. From the literature review, strategic planning that is aligned with an institution's goals and mission is integral to the process of determining if an institution needs to borrow funds for projects (Blustain et al., n.d.b). Therefore, borrowing funds

135

may maximize the institution's utility in numerous ways, such as providing a building like a new dormitory or academic building to meet enrollment demands. Through the planning process, options will be chosen to determine the principal amount to borrow (the quantity) and at what interest rate (the price). However, institutions do not have unlimited revenues to repay the debt, and the amount of revenue they earn constrains the amount they borrow. Additionally, when a college or university borrows funds, the lender may have certain requirements that must be met. The institution may be required to pledge revenues for the repayment of the funds or provide collateral for the debt (i.e., pledge the asset that will be purchased or built with the loaned funds) (Blustain et al., n.d.b). Accordingly, revenues and assets are the variables that supply the university with the resources needed to meet its mission. In turn, these resources can be used to support borrowing funds to further institutional strategic plans. Although utility is not observable (that is, in this particular study, the researcher does not know how the funds are spent), utility maximization is inferred by modeling the observed financial and nonfinancial factors as a proxy that relate to long-term debt and leverage.

Applying this economic lens to the results of the study, the amount of debt a public college or university could carry in order to achieve its goals would depend on the amount of revenues and assets that an institution has. Therefore, the amount of utility to be gained from holding long-term debt or leveraging assets will depend on the constraints of an institution's income and asset levels. Colleges and universities have different financial situations, and in particular, the amount of available fixed revenues may vary (Cheslock, 2006). The size of an institution factors into the amount of debt an institution holds, with institutions with larger amounts of assets able to carry more debt (National Association of College and University Business Officers and Commonfund Institute, 2010). These assets have the ability to generate

income. For example, a college or university may build a new residence hall and can charge sufficient rent to cover the debt required to finance the project and the operations and maintenance of the facility. Similarly, institutions with greater sources of revenue have additional revenue streams that can be used to repay the debt. Furthermore, colleges and universities have varying objectives depending on the mission and goals of the institution as exhibited by different classifications of universities. Therefore, particular institutional characteristics also may be related to institutional debt.

Study Context

This study focused on U.S. four-year public colleges and universities. The institutions were organized by the 2005 Carnegie Basic Classification and geographic region. Using the 2005 Carnegie Basic Classification, institutions were further delineated as Doctoral/Research universities, Master's colleges and universities, and Baccalaureate colleges. The geographic regions used in this study were based upon the eight regions provided by IPEDS with modifications (Integrated Postsecondary Education Data System, n.d.a). Because the number of institutions in the eight regions was unevenly distributed, regions were combined to provide a more balanced distribution of institutions by regions. Accordingly, four regions were used as follows: 1) the Northeast region includes the IPEDS regions of New England and Mid East; 2) the Midwest region includes the IPEDS regions of Great Lakes and Plains; 3) the Southeast region remains as specified by IPEDs; and 4) the West region includes the IPEDS regions of the Southwest, Rocky Mountains, and Far West. U.S. service schools, schools in the outlying areas (American Samoa, Federated States of Micronesia, Guam, Marshall Islands Northern Mariana Islands, Puerto Rico, Palau, and Virgin Islands), and four-year associate's colleges were not selected for inclusion. The data set included only those institutions that report data

independently with a unique IPEDS unit identification. In addition, only public institutions that report financial data following Governmental Accounting Standards Board requirements were included to allow for comparability of data. Finally, public institutions had to have either current or noncurrent long-term debt to be included in the data set.

The initial data set included 568 unique institutions across the five years included in the study. After considering the delimitations set forth, 115 institutions were removed. However, because research questions one through three used trend data, the data set needed to include the same institutions in all five fiscal years (2005 to 2009) for comparable data. Therefore, another 38 institutions were removed, which left a final data set of 415 institutions. Appendix A provides a table of the institutions included in this study for research questions one through three, while Appendix B provides a table of the public institutions excluded from research questions one through three.   Table 4 provides a summary of the study population by geographic region and simplified Carnegie classification for research questions one, two, and three.

Table 4

Summary of Data Set by Carnegie Classification and Geographic Region for Research Questions One, Two, and Three

Simplified Carnegie Classification	Geographic Region				Total by Classification
	Northeast	West	Midwest	Southeast	
Baccalaureate	13	23	13	22	71
Master's	59	45	55	56	215
Doctoral/Research	18	29	37	45	129
Total by Region	90	97	105	123	415

For research questions four and five that focused on one year (2009), out of the initial data set of 564 institutions in fiscal year 2009, 115 public institutions were excluded from the study based on the initial delimitations. After reviewing the data for outliers, one institution was removed due to a calculated age of facilities of 28,000 years, which appeared to be inaccurate data. Therefore, the final data set included 448 institutions. Appendix C provides a table of the institutions included in this study for research questions four and five, while Appendix D provides a table of the public institutions excluded from research questions four and five. Table 5 provides a summary of the study population by geographic region and simplified Carnegie classification for research questions four and five.

Table 5

Summary of Data Set by Carnegie Classification and Geographic Region for Research Questions
Four and Five

Simplified Carnegie Classification	Geographic Region				Total by Classification
	Northeast	West	Midwest	Southeast	
Baccalaureate	21	23	18	25	87
Master's	61	51	52	64	228
Doctoral/Research	18	29	36	50	133
Total by Region	100	103	106	139	448

Data Source

The National Center for Education Statistics (NCES) at the U.S. Department of
Education is required by Congress to report information on American education (Integrated
Postsecondary Education Data System, n.d.d). To meet this mandate, NCES makes the
Integrated Postsecondary Education Data System (IPEDS) publically available to provide
information on public colleges and universities. All higher education institutions that receive
Title IV funding in accordance with the Higher Education Act (HEA) of 1965, as amended, for
student aid are required to provide timely and accurate data to IPEDS. IPEDS has nine survey
components, which have different collection and dissemination cycles (Integrated Postsecondary
Education Data System, n.d.b). For purposes of this study, three surveys were used: institutional
characteristics, finance, and 12-month enrollment. Data for the institutional characteristics
survey are collected annually in the fall from early September until the middle of October. The

institutional characteristics survey contains general information about institutions, such as institutional contact information, affiliations, mission statements, and academic calendar systems. The finance survey also is an annual survey but data are collected in the spring from early December to the middle of April. The finance survey provides financial information such as revenues, expenses, assets, and liabilities based on each institutions required accounting reporting standard (i.e., GASB or FASB). The 12-month enrollment survey is collected in the fall and provides headcount enrollment, instructional activity (contact or credit hours), and full-time equivalent (FTE) enrollment. For all surveys, data are publically released one year after data collection ends (Integrated Postsecondary Education Data System, n.d.b). Prior higher education debt studies have used IPEDS as a data source (Moody, 2007; Shultz, 2000; Stump, 2002).

Data Collection and Variables of Interest

Data were extracted using the IPEDS data mining tool. The finance, enrollment, and institutional characteristic IPEDS surveys for fiscal years 2005, 2006, 2007, 2008, and 2009 provided the data for the study. Once the information was extracted, the data for each year were downloaded as a comma separated values (CSV) file and then imported into SPSS and Microsoft Excel for analysis. The data collected for the study were based on the variables of interest that were statistically significant in prior debt studies. In this section, the dependent variables are discussed first, followed by the independent variables. In addition to the discussion of variables of interest in this section, Appendix E provides a summary data dictionary of all variables that were used in this study.

Dependent Variables

As illustrated in Table 3 in Chapter II, the dependent variables used in this study were based on prior research as discussed in the review of the literature. The dependent variables in this study were long-term debt and leverage. Long-term debt was the focus of higher education studies by Shultz (2000) and Moody (2007) and nonprofit hospitals by Wedig et al. (1996). For purposes of this study and based on the information provided in IPEDS, long-term debt was a continuous variable that was defined as the aggregate value of the current and noncurrent portions of long-term debt. Leverage was another commonly occurring dependent variable in prior research. The most common formula for leverage found in nonprofit studies was based on the ratio of total liabilities or debt to total assets (Bacon, 1992; Bowman, 2002; Jegers & Verschueren, 2006; Smith, 2010; Wedig et al., 1998). Therefore, for the purposes of this study, leverage was a continuous variable that was defined as the ratio of total liabilities to total assets illustrated as:

$$\text{Leverage} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

Both long-term debt and leverage values were reported in current dollars. Adjusting the values of long-term debt and leverage to constant dollars was not proposed because of the fundamental manner in which the values are reported. Long-term debt is issued by a college or university for a specific need with a known cost. Not only is the use of the debt known but also the cost of the debt is known based on the interest rate, which has been influenced by inflation (Blustain et al., n.d.b). Accordingly, adjusting long-term debt values for inflation would be redundant because inflationary factors have been factored into the debt value (National Association of College and University Business Officers, 2006). Additionally, long-term debt is

142

commonly used to finance assets such as property, plant, and equipment (Hornfischer, 1997), which are valued at historical cost (National Association of College and University Business Officers, 2006). Thus, the cost of the assets would align with the amount of debt issued. Therefore, adjusting these values to constant dollars would be misleading.

Independent Variables

Multiple combinations of independent variables have been used in prior research as illustrated in the literature review. Accordingly, three criteria were considered in the selection of independent variables used in this study. First, independent variables that were statistically significant in prior research across four settings (hospitals, nonprofits, K-12, and higher education) were used as an initial framework to select the independent variables. Second, gaps from the previous research where independent variables were used in other settings but not in higher education were identified. Third and finally, the independent variables were further refined to those that were endogenous in nature in so much that the institution could control or had some involvement in data reported for the independent variables. For example, institutions establish student enrollment goals in accordance with strategic planning and implement tuition and fee structures in conjunction with their governing boards.

Hence, the independent variables in this study were classified into three categories: revenues, assets, and institutional characteristics. In this section, revenues are discussed first, followed by assets and then institutional characteristics. Independent variables were reported in current dollars in the long-term debt model and as percentages or ratios in the leverage model.

Prior research used different types of revenues as determinants of debt. For nonprofit studies, Smith (2010) found significance related to support from gifts, contributions, and grants, while Yan et al. (2009) found significance related to revenues from goods and services and

143

government grants. In addition, public support was significant for nonprofit entities (Bowman, 2002; Yan et al., 2009). The percentage of revenue from prior year government aid was a significant independent variable in K-12 studies (Harris & Munley, 2002; Strand et al., 1999). Additionally, although not as common, total revenues were included as an independent variable in nonprofit studies by Denison (2009) and Smith (2010). Shultz also (2000) found that total revenues were a significant predictor of long-term debt for public and private colleges and universities.

For the purposes of this study, independent variables classified as revenues were categorized based on major types as illustrated in Table 1 in Chapter II. For example, grants and contracts revenues are reported as nonoperating and operating revenues in IPEDS and are further delineated by sources as federal, state, local, and private. These values were reported as an aggregate variable labeled as grants and contract revenue. Similarly, federal and local appropriations were aggregated and reported as other appropriations. State appropriations were reported separately. Additional revenue variables included tuition and fees, sales and services of auxiliary enterprises, sales and services of hospital operations, gifts, and independent operations for a total of eight revenue sources. Other operating and nonoperating revenues were excluded as a revenue independent variable because in some instances the reported numbers in aggregate equaled a negative number. Investment income was also excluded because the reported results in 2009 were negative or investment losses.

In defining the revenue variables, prior debt studies used either total dollar amounts or the ratio of a specific type of revenue to total revenues. Due to the exploratory nature of this study, dollar amounts of specific revenues were considered when evaluating the relationship with the dollar amount of long-term debt. For example, the independent variable for state

appropriations was represented by the amount of state appropriations. Because leverage is computed as a ratio, the ratio of specific revenue types to total revenues was considered in relation to leverage. For example, the independent variable for state appropriations was the ratio of state appropriations to total revenues, where total revenues were defined as the aggregate amount of each type of revenue considered. The state appropriations ratio is illustrated as:

$$\text{State Appropriations Ratio} = \frac{\text{State Appropriations Revenue}}{\text{Total Revenue}}$$

In addition, because only 18 of the public institutions had sales and services of hospital revenues, a dichotomous variable for whether an institution has hospital revenues was used as an alternative independent variable. All revenue independent variables were continuous variables with the exception of the dichotomous variable related to hospital revenue.

Independent variables based on physical assets, total assets, and financial assets also were common in prior research. For physical assets, a ratio of fixed assets to total assets was the most common measure in nonprofit (Bowman, 2002; Smith, 2010; Yan et al., 2009) and hospital (Bacon, 1992; McCue & Ozcan, 1992; Wedig et al., 1998) studies. Although not as commonly occurring, endowment values, as a financial asset, were statistically significant in higher education (Shultz, 2000), nonprofit (Bowman, 2002), and hospital studies (Gentry, 2002). The independent variables classified as assets in this study included two continuous variables: the value of endowment assets at the end of the year and property, plant, and equipment at the end of the year net of accumulated depreciation. The net or depreciated value of property, plant, and equipment was used as opposed to the gross value to avoid overstating the remaining usefulness of the assets. In addition, the net value of property, plant, and equipment would be more likely to align with the remaining amount of debt owed on the asset. As noted earlier, when leverage

145

was the dependent variable, the ratio of the asset to total assets was used as the independent variable. Likewise, when the dollar value of long-term debt was the dependent variable, the asset independent variables were based on the dollar amount of the specific assets.

In addition to the revenue and asset independent variables, institutional characteristics were common variables used in prior debt studies. The variables classified as institutional characteristics for this study were: enrollment, location (region), simplified Carnegie classification, age of facilities, and revenue diversification index. Student enrollment was commonly found as an independent variable in education studies (Bowers et al., 2010a; Denison et al., 2007; Harris & Munley, 2002; Moody, 2007; Strand et al., 1999). Full-time equivalent (FTE) student enrollment was used in a prior higher education debt study by Moody (2007) and McFall (2000). FTE student enrollment is a commonly used variable found in higher education finance publications, such as *Trends in College Spending* (Desrochers, Lenihan, & Wellman, 2010) and *State Higher Education Finance* (State Higher Education Executive Officers, 2011), as well as *the Digest of Higher Education Statistics* (Snyder & Dillow, 2010; 2011). This study used the continuous variable of 12-month full-time equivalent (FTE) enrollment for the corresponding academic year. For example, for fiscal year 2008-2009, the 12-month FTE enrollment for the academic year 2008-2009 was used. This enrollment calculation included the aggregate of undergraduate and graduate students. See Appendix E for additional information about how 12-month FTE enrollment is calculated by IPEDS.

Location was another independent variable that was found to be statistically significant in prior debt studies of K-12 school districts (Bowers et al., 2010a; 2010b; Harris & Munley, 2002; Johnson & Maiden, 2010; Zimmer & Jones, 2005) and nonprofit hospitals (Gentry, 2002; Wedig et al., 1988). Geographic region was a categorical variable. As noted earlier, four geographic

146

regions were included based on a modified version of the IPEDS regions and labeled as Midwest, Northeast, Southeast, and West.

Classification also was included as an institutional characteristic. In studies of multiple sectors of nonprofit organizations, the NTEE code was used to understand industry effects (Bowman, 2002; Jegers & Verschueren, 2006; Smith, 2010). In a higher education study (Shultz, 2000), Carnegie classification was used to distinguish between different institutional types. Accordingly, as noted earlier, a simplified Carnegie classification based on the 2005 Basic Classification methodology was used in this study. Three levels of classifications were considered: Baccalaureate, Master's, and Doctoral/Research institutions. Like geographic region, classification was also a categorical variable.

Based on significance in prior debt studies (McFall, 2000; Moody, 2007; Smith, 2010; Wedig et al., 1988; Wedig et al., 1998), age of facilities also was included as a continuous independent variable. For this study, accumulated depreciation divided by depreciation expense served as a proxy for age of facilities (Mezzina et al., 2010; Wedig et al., 1988; Wedig et al., 1998). Both accumulated depreciation and depreciation expense dollar amounts were obtained from the IPEDS finance survey for the applicable year. Accumulated depreciation represented total accumulated depreciation at the end of the year for all property, plant, and equipment. Depreciation expense was computed based on the aggregate amount of depreciation reported by expenditure function (instruction, research, public service, etc.) for institutions that report depreciation by function. Otherwise, total depreciation expense was used.

The final institutional characteristic used as an independent variable in this study was a continuous variable identified as the revenue diversification index (RDI). RDI was used in one prior debt study of arts, cultural, and humanities nonprofit entities (Yan et al., 2009). Using a

147

Hirschman-Herfindahl Index (HHI) based on the calculations illustrated by Suyderhoud (1994) and adapted for the revenues of public colleges and universities, RDI was measured based on revenues for four-year public colleges and universities discussed previously and shown in Table 1 in Chapter II.   Accordingly, the formula for RDI was:

$$RDI = \frac{\left[1 - \left\{ (r_1 / R)^2 + (r_2 / R)^2 ... + (r_8 / R)^2 \right\} \right]}{\left[1 - (100 / N) \right]}$$

In this formula, N represents the number of revenues sources, r represents the amount of revenue from each of the revenue sources, and R represents the aggregate total of all of the revenues sources. A higher RDI denotes a higher diversification of revenues and therefore lower risk. A step-by-step illustration of the RDI calculation is shown in Appendix F.

Ethical and Security Considerations

Because IPEDS is publically available and human subjects were not involved, data security was not applicable. In addition, publically available datasets from the National Center for Education Statistics were approved for secondary analysis at the researcher's institution without requiring the review of the Institutional Review Board (IRB). To confirm authorization of this preapproved dataset, the researcher notified IRB in writing of her intent to use this dataset for the study and requested a determination letter from IRB. IRB approved the researcher's request to use the dataset, and the determination letter is shown in Appendix G.

Statistical/Data Analysis

Data analysis was conducted using various statistical techniques. Each of the methods used are discussed in the context of the five research questions. As noted earlier, the final data set for research questions one, two, and three included the 415 institutions that reported data in each of the five years in order to have comparable data.

Research question one was answered by extracting the data for fiscal years 2005 through 2009 and computing and reporting descriptive statistics. Specifically, the descriptive statistics included the mean; median; standard deviation; minimum; and maximum of long-term debt and leverage values for each of the five years, as well as the year-to-year and five-year change in long-term debt and leverage from 2005 to 2009. The trend of long-term debt and leverage was reported.

Research questions two and three also were answered by providing descriptive statistics from question one disaggregated by simplified Carnegie classification and geographic region. Data were reviewed for any unusual values or outliers. After the analysis of descriptive statistics was finished, appropriate diagnostic tests were used to test statistical assumptions and corrective measures used. When statistical assumptions were not met, the researcher noted any limitations.

Analysis of variance (ANOVA) with log transformation of variables was used to determine if a difference existed in the means of long-term debt and leverage by Carnegie classification and geographic region across fiscal years 2005, 2006, 2007, 2008, and 2009. ANOVA is an appropriate technique to use because it allows the researcher "to *partition* (divide) the *total variance* measured in the study into its sources or component parts" where the variance measured is that of the dependent variable (Gamst, Meyers, & Guarino, 2008, p. 23). The ANOVA design used for this study was a complex mixed design, which by definition must have at least three independent variables (Gamst et al., 2008). In this study, the three independent variables were Carnegie classification, geographic region, and fiscal year. To qualify as a mixed design, there must be at least two independent variables that are either between-subjects factors or within-in subjects factors and one independent variable that represents the remaining factor type (Gamst et al., 2008). In this study, Carnegie classification and geographic region

represented the two between-subjects factors, because each of the institutions contributed only one value for the dependent variable in these categories. In addition, the two-way portion of the ANOVA design included a three by four factorial design. The Carnegie classification had three levels—Baccalaureate, Master's, and Doctoral/Research, while geographic region had four levels—Northeast, Midwest, Southeast, and West. Fiscal year represented the within-subjects factor, also known as repeated measures, because each institution contributed an amount for the dependent variable for every instance or fiscal year. Accordingly, repeated measures were used to study the dependent variables by Carnegie class and geographic region by fiscal year. A mixed ANOVA design was appropriate because it allowed the researcher to evaluate the effect of each independent variable separately and collectively. Collectively studying the two independent variables allowed the researcher to determine if the two factors operated independently or operate together, that is, interacted and produce a different effect (Gamst et al., 2008). Because question two and three addressed two dependent variables, long-term debt and leverage, the mixed design was conducted twice.

For questions four and five, multivariate linear regression or ordinary least squares (OLS) regression was used to determine the relationship between long-term debt and leverage and financial and institutional characteristic factors for fiscal year 2009. Once extracted, data were reviewed for any unusual values or outliers. As noted earlier after considering delimitations, the data set included 449 institutions; however, one institution was excluded because of what appeared to be a reporting error. Descriptive statistics were reported for the dependent and independent variables.

In prior debt studies, OLS regression was the most common statistical method for hospital and nonprofit studies (Bowman, 2002; Gentry, 2002; Jegers & Verschueren, 2006;

150

Magnus et al., 2004a; Magnus et al., 2004b), higher education studies (Moody, 2007; Shultz, 2000), and K-12 studies (Benson & Marks, 2005; Hsueh & Kidwell, 1988; Strand et al., 1999). Tabachnick and Fidell (2007) explain that regression analysis allows one to investigate the relationship between a dependent variable and multiple independent variables and determine the strength and importance of the relationship between each independent variable and the dependent variable. OLS regression is used when the dependent variable is measured based on a continuous scale, and the independent variables are measured based on continuous or categorical scales and the relationship between the dependent variable and independent variable is linear (Gall, Gall, & Borg, 2003). Regression results provide the best prediction of the dependent variable based on the independent variables (Gall et al., 2003).

After the analysis of descriptive statistics was finished and prior to proceeding with the regression model, diagnostic tests were run to evaluate the statistical assumption of normality. In this study, two OLS regression tables were generated for the two dependent variables that were continuous variables—long-term debt and leverage. The independent variables were those variables previously discussed in the variables of interest section. The independent variables met the criteria for OLS regression because they were either categorical or continuous variables. Because this study was exploratory, the analysis in SPSS began with all subsets regression to examine the relative explanatory value of the independent variables. After the most significant independent variables were identified, OLS regression was conducted using the SPSS Enter method. The Northeast region and Baccalaureate institutions, which were the smallest in each group, were excluded for comparative purposes.

151

Researcher Positionality

Although this study was a quantitative study, a potential exists that the past experiences of the researcher influenced the research approach used and interpretation of findings. Therefore, the researcher wishes to acknowledge her background that might influence the results of the study. The researcher has 20 years of experience working in administrative financial areas at four-year public universities. In addition, the researcher currently is part of a team of individuals who have responsibility for overseeing the issuance of debt at her current institution, and thus, she has a professional interest in the results of the study. Furthermore, the researcher's institution is a four-year public university and was included in the study.

By recognizing the potential for bias, the researcher sought to maintain objectivity as the study was conducted. Objectivity was maintained by collecting the data using common extraction tools in a publically available database following a systematic approach. In addition, the research questions were answered based on quantitative techniques. Results were reported based on the statistical output and, to some extent, the quantitative nature of the study inherently mitigated the potential for bias.

Summary

The purpose of this quantitative study was to explore the institutional characteristics and financial factors that explain long-term debt of U.S. four-year public colleges and universities. This study fills a gap in the existing literature and provides information that will inform financial administrators and policymakers. This chapter discussed the overall research approach and the methodology that was used for the study. The research utilized a positivist perspective and employed quantitative methods. In addition, the theoretical framework, study context, and data source were discussed. A detailed discussion of the dependent variables and independent

variable also was provided. The research questions outlined in Chapter I were revisited, and the descriptive and inferential statistical techniques that were used to answer each research question were presented. In addition, ethical and security considerations and researcher positionality were acknowledged. In the next chapter (Chapter IV), the findings that result from the analysis are presented.

CHAPTER IV:

PRESENTATION OF DATA

Introduction

The purpose of this quantitative study was to explore the financial factors and institutional characteristics of U.S. four-year public colleges and universities that relate to long-term debt and leverage. In addition, trends in long-term debt and leverage from 2005 to 2009 were analyzed by Carnegie classification and geographic region. This chapter presents the data for the study and provides the results of the analysis from the descriptive statistics, ANOVA tests, and regression models. Following a brief restatement of the study population, the results will be organized by research question.

The institutions included in the study were U.S. four-year public colleges and universities that (a) report financial information in accordance with Governmental Accounting Standards Board requirements; (b) had long-term debt; (c) reported data to IPEDS using a unique identification number; and (d) were classified as Baccalaureate, Master's, or Doctoral/Research institutions in accordance with the 2005 Carnegie Basic Classification. In addition, institutions were grouped by the eight regions provided by IPEDS with modifications (Integrated Postsecondary Education Data System, n.d.a). Because the number of institutions in the eight regions was unevenly distributed, regions were combined to provide a more balanced distribution of institutions by regions. Accordingly, four regions were used as follows: 1) the

Northeast region included the IPEDS regions of New England and Mid East; 2) the Midwest region included the IPEDS regions of Great Lakes and Plains; 3) the Southeast region remained as specified by IPEDs; and 4) the West region included the IPEDS regions of the Southwest, Rocky Mountains, and Far West. U.S. service schools, schools in the outlying areas (American Samoa, Federated States of Micronesia, Guam, Marshall Islands Northern Mariana Islands, Puerto Rico, Palau, and Virgin Islands), and four-year associate's colleges were excluded.

The initial data set included a different number of institutions in each fiscal year. Because a five-year trend was examined and comparable data were necessary, institutions were excluded that did not consistently report data in each year. Accordingly, the final data set for research questions one through three included the 415 institutions that reported data in each of the five years. The final data set for research questions four and five will be discussed prior to answering research question four.

The data set for research questions one, two, and three is shown in Table 6. The number of institutions was categorized by simplified Carnegie classification and geographic region. By Carnegie classification, Master's institutions represented the largest number of institutions when compared to Baccalaureate and Doctoral/Research institutions. According to geographic region, more institutions were represented by the Southeast region, and the least number of institutions was represented by the Northeast.

Table 6

Number of Institutions by Carnegie Classification and Geographical Region

Classification and Region	*n*
Baccalaureate	
Northeast	13
West	23
Midwest	13
Southeast	22
Total Baccalaureate	71
Master's	
Northeast	59
West	45
Midwest	55
Southeast	56
Total Master's	215
Doctoral/Research	
Northeast	18
West	29
Midwest	37
Southeast	45
Total Doctoral/Research	129
Grand Total	415
Northeast	90
West	97
Midwest	105
Southeast	123
Grand Total	415

Results

Research Question One

What was the long-term debt profile of U.S. four-year public colleges and universities

from 2005 to 2009 in terms of the (a) mean total long-term debt by year; (b) mean five-year

156

change in total long-term debt; (c) mean year-to-year change in total long-term debt; (d) mean

leverage; (e) mean five-year change in leverage; and (f) mean year-to-year change in leverage?

Table 7 provides descriptive statistics for mean long-term debt for fiscal years 2005

through 2009. Long-term debt showed an increasing trend with mean long-term debt for U.S.

four-year public colleges and universities increasing from $90,188,081 in 2005 to $137,889,388

in 2009. Median long-term debt also increased over this same period from $40,400,316 to

$69,941,350. Over the five-year period from 2005 to 2009, no decline in average long-term debt

occurred.

Table 7

Descriptive Statistics, Long-term Debt, Fiscal Years 2005 to 2009

	Long-term Debt				
Year	*M*	*Mdn*	*SD*	*Min*	*Max*
2005	$90,188,081	$40,400,316	$134,038,753	$49,442	$877,540,033
2006	$100,695,004	$48,306,095	$148,811,802	$53,911	$1,106,227,366
2007	$111,291,057	$52,581,167	$158,535,758	$24,347	$1,118,091,657
2008	$125,393,696	$62,536,297	$179,108,249	$1,734	$1,195,567,000
2009	$137,889,388	$69,941,350	$193,740,317	$55,510	$1,444,571,000

Note: *n = 415*

In addition, mean long-term debt for four-year public colleges and universities showed a

wide and increasing range of variation. The minimum amount of long-term debt reported was

lowest in fiscal year 2008 at $1,734. Fiscal year 2009 had the highest reported maximum

amount of long-term debt at $1,444,571,000.

Table 8 shows the skewness and kurtosis values for long-term debt for the five-year

period. Mean long-term debt for the five fiscal years was not normally distributed. The

157

skewness value was much larger than a range of plus or minus one each year and was positively skewed. In addition, the distribution curve was leptokurtic.

Table 8

Skewness and Kurtosis Values, Mean Long-term Debt Fiscal Years 2005 to 2009

	Mean Long-term Debt	
Year	Skewness	Kurtosis
2005	3.055	11.208
2006	3.154	12.316
2007	2.984	10.920
2008	2.932	10.173
2009	3.124	12.684

Note: *n = 415*

The changes in mean long-term debt in dollars and percentages by each year and over the five-year period are reported in Table 9. Over the five-year period, the cumulative increase in mean long-term debt was $47,701,306 or 52.89%. The largest annual change over the five-year period occurred between fiscal years 2007 and 2008 when the mean long-term debt rose by $14,102,640 or 12.67% during this one-year period. Although fiscal year 2009 showed the highest mean amount of long-term debt of $137,889,388, the annual year-to-year change in the amount of mean long-term debt between fiscal years 2008 and 2009 showed the smallest percentage change of 9.97%.

Table 9

Mean Long-term Debt, Year-to-year Change, and Five-year Change in Dollars and Percentages

		One-year change		Five-year change	
Year	*M*	$	%	$	%
2005	$90,188,081				
2006	$100,695,004	$10,506,922	11.65%		
2007	$111,291,057	$10,596,053	10.52%		
2008	$125,393,696	$14,102,640	12.67%		
2009	$137,889,388	$12,495,691	9.97%	$47,701,306	52.89%

Note: $n = 415$

Similar to mean long-term debt, mean leverage (defined as total liabilities divided by total assets) showed an increasing trend from fiscal years 2005 to 2009. As illustrated in Table 10, the mean leverage for four-year public colleges and universities was 0.3811 in 2005, compared to 0.4233 in 2009. Consistent with mean long-term debt, mean leverage did not decline over the five-year period. The median leverage also increased during this same time frame from .3391 in fiscal year 2005 to .3911 in fiscal year 2009. Like long-term debt, leverage covered a wide range for four-year public colleges and universities. The minimum leverage was 0.0311 in fiscal year 2007. In comparison, fiscal year 2009 had the highest maximum leverage of 1.4911. In every year, a maximum leverage greater than 1.00 was calculated.

159

Table 10

Descriptive Statistics, Leverage, Fiscal Years 2005 to 2009

Year	*M*	*Mdn*	*SD*	*Min*	*Max*
2005	0.3811	0.3391	0.2001	0.0526	1.4700
2006	0.3898	0.3488	0.1960	0.0433	1.3008
2007	0.3924	0.3550	0.1895	0.0311	1.2975
2008	0.4063	0.3702	0.1952	0.0661	1.2890
2009	0.4233	0.3911	0.2026	0.0528	1.4911

Note: *n = 415*

Table 11 reports the skewness and kurtosis values for mean leverage for fiscal years 2005 through 2009. Like mean long-term debt, mean leverage was not normally distributed in each of the five fiscal years. Mean leverage also exhibited a positive skewness that was leptokurtic. However, the mean leverage skewness was much closer to a value of one as compared to mean long-term debt and had a significantly lower kurtosis value.

Table 11

Skewness and Kurtosis Values, Mean Leverage Fiscal Years 2005 to 2009

Year	Mean Leverage	
	Skewness	Kurtosis
2005	1.374	2.800
2006	1.162	1.776
2007	1.057	1.652
2008	1.102	1.707
2009	1.140	2.344

Note: *n = 415*

Table 12 reports the data for the year-to-year and five-year change in mean leverage for U.S. four-year public colleges and universities. The aggregate change in mean leverage over the five-year period was 0.0421 or 11.05%. The greatest one-year change occurred between fiscal years 2008 and 2009; mean leverage increased by .0169 or 4.16%. The smallest change occurred between fiscal years 2006 and 2007 when mean leverage increased by only 0.67%.

Table 12

Mean Leverage, Year-to-year Change and Five-year Change

Year	*M*	One-year change	One-year % change	Five-year change	Five-year % change
2005	0.3811				
2006	0.3898	0.0086	2.27%		
2007	0.3924	0.0026	0.67%		
2008	0.4063	0.0140	3.56%		
2009	0.4233	0.0169	4.16%	0.0421	11.05%

Research Question Two

How did the long-term debt of U.S. four-year public colleges and universities from question one differ based on a (a) simplified Carnegie classification (i.e., baccalaureate, master's, and doctoral/research) and (b) geographic region?

Descriptive statistics of the mean long-term debt of U.S. four-year public colleges and universities disaggregated by the simplified Carnegie classification, geographic region, and fiscal year are reported in Table 13. Medians and standard deviations of mean long-term debt in dollars by Carnegie classification and geographic region for fiscal years 2005 through 2009 are located in Appendix H. Based on the descriptive statistics, across the five-year period,

Doctoral/Research institutions across all regions had, on average, more debt than Master's institutions across all regions. Similarly, Master's institutions across all regions had, on average, more debt than Baccalaureate institutions. Except for 2008, Baccalaureate institutions located in the Northeast had the lowest mean long-term debt in each of the fiscal years when compared to all other institutional types and geographic regions. In 2008, Baccalaureate institution located in the Midwest had mean long-term debt only slightly lower than those in the Northeast. Mean long-term debt for Baccalaureate institutions in the Northeast increased from $13,039,292 in fiscal year 2005 to $17,308,045 in fiscal year 2009. Doctoral/Research institutions located in the Midwest had on average the most long-term debt when compared to all other institutional types and regions across all fiscal years. For these institutions, mean long-term debt increased from $177,516,637 in fiscal year 2005 to $256,697,669 in fiscal year 2009. Overall institutions in the Southeast had the lowest mean long-term debt until 2007 when mean long-term debt exceeded that of institutions in the Northeast. Consistently, institutions in the Midwest maintained the greatest amount of mean long-term debt over the five-year period.

Table 13

Mean Long-term Debt in Dollars by Carnegie Classification, Geographic Region, and Fiscal Year

Carnegie Classification	Region	*n*	Mean Long-term Debt ($)				
			2005	2006	2007	2008	2009
Baccalaureate	Northeast	13	$13,039,292	$13,896,520	$15,046,671	$17,179,131	$17,308,045
	West	23	$52,133,291	$64,807,584	$67,503,354	$70,094,532	$85,308,209
	Midwest	13	$14,844,250	$16,157,690	$16,561,592	$16,885,848	$18,397,224
	Southeast	22	$26,710,094	$32,569,351	$39,952,464	$45,848,904	$53,170,142
Baccalaureate Total *n* and *M*		71	$30,270,053	$36,588,801	$40,034,349	$43,150,632	$50,647,893
Master's	Northeast	59	$98,150,502	$106,371,857	$113,132,796	$122,883,992	$131,309,236
	West	45	$76,581,294	$89,304,186	$98,575,226	$118,173,897	$136,653,277
	Midwest	55	$72,748,034	$82,198,329	$90,389,821	$96,888,977	$111,094,359
	Southeast	56	$66,928,781	$70,482,034	$88,118,681	$103,140,418	$120,669,400
Master's Total *n* and *M*		215	$79,005,542	$87,267,581	$97,752,588	$110,105,758	$124,485,202
Doctoral/Research	Northeast	18	$116,281,746	$120,258,558	$120,696,327	$137,221,012	$139,563,969
	West	29	$139,100,673	$155,863,140	$165,555,015	$181,104,230	$199,025,068
	Midwest	37	$177,516,637	$194,849,261	$217,740,882	$243,613,245	$256,697,669
	Southeast	45	$124,390,711	$145,199,645	$162,144,476	$190,361,336	$201,824,105
Doctoral/Research Total *n* and *M*		129	$141,803,787	$158,357,301	$173,073,980	$196,139,155	$208,246,333
	Northeast	90	$89,482,909	$95,791,648	$100,477,506	$110,482,916	$116,493,344
	West	97	$89,475,705	$103,394,782	$111,232,554	$125,587,858	$143,125,909
	Midwest	105	$102,497,454	$113,717,912	$126,125,271	$138,686,665	$150,925,404
	Southeast	123	$80,757,852	$91,036,615	$106,586,193	$124,803,247	$138,287,108
Region Total *n* and *M*		415	$90,188,081	$100,695,004	$111,291,057	$125,393,696	$137,889,388

As shown in Table 14, Doctoral/Research institutions located in the Midwest had the greatest change in mean long-term debt from 2005 to 2009 of $79,181,032 compared to all other

163

regions and institutional types. Doctoral/Research institutions in the Southeast followed closely behind the Midwest institutions with a $77,433,394 aggregate increase in mean long-term debt from fiscal years 2005 to 2009. Conversely, Baccalaureate institutions located in the Midwest had the smallest aggregate increase in mean long-term debt over the five-year period of $3,552,974 when compared to all other institutional types and geographic regions. A consistent trend can be noted according to classification and region; that is, Baccalaureate institutions across all regions had a lower cumulative change in mean long-term debt in comparison to Master's and Doctoral/Research institutions in the same regions. However, Master's institutions located in the Northeast and the West had higher cumulative changes in mean long-term debt for the five-year period than the Doctoral/Research institutions located in the Northeast and the West. Another notable trend is that the change in the mean long-term debt consistently increased each of the five years for all institutional types across all regions.

Table 14

Change in Mean Long-term Debt in Dollars by Carnegie Classification, Geographic Region, and

Fiscal Year

| Carnegie Classification | Region | *n* | Year-to-Year Change ($) | | | | Cumulative change |
			2005 to 2006	2006 to 2007	2007 to 2008	2008 to 2009	
Baccalaureate	Northeast	13	$857,228	$1,150,151	$2,132,460	$128,914	$4,268,753
	West	23	$12,674,294	$2,695,769	$2,591,179	$15,213,676	$33,174,918
	Midwest	13	$1,313,440	$403,902	$324,256	$1,511,376	$3,552,974
	Southeast	22	$5,859,257	$7,383,113	$5,896,441	$7,321,237	$26,460,048
Baccalaureate Total *n* and *M*		71	$6,318,748	$3,445,547	$3,116,283	$7,497,261	$20,377,840
Master's	Northeast	59	$8,221,355	$6,760,939	$9,751,197	$8,425,244	$33,158,735
	West	45	$12,722,892	$9,271,041	$19,598,670	$18,479,380	$60,071,983
	Midwest	55	$9,450,295	$8,191,491	$6,499,157	$14,205,381	$38,346,324
	Southeast	56	$3,553,253	$17,636,648	$15,021,737	$17,528,982	$53,740,619
Master's Total *n* and *M*		215	$8,262,039	$10,485,007	$12,353,170	$14,379,444	$45,479,661
Doctoral/Research	Northeast	18	$3,976,813	$437,769	$16,524,685	$2,342,957	$23,282,224
	West	29	$16,762,468	$9,691,875	$15,549,215	$17,920,838	$59,924,395
	Midwest	37	$17,332,623	$22,891,621	$25,872,363	$13,084,424	$79,181,032
	Southeast	45	$20,808,933	$16,944,832	$28,216,859	$11,462,770	$77,433,394
Doctoral/Research Total *n* and *M*		129	$16,553,514	$14,716,679	$23,065,176	$12,107,177	$66,442,546
	Northeast	90	$6,308,740	$4,685,858	$10,005,410	$6,010,428	$27,010,435
	West	97	$13,919,077	$7,837,772	$14,355,304	$17,538,051	$53,650,204
	Midwest	105	$11,220,457	$12,407,359	$12,561,394	$12,238,739	$48,427,949
	Southeast	123	$10,278,763	$15,549,579	$18,217,054	$13,483,860	$57,529,256
Region Total *n* and *M*		415	$10,506,922	$10,596,053	$14,102,640	$12,495,691	$47,701,306

Table 15 provides the percentage change in mean long-term debt by classification,

region, and fiscal year. In total, Baccalaureate institutions had the largest percentage change in

mean long-term debt from 2005 to 2009 of 67.32%. In comparison, Master's and

Doctoral/Research institutions had percentage changes in mean long-term debt of 57.57% and

165

46.86%, respectively, over the five-year period. The largest five-year increase by region was

71.24% for institutions in the Southeast, while the smallest five-year increase by region was

30.19% for institutions in the Northeast.

Table 15

Percentage Change in Mean Long-term Debt by Carnegie Classification, Geographic Region,

and Fiscal Year

Carnegie Classification	Region	n	Year-to-Year Change (%)				Five-year change
			2005 to 2006	2006 to 2007	2007 to 2008	2008 to 2009	
Baccalaureate	Northeast	13	6.57%	8.28%	14.17%	0.75%	32.74%
	West	23	24.31%	4.16%	3.84%	21.70%	63.63%
	Midwest	13	8.85%	2.50%	1.96%	8.95%	23.94%
	Southeast	22	21.94%	22.67%	14.76%	15.97%	99.06%
Baccalaureate Total n and M		71	20.87%	9.42%	7.78%	17.37%	67.32%
Master's	Northeast	59	8.38%	6.36%	8.62%	6.86%	33.78%
	West	45	16.61%	10.38%	19.88%	15.64%	78.44%
	Midwest	55	12.99%	9.97%	7.19%	14.66%	52.71%
	Southeast	56	5.31%	25.02%	17.05%	17.00%	80.30%
Master's Total n and M		215	10.46%	12.01%	12.64%	13.06%	57.57%
Doctoral/Research	Northeast	18	3.42%	0.36%	13.69%	1.71%	20.02%
	West	29	12.05%	6.22%	9.39%	9.90%	43.08%
	Midwest	37	9.76%	11.75%	11.88%	5.37%	44.60%
	Southeast	45	16.73%	11.67%	17.40%	6.02%	62.25%
Doctoral/Research Total n and M		129	11.67%	9.29%	13.33%	6.17%	46.86%
	Northeast	90	7.05%	4.89%	9.96%	5.44%	30.19%
	West	97	15.56%	7.58%	12.91%	13.96%	59.96%
	Midwest	105	10.95%	10.91%	9.96%	8.82%	47.25%
	Southeast	123	12.73%	17.08%	17.09%	10.80%	71.24%
Region Total n and M		415	11.65%	10.52%	12.67%	9.97%	52.89%

166

Consistently, institutions located in the Southeast had the largest five-year percentage increase in mean long-term debt for all classifications. Baccalaureate institutions in the Southeast had the largest five-year increase of any other institutional classification; mean long-term debt increased almost 100%. In comparison, the smallest five-year percentage increase of all institutional types and regions was 20.02% for Doctoral/Research institutions located in the Northeast.

Before conducting the ANOVA test to determine if differences in mean long-term debt existed by Carnegie classification and geographic region, a transformation of the data was required due to lack of normality. The researcher selected the best transformation to meet the statistical assumptions required for both ANOVA and regression (Gamst et al., 2008; Hair, Black, Babin, & Anderson, 2010; Tabachnick & Fidell, 2007). Therefore, if data transformations were required, the same transformation was used consistently for all research questions. The best transformation was $\log_{10}$ of the value of the variable plus one (i.e., [$\log_{10}$(long-term debt in dollars + 1)]) because it improved the normality of the dataset for both ANOVA and regression and made relationships more linear for the regression models. In addition, for those values with a reported value of zero, the transformation kept the value at zero because the $\log_{10}$ of one is equal to zero (i.e. [$\log_{10}($0 + 1) = 1$]. Appendix I shows the descriptive statistics for the transformed mean long-term debt ($\log_{10}$) by institutional type, region, and fiscal year.

A complex mixed design ANOVA with fiscal year as the within-subjects factor and simplified Carnegie classification and geographic region as the between-subjects factors was conducted to determine if differences existed in mean long-term debt ($\log_{10}$). To test for homogeneity of variances, Levene's test was conducted and was statistically significant for fiscal

year 2006, $W(11, 403) = 2.636$, $p = .003$ and fiscal year 2008, $W(11, 403) = 2.014$, $p = .026$.

Therefore, the assumption of homogeneity of variances was violated in 2006 and 2008.

Homogeneity of variances is a statistical assumption that is required for ANOVA testing. In this

study, the data set is disparate when disaggregated by Carnegie classification, geographic region,

and fiscal year with different ns. Failing this assumption leads to an increase in a Type I error

rate (Gamst et al., 2008). This violation of the assumption of homogeneity of variances occurred

even after the data were transformed. Based on the failure to meet the homogeneity of variances

assumption for the repeated measures, it was not appropriate to interpret the inferential statistics

to determine if a statistically significant difference in mean long-term debt existed by fiscal year,

Carnegie classification, and geographic region.

Research Question Three

How did leverage of U.S. four-year public colleges and universities from question one

differ based on a (a) simplified Carnegie classification (i.e., baccalaureate, master's, and

doctoral/research) and (b) geographic region?

Mean leverage by Carnegie classification, region, and fiscal year are shown in Table 16.

Fiscal year 2009 showed the highest mean leverage for all Carnegie classifications and

geographic regions in comparison to previous years, with two exceptions; Baccalaureate

institutions in the Midwest and Doctoral/Research institutions in the West had higher mean

leverage in 2006 in comparison to 2009. For fiscal year 2009, Master's institutions in the

Northeast had the largest mean leverage of 0.6426, which was followed closely by

Doctoral/Research institutions in the Northeast with mean leverage of 0.6155. The mean

leverage for Master's and Doctoral/Research institutions in the Northeast far exceeded their

peers within the same classification and region. Conversely, Doctoral/Research institutions in

the Southeast consistently had the lowest mean leverage of all geographical regions and Carnegie classifications in every fiscal year except for two instances. In 2005, Baccalaureate institutions in the Southeast had the lowest mean leverage while in 2009, Baccalaureate institutions in the Midwest had the lowest mean leverage. In addition, Baccalaureate institutions across the four regions had comparable mean leverage.

Table 16

Mean Leverage by Carnegie Classification, Geographic Region, and Fiscal Year

Carnegie Classification	Region	n	Mean Leverage				
			2005	2006	2007	2008	2009
Baccalaureate	Northeast	13	0.3673	0.3498	0.3485	0.3702	0.3740
	West	23	0.3027	0.3249	0.3177	0.3290	0.3646
	Midwest	13	0.3448	0.3472	0.3398	0.3330	0.3242
	Southeast	22	0.2820	0.3181	0.3292	0.3376	0.3667
Baccalaureate Total n and M		71	0.3158	0.3314	0.3309	0.3400	0.3596
Master's	Northeast	59	0.6363	0.6327	0.6143	0.6269	0.6426
	West	45	0.3840	0.3971	0.3997	0.4241	0.4678
	Midwest	55	0.3254	0.3337	0.3445	0.3558	0.3632
	Southeast	56	0.3080	0.3129	0.3486	0.3609	0.3834
Master's Total n and M		215	0.4184	0.4236	0.4312	0.4458	0.4670
Doctoral/Research	Northeast	18	0.5950	0.5966	0.5779	0.6052	0.6155
	West	29	0.3589	0.3821	0.3743	0.3749	0.3756
	Midwest	37	0.3141	0.3200	0.3256	0.3451	0.3517
	Southeast	45	0.2898	0.2996	0.2961	0.3137	0.3272
Doctoral/Research Total n and M		129	0.3549	0.3654	0.3615	0.3771	0.3853
	Northeast	90	0.5892	0.5846	0.5686	0.5855	0.5984
	West	97	0.3572	0.3755	0.3727	0.3868	0.4158
	Midwest	105	0.3238	0.3305	0.3373	0.3492	0.3543
	Southeast	123	0.2967	0.3090	0.3259	0.3395	0.3598
Region Total n and M		415	0.3811	0.3898	0.3924	0.4063	0.4233

Table 17 provides the year-to-year and five-year change in mean leverage parsed by Carnegie classification, region, and fiscal year. Like the cumulative change in mean long-term debt, the five-year change in mean leverage also increased in all institutional classifications and regions except for one. Baccalaureate institutions in the Midwest showed a consistent decreasing trend over a three-year period, with a cumulative five-year decline in mean leverage of -0.0206. Baccalaureate institutions in the Southeast had the greatest aggregate five-year change in mean leverage of 0.0847. This amount was followed closely by Master's institutions in the West with a five-year change in mean leverage of 0.0838. Doctoral/Research institutions in all four regions had more comparable five-year changes in mean leverage than Baccalaureate and Master's institutions.

Table 17

Change in Mean Leverage by Carnegie Classification, Geographical Region, and Fiscal Year

Carnegie Classification	Region	n	Year-to-year Change				Five-year change
			2005 to 2006	2006 to 2007	2007 to 2008	2008 to 2009	
Baccalaureate	Northeast	13	-0.0175	-0.0013	0.0217	0.0038	0.0067
	West	23	0.0222	-0.0072	0.0113	0.0356	0.0619
	Midwest	13	0.0024	-0.0074	-0.0068	-0.0088	-0.0206
	Southeast	22	0.0361	0.0111	0.0084	0.0291	0.0847
Baccalaureate Total n and M		71	0.0156	-0.0005	0.0091	0.0196	0.0438
Master's	Northeast	59	-0.0036	-0.0184	0.0126	0.0157	0.0063
	West	45	0.0131	0.0026	0.0244	0.0437	0.0838
	Midwest	55	0.0083	0.0108	0.0113	0.0074	0.0378
	Southeast	56	0.0049	0.0357	0.0123	0.0225	0.0754
Master's Total n and M		215	0.0052	0.0076	0.0146	0.0212	0.0486
Doctoral/Research	Northeast	18	0.0016	-0.0187	0.0273	0.0103	0.0205
	West	29	0.0232	-0.0078	0.0006	0.0007	0.0167
	Midwest	37	0.0059	0.0056	0.0195	0.0066	0.0376
	Southeast	45	0.0098	-0.0035	0.0176	0.0135	0.0374
Doctoral/Research Total n and M		129	0.0105	-0.0039	0.0156	0.0082	0.0304
	Northeast	90	-0.0046	-0.0160	0.0169	0.0129	0.0092
	West	97	0.0183	-0.0028	0.0141	0.0290	0.0586
	Midwest	105	0.0067	0.0068	0.0119	0.0051	0.0305
	Southeast	123	0.0123	0.0169	0.0136	0.0203	0.0631
Region Total n and M		415	0.0087	0.0026	0.0139	0.0170	0.0422

Table 18 shows the percentage changes in mean leverage by Carnegie classification, geographical region, and fiscal year. Similar to the five-year percentage change in mean long-term debt, Baccalaureate institutions had the largest five-year percentage change in mean leverage of 13.87% when compared to Master's and Doctoral/Research institutions. The

171

Southeast region had the greatest five-year percentage increase in mean leverage of 21.27% of all regions. Consistently, the Southeast region had the highest five-year percentage increase in mean leverage by institutional type. Unlike percentage changes in mean long-term debt by fiscal year, which experienced increases in every year, percentage decreases in mean leverage occurred in some fiscal years. Most notably, percentage changes in mean leverage decreased from 2006 to 2007 for all Baccalaureate institutions except for those located in the Southeast and all Doctoral/Research institutions except for those located in the Midwest. Baccalaureate institutions located in the Northeast also experienced a decline in the percentage change in mean leverage from 2005 to 2006. For Master's institutions, the percentage change in mean leverage also declined for institutions in the Northeast from 2005 to 2006 and from 2006 to 2007. The only institutional classification and region to experience a five-year percentage decrease in mean leverage was Baccalaureate institutions in the Midwest; the cumulative five-year decline was -5.97%.

Table 18

Percentage Change in Mean Leverage by Carnegie Classification, Geographical Region, and Fiscal Year

| Carnegie Classification | Region | *n* | Year-to-Year Change (%) | | | | |
			2005 to 2006	2006 to 2007	2007 to 2008	2008 to 2009	Five-year change
Baccalaureate	Northeast	13	-4.76%	-0.37%	6.23%	1.03%	1.82%
	West	23	7.33%	-2.22%	3.56%	10.82%	20.45%
	Midwest	13	0.70%	-2.13%	-2.00%	-2.64%	-5.97%
	Southeast	22	12.80%	3.49%	2.55%	8.62%	30.04%
Baccalaureate Total *n* and *M*		71	4.94%	-0.15%	2.75%	5.76%	13.87%
Master's	Northeast	59	-0.57%	-2.91%	2.05%	2.50%	0.99%
	West	45	3.41%	0.65%	6.10%	10.30%	21.82%
	Midwest	55	2.55%	3.24%	3.28%	2.08%	11.62%
	Southeast	56	1.59%	11.41%	3.53%	6.23%	24.48%
Master's Total *n* and *M*		215	1.24%	1.79%	3.39%	4.76%	11.62%
Doctoral/Research	Northeast	18	0.27%	-3.13%	4.72%	1.70%	3.45%
	West	29	6.46%	-2.04%	0.16%	0.19%	4.65%
	Midwest	37	1.88%	1.75%	5.99%	1.91%	11.97%
	Southeast	45	3.38%	-1.17%	5.94%	4.30%	12.91%
Doctoral/Research Total *n* and *M*		129	2.96%	-1.07%	4.32%	2.17%	8.57%
	Northeast	90	-0.78%	-2.74%	2.97%	2.20%	1.56%
	West	97	5.12%	-0.75%	3.78%	7.50%	16.41%
	Midwest	105	2.07%	2.06%	3.53%	1.46%	9.42%
	Southeast	123	4.15%	5.47%	4.17%	5.98%	21.27%
Region Total *n* and *M*		415	2.28%	0.67%	3.54%	4.18%	11.07%

Before conducting the ANOVA test to determine if differences in mean leverage existed

by Carnegie classification and geographic region, a transformation of the data was required. As

noted earlier, a transformation equivalent to the $\log_{10}$ of the value of the variable of interest plus

one (i.e., [$\log_{10}$(mean leverage+1)] transformation was determined to be the most appropriate. Appendix J shows the descriptive statistics for the transformed mean leverage ($\log_{10}$) values by institutional type, region, and fiscal year.

A complex mixed design ANOVA with fiscal year as the within-subjects factor and simplified Carnegie classification and geographic region as the between-subjects factors was conducted to determine if differences existed in mean leverage ($\log_{10}$). To test for homogeneity of variances, Levene's test was conducted and was statistically significant for all fiscal years; therefore, the assumption of homogeneity of variances was violated in all fiscal years. As noted earlier, homogeneity of variances is a statistical assumption required for ANOVA testing. This violation of the assumption of homogeneity of variances occurred even after the data were transformed. Based on the failure to meet the homogeneity of variances assumption for the repeated measures, it was not appropriate to interpret the inferential statistics to determine if a statistically significant difference in mean leverage existed by fiscal year, Carnegie classification, and geographic region.

Research Question Four

What institutional characteristics and financial factors of U.S. four-year public colleges and universities were related to long-term debt?

As noted in Chapter III, for research questions four and five, the initial data set had 564 U.S. four-year public colleges and universities in fiscal year 2009 of which 115 institutions were excluded from the study based on the initial delimitations. Of the remaining 449 institutions in the fiscal year 2009 data set, 448 institutions were included for the regression analysis. One institution was excluded because the age of facility was extremely large with an amount of

174

28,861.57 years, which appeared to be a reporting error. Table 19 provides the descriptive statistics for the dependent and continuous independent variables for fiscal year 2009.

Like the dependent variable, long-term debt, the independent variables showed a wide range in reported results. The independent variables classified as assets were by far the largest reported amounts in dollar values. Mean property, plant, and equipment net of accumulated depreciation (hereafter, property, plant, and equipment) was the largest independent variable with a mean of $521,498,022. Institutions had as little as $22,258,000 and as much as $7,794,581,000 in property, plant, and equipment. Mean endowment value at the end of the year, the other asset independent variable, was the next largest independent variable in dollar terms. The minimum reported endowment value was $0, and the maximum reported endowment value was $5,914,285,000. The average endowment value of the 448 institutions was $110,626,378.

Table 19

Descriptive Statistics of Dependent and Independent Variables for Fiscal Year 2009

Variables	*M*	*Mdn*	*SD*	*Min*	*Max*
Dependent variable					
Long-term debt	$134,668,424	$67,595,003	$189,566,269	$55,510	$1,444,571,000
Independent variables					
Tuition and fees	$71,086,050	$40,938,638	$89,919,899	$1,181,823	$719,647,000
Grants and contracts	$65,235,930	$22,664,692	$123,226,549	$1,118,005	$1,098,098,000
Auxiliary revenues	$33,243,033	$14,944,058	$52,050,028	$0	$553,697,524
Hospital revenues	$26,193,325	$0	$177,868,426	$0	$2,220,551,000
Independent operations	$3,283,582	$0	$28,684,281	$0	$572,546,000
State appropriations	$78,961,738	$46,148,734	$94,606,827	$0	$620,968,000
Federal and local appropriations	$816,345	$0	$4,253,714	$0	$63,253,291
Gifts	$7,400,642	$950,640	$19,725,797	$0	$240,163,068
Property, plant, and equipment (net)	$521,498,022	$266,473,655	$767,098,041	$22,258,000	$7,794,581,000
Endowment at the end of the year	$110,626,378	$15,539,756	$399,174,565	$0	$5,914,285,000
FTE enrollment	10,948	7,787	9,691	579	58,815
Age of facilities	13.30	13.06	3.83	1.00	29.68
Revenue diversification index	.7939	.8030	.0594	.3506	.9072

Notes: *n* = 448

The endowment value was not the only amount with a minimum reported amount of $0. Surprisingly, considering the data set includes only public institutions, the minimum amount of state appropriations reported also was $0. The only revenue independent variables that were not reported with a minimum value of $0 were tuition and fees and grants and contracts revenue. Not surprising is that mean state appropriations revenue of $78,961,738 was still the largest source of revenues followed closely by mean tuition and fees revenue of $71,086,050. The mean of grants and contracts revenues of $65,235,390 rounded out the top three revenue sources in dollar terms. Mean Federal and Local appropriations revenue was the smallest independent variable in terms of total dollars with an average amount of $816,345.

For the independent variables classified as institutional characteristic variables, average FTE enrollment was 10,948. The amount of average long-term debt per FTE student equaled approximately $12,300 ($134,668,424/10,948). The average age of facilities was 13.30 years compared to a median age of 13.06. In addition, the calculated minimum and maximum age of facilities were 1.00 year and 29.68 years, respectively. The average revenue diversification index was 0.7939 with the revenue diversification index amounts ranging from a lower diversification amount of 0.3506 to a highly diversified amount of 0.9072.

The combined total amount of average restricted revenues (grants and contracts, auxiliary, and hospital revenue) totaled to $124,672,288 and represented 43.56% of the average total of all revenue independent variables (see Table 20). The combined average of all remaining revenues equaled $161,548,356 or 56.44% and exceeded the average amount of total debt of $134,668,424.

Table 20

Mean Values of Revenue Independent Variables in Dollars and Percentages for Fiscal Year 2009

Revenue Independent Variables	M	% of Total
Tuition and fees	$71,086,050	24.84%
Grants and contracts	$65,235,930	22.79%
Auxiliary revenues	$33,243,033	11.61%
Hospital revenues	$26,193,325	9.15%
Independent operations	$3,283,582	1.15%
State appropriations	$78,961,738	27.59%
Federal and local appropriations	$816,345	0.29%
Gifts	$7,400,642	2.59%
Total	$286,220,644	100.00%

To determine the institutional characteristics and financial factors of U.S. four-year public colleges and universities related to long-term debt, the automated linear modeling function in SPSS was first used to determine the best subset of independent variables. After evaluating assumptions, transformation of variables was required to improve normality, linearity, and homoscedasticity of residuals. All variables with the exception of age of facilities and the dummy variables for Carnegie classification and geographic region required transformation. The best transformation was $\log_{10}$ of the value of the variable plus one (i.e., [$\log_{10}$(long-term debt in dollars + 1)]. Those variables that required transformation were changed concurrently and placed into the model. From the best subsets model, the combination of independent variables that provided a maximum R^2 value and minimum multicollinearity were selected. The independent variables that were most important were property, plant, and equipment ($\log_{10}$), Southeast region, age of facilities, Midwest region, and West region. Descriptive statistics for the transformed dependent and continuous independent variables are shown in Appendix K.

In addition, a Pearson product-moment correlation coefficient was computed to assess the strength of the relationship between mean long-term debt ($\log_{10}$) and the independent variables,

excluding dummy variables, deemed most important according to the best subsets model. All variables were significant at the .05 level. The independent variable that was positive and strongly correlated with long-term debt ($\log_{10}$) was property, plant, and equipment, ($\log_{10}$), $r = 0.812, p < .001$. Age of facilities showed a negative and weak correlation with long-term debt ($\log_{10}$), $r = -.243, p < .001$. In addition, age of facilities was weakly and negatively correlated with property, plant, and equipment ($\log_{10}$), $r = -.164, p < .001$.

Next, multiple linear regression was used to determine if the independent variables from the best subsets model were predictive of long-term debt ($\log_{10}$). Overall, the model was statistically significant, $R^2 = .688, F(5, 442) = 194.593, p < .001$, with an adjusted R^2 of .684. Table 21 provides the model summary for the regression analysis for mean long-term debt ($\log_{10}$) and independent variables. This model summary illustrates the changes in R^2 and adjusted R^2 as the independent variables from the best subsets model are entered. In model 1 with property, plant, and equipment ($\log_{10}$) added, $R^2 = .660, F_{inc}(1,442) = 865.148, p < .001$. For model 2, with the Southeast region added, $R^2 = .667, F_{inc}(1,442) = 446.546, p < .001$. Model 3 adds age of facilities with $R^2 = .682, F_{inc}(1,442) = 317.453, p < .001$. In model 4, with the addition of the Midwest region, $R^2 = .684, F_{inc}(1,442) = 239.982, p < .001$. Finally, with the final independent variable of the West region added, $R^2 = .688, F_{inc}(1,442) = 194.593, p < .001$. Model 5 is the selected model.

Table 21

Model Summary for Regression Analysis, Mean Long-term Debt ($\log_{10}$) and Independent Variables

					Change Statistics			
Model	R	R^2	Adjusted R^2	R^2 Change	F Change	df1	df2	Sig. F Change
1	.812[a]	.660	.659	.660	865.148	1	446	.000
2	.817[b]	.667	.666	.008	10.165	1	445	.002

179

3	.826[c]	.682	.680	.015	20.377	1	444	.000
4	.827[d]	.684	.681	.002	3.089	1	443	.079
5	.829[e]	.688	.684	.003	4.800	1	442	.029

a. Predictors: (Constant), Property, plant, and equipment (net) (log10)
b. Predictors: (Constant), Property, plant, and equipment (net) (log10), Southeast (dummy)
c. Predictors: (Constant), Property, plant, and equipment (net) (log10), Southeast (dummy), Age of facilities
d. Predictors: (Constant), Property, plant, and equipment (net) (log10), Southeast (dummy), Age of facilities, Midwest (dummy)
e. Predictors: (Constant), Property, plant, and equipment (net) (log10), Southeast (dummy), Age of facilities, Midwest (dummy), West (dummy)

Note: $n = 448$, $p < .05$

Table 22 displays the regression coefficients for each of the variables for Model 5.

Property, plant, and equipment (log_{10}) was positively related to mean long-term debt (log_{10}),

while age of facilities was negatively related to long-term debt.

Table 22

Coefficients of Regression Analysis for Variables Predicting Mean Long-term Debt (log$_{10}$)

Independent variables	B	SE B	β	Sig. (p)
(Constant)	-1.125	.327		.001
Property, plant, and equipment, net (log_{10})	1.098	.037	.806	.000*
Southeast region	-.226	.049	-.159	.000*
Age of facilities	-.019	.005	-.109	.000*
Midwest region	-.140	.053	-.090	.008*
West region	-.115	.052	-.074	.029*

Notes: Adjusted $R^2 = .684$, *$p < .05$

Research Question Five

What institutional characteristics and financial factors of U.S. four-year public colleges

and universities are related to leverage?

180

For research question five, the dependent variable was leverage. In addition, while the independent variables were similar to those in research question four, they represented a ratio as opposed to a whole number. For example, the tuition and fees revenue ratio was the proportion of tuition and fees revenue to total revenues. Similarly, the property, plant, and equipment ratio was computed as the amount of property, plant, and equipment assets net of accumulated depreciation divided by total assets. Table 23 provides the descriptive statistics for the dependent variable and the independent variables. Mean leverage for fiscal year 2009 for the 448 institutions was .4324 with minimum leverage of .0311 and maximum leverage of 1.6259 reported.

The descriptive statistics of the independent variables classified as revenue variables for the leverage model showed similar trends to those in the long-term debt model. The average state appropriations as a percentage of total revenues (state appropriations ratio) was the largest at .3447, followed by the tuition and fees ratio at .2886, and grants and contracts ratio at .2032. Like the reported dollar amounts, the only revenue ratios that had no reported value at .0000 were the tuition and fees and grants and contracts revenue.

Table 23

Descriptive Statistics of the Dependent Variable, Leverage, and Independent Variables for Fiscal Year 2009

Variables	M	Mdn	SD	Min	Max
Dependent variable					
Leverage	.4324	.3967	.2180	.0311	1.6259
Independent variables					
Tuition and fees ratio	.2886	.2875	.1061	.0421	.8244
Grants and contracts ratio	.2032	.1872	.0932	.0199	.5260
Auxiliary revenues ratio	.1247	.1196	.0748	.0000	.4430
Hospital revenues ratio	.0130	.0000	.0725	.0000	.4857

Independent operations ratio	.0046	.0000	.0146	.0000	.2230
State appropriations ratio	.3447	.3539	.1171	.0000	.7697
Federal and local appropriations ratio	.0037	.0000	.0253	.0000	.4084
Gifts ratio	.0176	.0101	.0242	.0000	.2671
Property, plant, and equipment ratio (net)	.6601	.6698	.1353	.0564	1.1071
Endowment ratio	.1248	.0900	.1352	.0000	1.0009
Enrollment	10,948	7,787	9,691	579	58,815
Age of facilities	13.30	13.06	3.83	1.00	29.68
Revenue diversification index	.7939	.8030	.0594	.3506	.9072

Notes: $n = 448$

Property, plant, and equipment as a percentage of total assets (property, plant, and equipment ratio), was the largest independent variable with a mean of .6601. The minimum and maximum property, plant, and equipment ratio was .0564 and 1.1071, respectively. The other independent variable classified as an asset was the average endowment ratio (endowment values as a percentage of total assets). The average endowment ratio was .1248. As with reported endowment dollar amounts, the minimum endowment ratio was .0000 and the maximum endowment ratio was greater than one with a ratio of 1.0009. The independent variables classified as institutional characteristics were the same as previously discussed in research question four.

To determine the institutional characteristics and financial factors of U.S. four-year public colleges and universities related to leverage, the automated linear modeling function in SPSS was first used to determine the best subset of independent variables. After evaluating assumptions, a transformation of variables was required to improve normality, linearity, and homoscedasticity of residuals. The transformation that was used was $\log_{10}$ of the value of the variable plus one (i.e., $[\log_{10}(\text{leverage}) + 1]$). The variables that required transformation included: hospital revenues ratio, independent operations ratio, federal and local appropriations

182

ratio, gifts ratio, endowment ratio, enrollment, and revenue diversification index. Those

variables that required transformation were changed concurrently and placed into the model.

From the best subsets model, the combination of independent variables that provided a maximum

R^2 value and minimum multicollinearity were selected. The independent variables that were

most important were Southeast region, Midwest region, West region, Doctoral/Research

institutions, enrollment (log_{10}), property, plant, and equipment ratio, and grants and contracts

revenue ratio. Enrollment (log_{10}) was the only transformed independent variable in the best

subsets model with $M = 3.8798$, $SD = .3900$.

A Pearson product-moment correlation coefficient was computed to assess the strength of

the relationship between mean leverage and the continuous independent variables deemed most

important according to the best subsets model. While all variables had a positive relationship

with leverage, the coefficients were weak and only the property, plant, and equipment ratio was

barely statistically significant with leverage at the .05 level, $r = .079$, $p = .047$. In addition, none

of the other independent variables were strongly correlated with each other. Only enrollment

(log_{10}) and property, plant, and equipment had a negatively correlated relationship that was

statistically significant, $r = -.207$, $p < .001$.

Next, multiple linear regression was used to determine if the independent variables from

the best subsets model were predictive of leverage. Overall, the model was statistically

significant, $R^2 = .304$, $F(7, 440) = 27.404$, $p < .001$. The adjusted R^2 was .293. Table 24 provides

the model summary for the regression analysis for mean leverage and the independent variables.

This model summary illustrates the changes in R^2 and adjusted R^2 as the independent variables

from the best subsets model are entered in the model. In model 1 with the Southeast region

added, $R^2 = .051$, $F_{inc}(1,440) = 24.001$, $p < .001$. For model 2, with the Midwest region added,

$R^2 = .144$, F_{inc} (1,440) = 37.485, $p < .001$. Model 3 adds the West region with $R^2 = .271$,

F_{inc}(1,440) = 55.053, $p < .001$. In model 4, with the addition of Doctoral/Research institutions,

$R^2 = .274$, F_{inc} (1,440) = 41.875, $p < .001$. Next, with Model 5, enrollment (log_{10}) is added and

$R^2 = .289$, F_{inc} (1,440) = 35.984, $p < .001$. For model 6, with the property, plant, and equipment

ratio added, $R^2 = .297$, F_{inc} (1,440) = 31.014, $p < .001$. Finally, with the last independent

variable of the grants and contracts ratio added, $R^2 = .304$, F_{inc} (1,440) = 27.404, $p < .001$. Model

7 is the selected model.

Table 24

Model Summary for Regression Analysis, Mean Leverage, and Independent Variables

Model	R	R^2	Adjusted R^2	R^2 Change	F Change	df1	df2	Sig. F Change
				Change Statistics				
1	.226[a]	.051	.049	.051	24.001	1	446	.000
2	.380[b]	.144	.140	.093	48.418	1	445	.000
3	.521[c]	.271	.266	.127	77.329	1	444	.000
4	.524[d]	.274	.268	.003	1.976	1	443	.160
5	.538[e]	.289	.281	.015	9.288	1	442	.002
6	.545[f]	.297	.287	.007	4.668	1	441	.031
7	.551[g]	.304	.293	.007	4.337	1	440	.038

a. Predictors: (Constant), Southeast region
b. Predictors: (Constant), Southeast region, Midwest region
c. Predictors: (Constant), Southeast region, Midwest region, West region
d. Predictors: (Constant), Southeast region, Midwest region, West region, Doctoral/Research institutions
e. Predictors: (Constant), Southeast region, Midwest region, West region, Doctoral/Research institutions, Enrollment (log10)
f. Predictors: (Constant), Southeast region, Midwest region, West region, Doctoral/Research institutions, Enrollment (log10), Property, plant, and equipment ratio (net)
g. Predictors: (Constant), Southeast region, Midwest region, West region, Doctoral/Research institutions, Enrollment (log10), Property, plant, and equipment ratio (net), Grants and contracts ratio
Note: n = 448, p < .05

The coefficients of the regression analysis for the independent variables for Model 7 are shown in Table 25. All of the continuous variables, which included enrollment ($\log_{10}$), the property, plant, and equipment ratio, and the grants and contracts ratio, were positively related to leverage.

Table 25

Coefficients of Regression Analysis for Independent Variables Predicting Leverage

Independent variables	*B*	*SB*	β	Sig. (*p*)
(Constant)	0.160	0.119		0.18
Southeast region	-0.288	0.025	-0.611	.000*
Midwest region	-0.282	0.026	-0.550	.000*
West region	-0.236	0.026	-0.456	.000*
Doctoral/Research institutions	-0.075	0.024	-0.158	.002*
Enrollment ($\log_{10}$)	0.095	0.027	0.171	.000*
Property, plant, and equipment ratio (net)	0.139	0.067	0.086	.038*
Grants and contracts ratio	0.211	0.101	0.090	.038*

Notes: Adjusted $R^2 = .293$, *$p < .05$

Summary

This chapter provided the results of the data analyses conducted to answer the five research questions in this study. Descriptive statistics were analyzed to determine the trends in mean long-term debt and mean leverage from fiscal years 2005 through 2009 for U.S. four-year public colleges and universities. The changes in mean long-term debt and mean leverage over this five-year period also were examined. In addition, the trends in mean long-term debt and mean leverage were further disaggregated by Carnegie classification and geographic region and analyzed. Inferential statistics were used to determine the financial factors and institutional characteristics of U.S. four-year public colleges and universities that related to long-term debt

and leverage. In the next chapter, findings and conclusions from the data analyses in this chapter will be presented followed by recommendations for practice, policy, and future research.

CHAPTER V:

FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The purpose of this study was to determine the financial factors and institutional characteristics of U.S. four-year public colleges and universities that relate to long-term debt and leverage. In addition, this study examined trends of long-term debt and leverage over five fiscal years. This research contributes to the literature by examining the relationships between financial variables and institutional characteristics that have not been studied in prior research and during a period of economic downturn. Understanding the relationship between long-term debt and these financial variables provides awareness of those factors that contribute to the amount of long-term debt held by public higher education institutions. Furthermore, as the finances of public higher education continue to face intense scrutiny, this study informs legislators and policymakers of the implications of long-term debt and its relationship to other financial factors. As this study also explores data trends categorized by Carnegie classification and geographic region, public higher education administrators can use the reported data to compare their institutions to similar institutions in their region.

The outline for this chapter is as follows. First, a summary of findings for each research question is presented. Second, the conclusions derived from the research are discussed. Third, recommendations made to policymakers and practitioners and for future research are provided. Lastly, the final section of this chapter provides the researcher's concluding thoughts about the study and its contribution to research in the field of higher education finance.

187

Summary of Findings

This study included five research questions. The significant findings reported from the data analysis in Chapter IV are interpreted for each of the research questions in the narrative that follows.

Research Question One

What was the long-term debt profile of U.S. four-year public colleges and universities from 2005 to 2009 in terms of the (a) mean total long-term debt by year; (b) mean five-year change in total long-term debt; (c) mean year-to-year change in total long-term debt; (d) mean leverage; (e) mean five-year change in leverage; and (f) mean year-to-year change in leverage?

From 2005 to 2009, the long-term debt profile showed an increasing trend of mean long-term debt. As illustrated in Figure 1, mean long-term debt increased from $90,188,081 in 2005 to $137,889,388 in 2009. The five-year change in mean long-term debt was $47,701,306 or 52.89%.
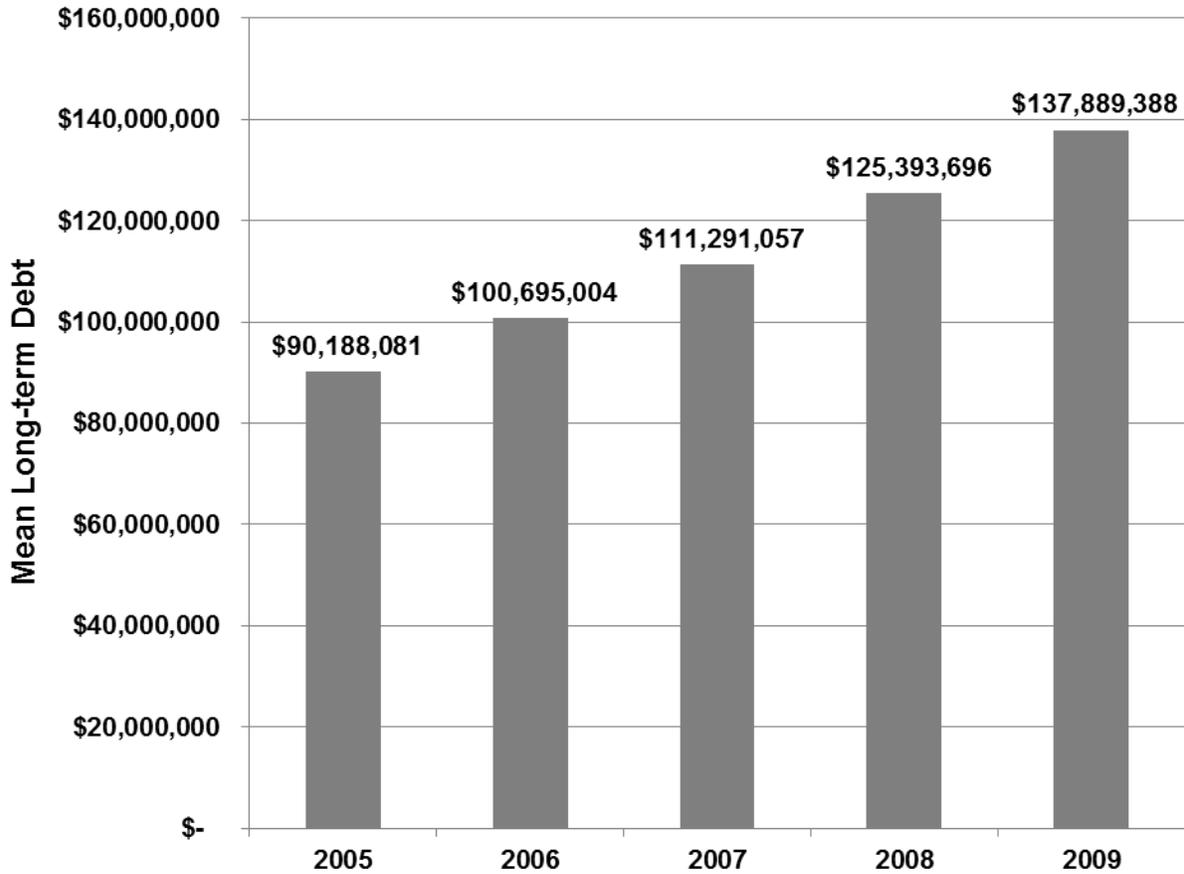
Figure 1. Mean long-term debt of U.S. four-year public colleges and universities for fiscal years 2005 to 2009. Note: *n* = 415.

The annual change in dollar and percentage amounts of mean long-term debt from 2005 to 2009 is shown in Figure 2. The year-to-year change in mean long-term debt initially showed a consistent increase each year of approximately $10,500,000 that was followed by a peak of $14,102,640 from 2007 to 2008. The percentage change showed a fairly steady percentage increase each fiscal year, except for the increase of 12.67% from 2007 to 2008.
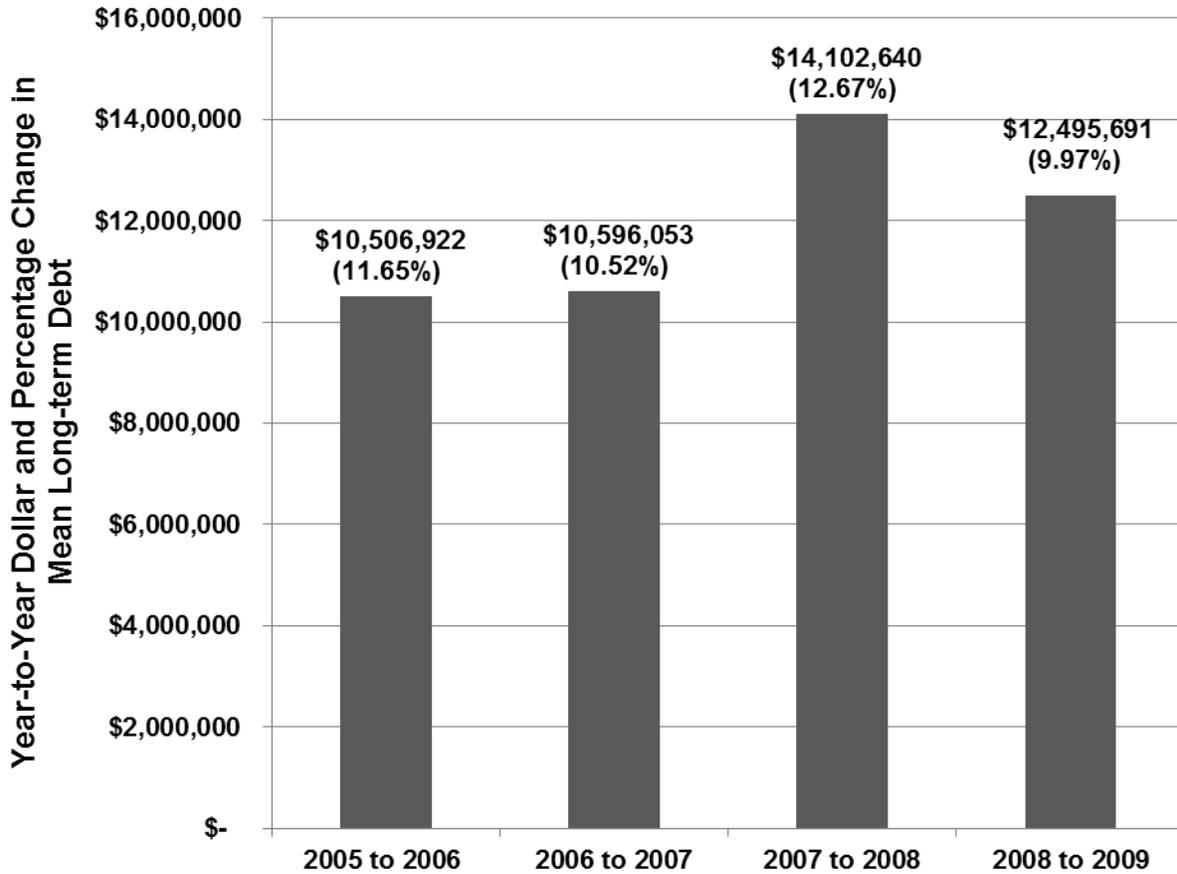
Figure 2. Year-to-year dollar and percentage change in mean long-term debt of U.S. four-year public colleges and univerisities for fiscal years 2005 to 2009. Note: *n* = 415.

Like long-term debt, mean leverage, computed as total liabilities divided by total assets, also increased every fiscal year from 2005 to 2009 with the greatest amount of mean leverage occurring in fiscal year 2008 and 2009 as shown in Figure 3. In fiscal year 2005, U.S. four-year public colleges and universities had mean leverage of .3811. Stated differently, 38.11% of the capital structure of U.S. four-year public institutions was financed with debt as opposed to net assets or reserves. By the end of fiscal year 2009, 42.33% of the capital structure of public institutions was financed with debt as opposed to net assets or reserves. Therefore, liabilities increased at a greater rate than institutional assets over the five-year period.

190
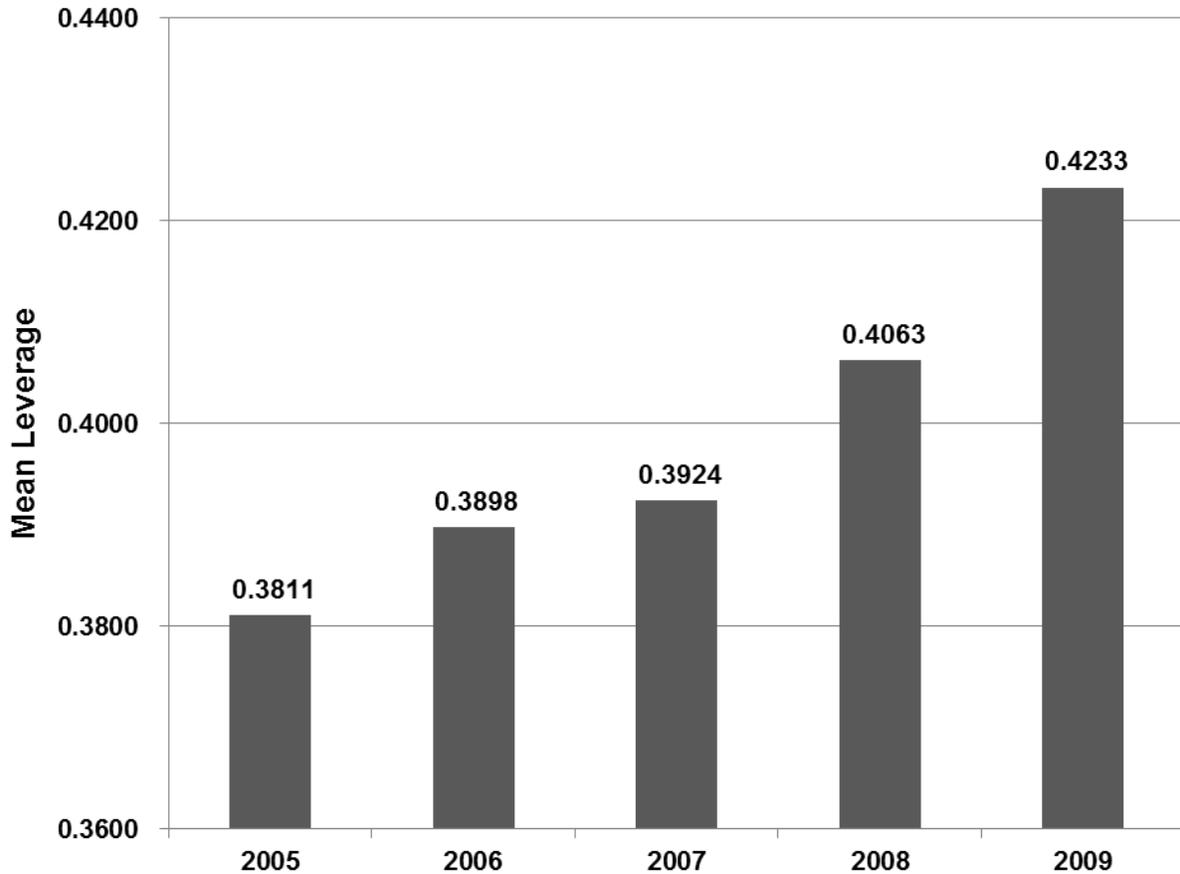
Figure 3. Mean leverage of U.S. four-year public colleges and universities for fiscal years 2005 to 2009.
Note: *n* = 415.

The five-year cumulative change in mean leverage was .0421 or 11.05%. Thus, in comparison to mean long-term debt, which increased by 52.89% over the five-year period, mean leverage grew at a smaller pace. Figure 4 provides the change in mean leverage, as well as the percentage change each year. The mean leverage increase was lowest between 2006 and 2007. Unlike long-term debt, which had the largest dollar amount and percentage increase between 2007 and 2008, the largest increase in mean leverage occurred between 2008 and 2009. This increase was .0169 or 4.16%.
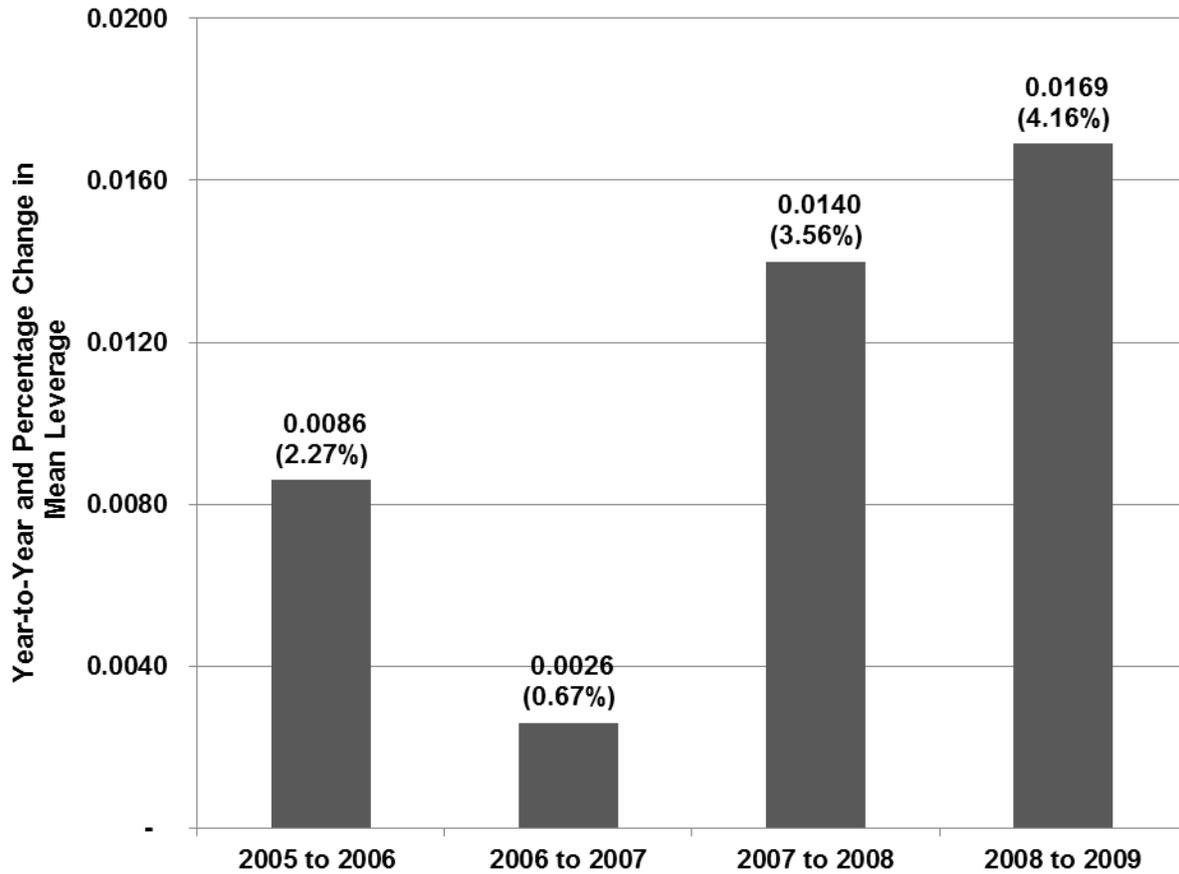
Figure 4. Year-to-year change in mean leverage for fiscal years 2005 to 2009 with year-to-year percentage change shown in parenthesis. Note: *n* = 415.

A recommended threshold for leverage of public colleges and universities is 1:1

(Salluzzo et al., 2005). Therefore, based on the measure of leverage for this study, a

recommended threshold for leverage is 50% or less. In other words, a public institution's capital

structure should be financed with a recommended maximum of 50% with debt and the remainder

with net assets. However, the appropriate level of leverage depends on each institution's

situation (Salluzzo et al., 2005). Some public institutions may use more debt because no other

sources exist to invest in facilities. Other institutions may have lower leverage ratios because

they are located in a state that provides a steady stream of capital appropriations for facilities'

needs. However, a period of prolonged increases in leverage may result in a loss of operational

flexibility or difficulty in repaying the debt if financial conditions deteriorate (Salluzzo et al., 2005). While this study was not designed to determine the cause of the increase in leverage, several economic factors occurred during the 2005 to 2009 timeframe that may have attributed to the increase in leverage. Beginning in December 2007 through June 2009, the U.S. economy was in a recession (National Bureau of Economic Research, 2010), which dampened the revenues of state budgets. In turn, state support to public colleges and universities in the form of state appropriations was reduced. Even with a decline in state appropriations from 2008 to 2009, state appropriations still comprised the largest percentage of public institutions' revenue (Snyder & Dillow, 2011). To deal with budget cuts, public institutions may use reserves to balance the budget. In addition, endowment values for higher education institutions have not kept pace with inflation over the past decade (National Association of College and University Business Officers and Commonfund Institute, 2011). Therefore, the liabilities may be increasing because assets such as endowments have not held their value.

Research Question Two

How did long-term debt of U.S. four-year public colleges and universities from question one differ based on a (a) simplified Carnegie classification (i.e., baccalaureate, master's, and doctoral/research) and (b) geographic region?

The mean long-term debt of U.S. four-year public colleges and universities for fiscal years 2005 through 2009 by Carnegie classification is shown in Figure 5. Based on the descriptive statistics, mean long-term debt increased for each institutional type in every year from 2005 to 2009. Another consistent trend is also obvious relative to institutional type. Doctoral/Research institutions had greater mean long-term debt than Master's and Baccalaureate

institutions, while Master's institutions had greater mean long-term debt than Baccalaureate institutions.

	2005	2006	2007	2008	2009
□ Baccaluareate	$30,270,053	$36,588,801	$40,034,349	$43,150,632	$50,647,893
▨ Master's	$79,005,542	$87,267,581	$97,752,588	$110,105,758	$124,485,202
■ Doctoral/Research	$141,803,787	$158,357,301	$173,073,980	$196,139,155	$208,246,333
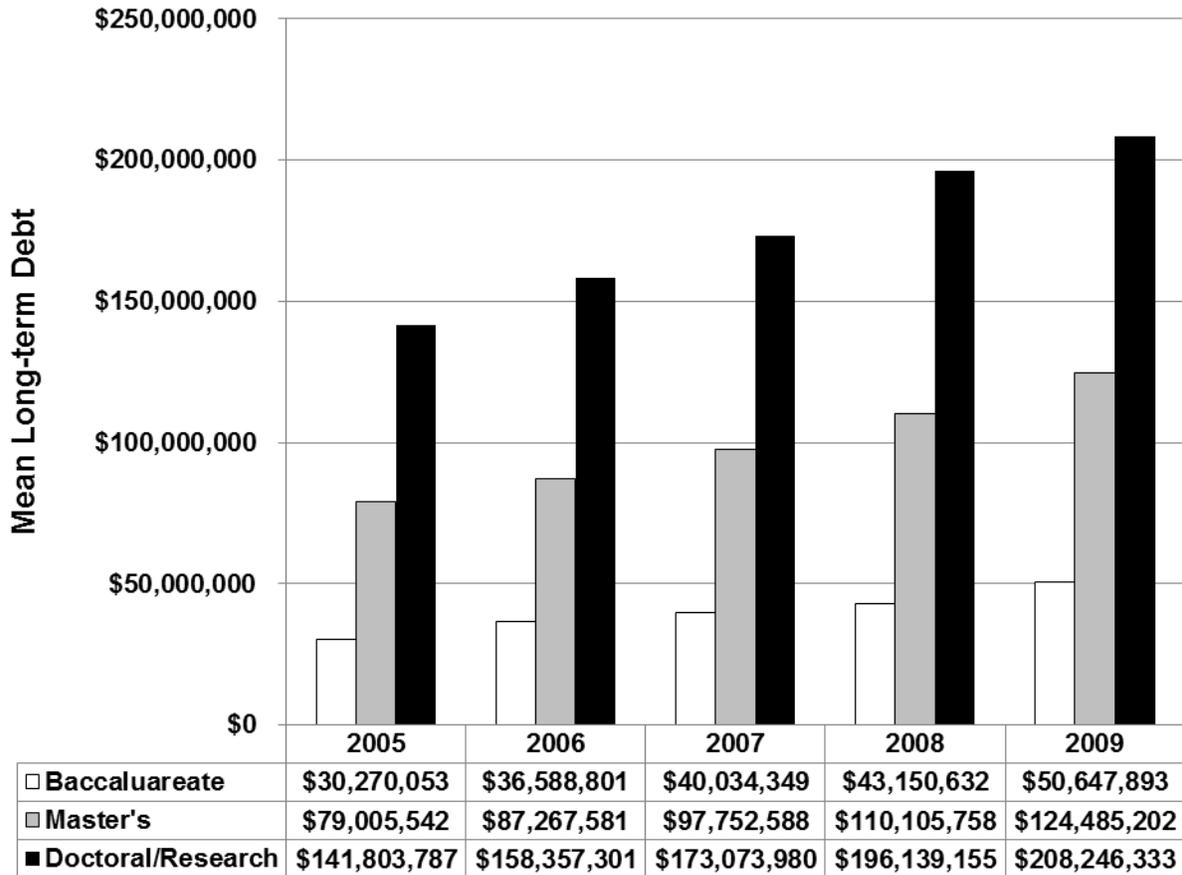
Figure 5. Mean long-term debt of U.S. four-year public colleges and universities for fiscal years 2005 to 2009 by Carnegie classification shown in dollar values.
Note: Baccalaureate *n* = 71; Master's *n* = 215; Doctoral/Research *n* = 129; Total *n* = 415.

Figure 6 provides the year-to-year changes in mean long-term debt for U.S. four-year public colleges and universities by Carnegie classification. As illustrated, only Master's institutions had increases each year in the amount of change in mean long-term debt over the previous year. Doctoral/Research institutions had declines in the amount of the change in mean long-term debt from 2006 to 2007 and then again from 2008 to 2009. Baccalaureate institutions

showed a two-year decline in the change in mean long-term debt from 2006 and 2007 to 2007 and 2008 with a subsequent elevation in the change in mean long-term debt from 2008 to 2009.

	2005 to 2006	2006 to 2007	2007 to 2008	2008 to 2009
□ Baccalaureate	$6,318,748	$3,445,547	$3,116,283	$7,497,261
▦ Master's	$8,262,039	$10,485,007	$12,353,170	$14,379,444
■ Doctoral/Research	$16,553,514	$14,716,679	$23,065,176	$12,107,177
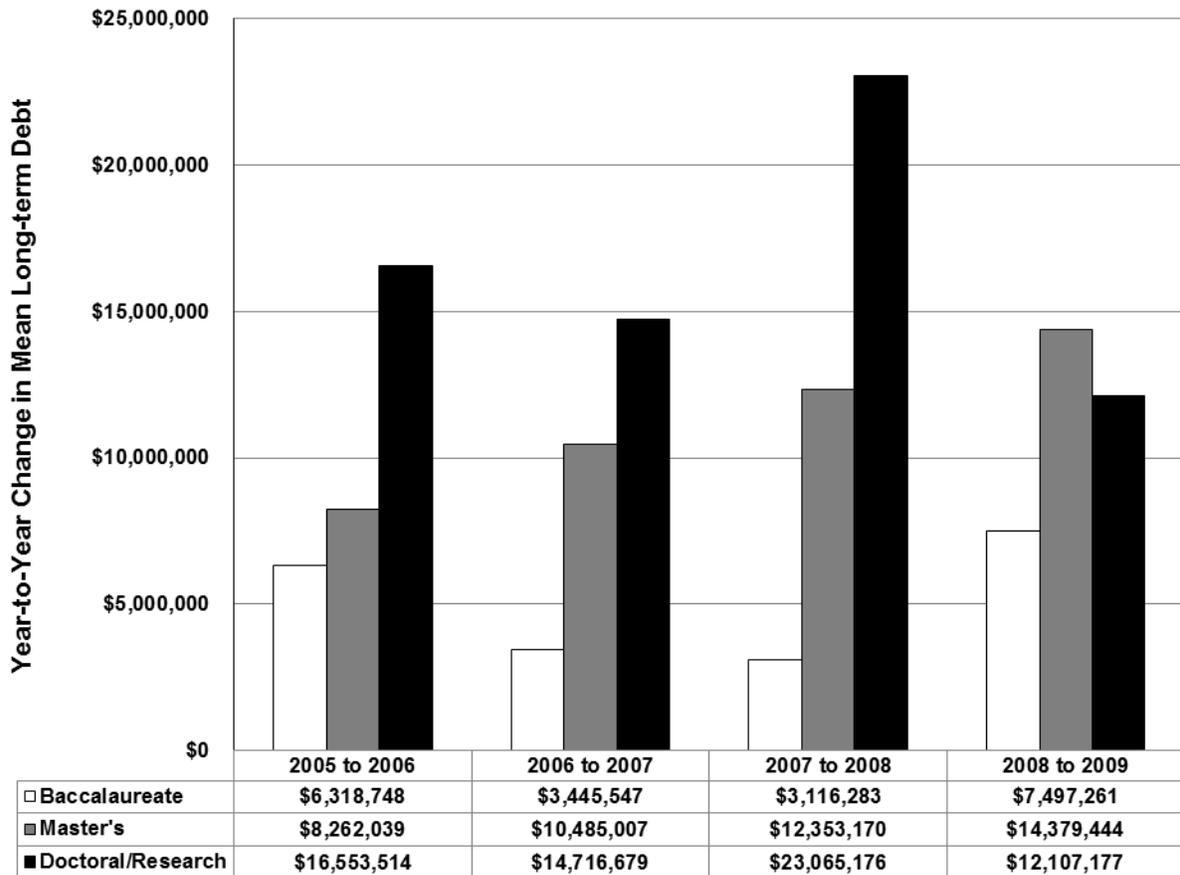
Figure 6. Year-to-year dollar change in mean long-term debt of U.S. four-year public colleges and universities for fiscal years 2005 to 2009 by Carnegie classification.
Note: Baccalaureate *n* = 71; Master's *n* = 215; Doctoral/Research *n* = 129; Total *n* = 415.

The year-to-year percentage changes in mean long-term debt for fiscal years 2005 through 2009 by Carnegie classification are provided in Figure 7. The greatest percentage change of 20.87% occurred between 2005 and 2006 for Baccalaureate institutions. The next greatest percentage change of 17.37% also was related to Baccalaureate institutions but occurred from 2008 to 2009.   In terms of cumulative five-year change, Doctoral/Research institutions had

195

the greatest five-year dollar change in mean long-term debt of $66,442,546 but the lowest

percentage change of 46.86%. In comparison, the cumulative five-year change in mean long-

term debt was $45,476,661 or 57.57% for Master's institutions and $20,377,840 or 67.32% for

Baccalaureate institutions.
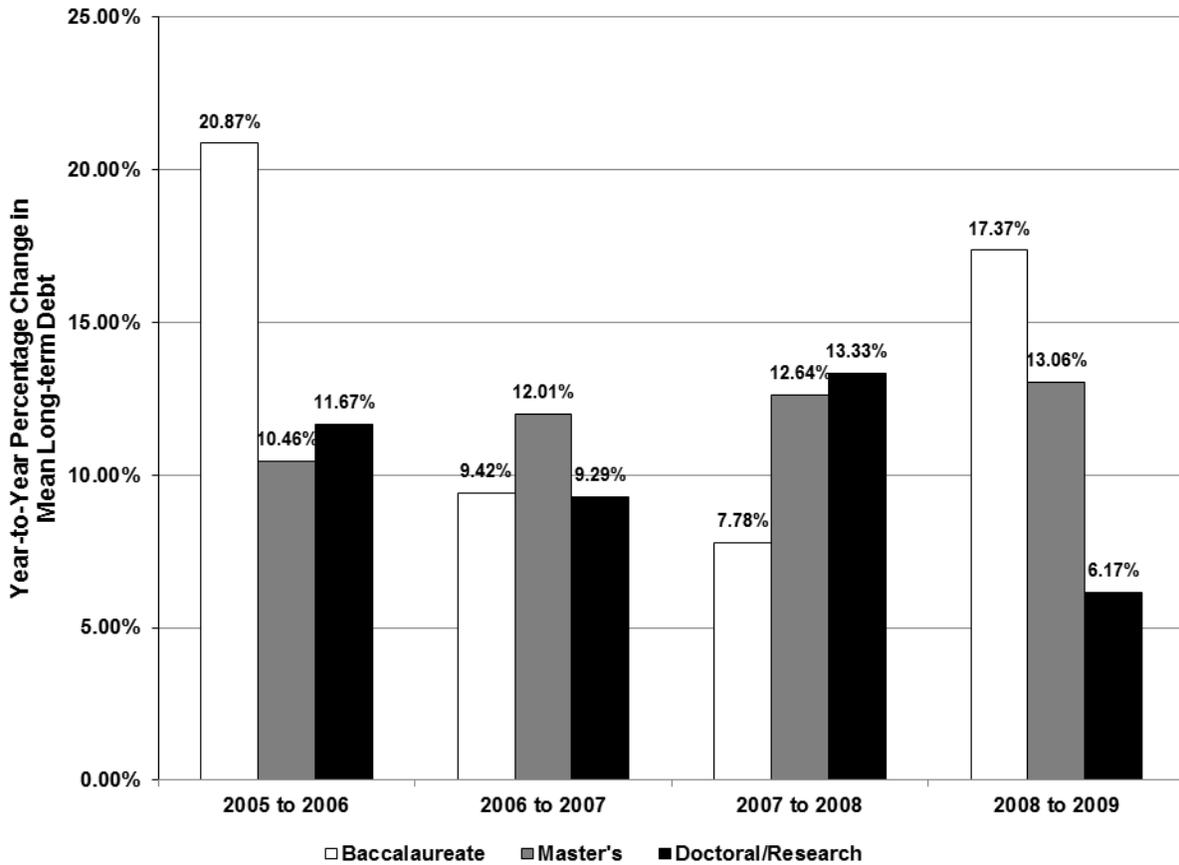
Figure 7. Year-to-year percentage change in mean long-term debt of U.S. four-year public colleges and universities for fiscal years 2005 to 2009 by Carnegie classification.
Note: Baccalaureate *n* = 71; Master's *n* = 215; Doctoral/Research *n* = 129; Total *n* = 415.

As Figure 8 illustrates, mean long-term debt also increased in every year for each

geographic region. Consistently, institutions in the Midwest region maintained the largest levels

of mean long-term debt in each fiscal year followed by the West region. Another notable trend is

that in 2005 and 2006, institutions in the Southeast region had the smallest amount of mean long-term debt, but by 2007, they had mean long-term debt that exceeded the Northeast region.

	2005	2006	2007	2008	2009
□ Northeast	$89,482,909	$95,791,648	$100,477,506	$110,482,916	$116,493,344
▥ West	$89,475,705	$103,394,782	$111,232,554	$125,587,858	$143,125,909
▦ Midwest	$102,497,454	$113,717,912	$126,125,271	$138,686,665	$150,925,404
■ Southeast	$80,757,852	$91,036,615	$106,586,193	$124,803,247	$138,287,108
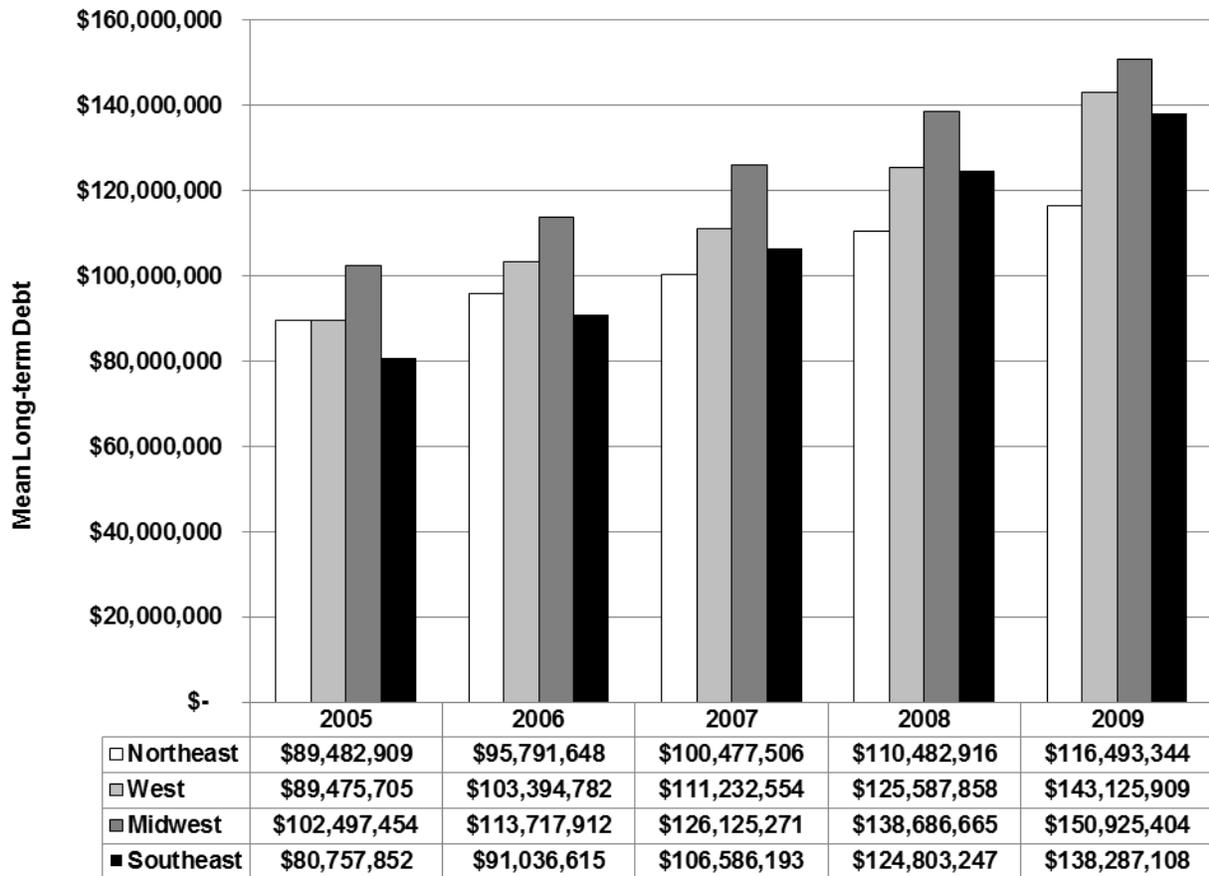
Figure 8. Mean long-term debt of U.S. four-year public colleges and universities for fiscal years 2005 to 2009 by geographic region shown in dollar values.
Note: Northeast *n* = 90; West *n* = 97; Midwest *n* = 105; Southeast *n* = 123; Total *n* = 415.

The associated percentage changes in mean long-term debt by geographic region and fiscal year are shown in Figure 9. This figure highlights the percentage changes in mean long-term debt in the Southeast region that jumped dramatically from 2006 to 2007 and 2007 to 2008. In addition, the slower percentage change in mean long-term debt for the Northeast region in comparison to the other regions is more obvious.

197
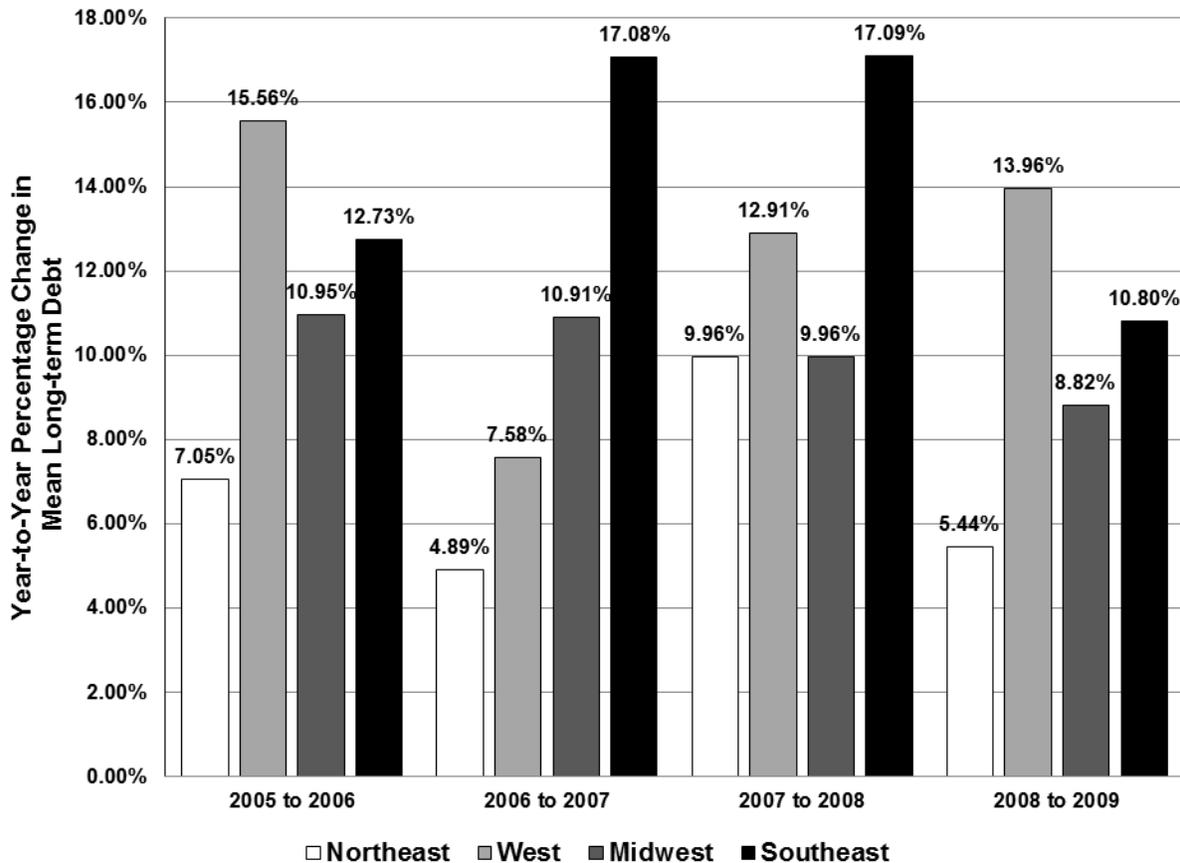
Figure 9. Year-to-year percentage change in mean long-term debt of U.S. four-year public colleges and universities for fiscal years 2005 to 2009 by geographic region.
Note: Northeast *n* = 90; West *n* = 97; Midwest *n* = 105; Southeast *n* = 123; Total *n* = 415.

Table 26 provides the aggregate dollar and percentage amounts for each region over the

five-year period. Mean long-term debt for the Northeast region grew by the smallest dollar and

percentage amounts of $27,010,435 or 30.19%, while the Southeast region had the greatest

aggregate dollar and percentage increase in mean long-term debt of $57,529,256 or 71.24%. The

dollar changes for the West, Midwest, and the Southeast were more closely comparable in dollar

amount than the Northeast region.

Table 26

Five-year Cumulative Change in Mean Long-term Debt in Dollars and Percent by Geographic Region

| Region | *n* | Five-year Cumulative Change in Mean Long-term Debt | |
		Dollars	Percent
Northeast	90	$27,010,435	30.19%
West	97	$53,650,204	59.96%
Midwest	105	$48,427,949	47.25%
Southeast	123	$57,529,256	71.24%

Figure 10 further disaggregates mean long-term debt for U.S. four-year public institutions by Carnegie classification, geographic region, and fiscal year. When viewed in this manner, the results show a wide disparity in mean long-term debt for Baccalaureate institutions across the four regions with the Baccalaureate institutions in the West region holding notably greater mean long-term debt than the other three regions. Similarly, Doctoral/Research institutions had greater shifts in mean long-term debt across regions with the Midwest region reporting larger amounts of mean long-term debt. However, Master's institutions had more comparable levels of debt across regions. In addition, mean long-term debt increased in every year for each geographic region and institutional type. Moreover, in every year, Doctoral/Research institutions in every region had greater long-term debt than Master's institutions in the same region. Similarly, Master's institutions in every region had greater long-term debt than Baccalaureate institutions in the same region. As the graph indicates, Doctoral/Research institutions in the Northeast had only slightly greater mean long-term debt than Master's institutions in the Northeast.

199

	NE	W	MW	SE	NE	W	MW	SE	NE	W	MW	SE
	Baccalaureate				Master's				Doctoral/Research			
□2005	$13.0	$52.1	$14.8	$26.7	$98.2	$76.6	$72.7	$66.9	$116.3	$139.1	$177.5	$124.4
▨2006	$13.9	$64.8	$16.2	$32.6	$106.4	$89.3	$82.2	$70.5	$120.3	$155.9	$194.9	$145.2
▤2007	$15.0	$67.5	$16.6	$40.0	$113.1	$98.6	$90.4	$88.1	$120.7	$165.6	$217.7	$162.1
▨2008	$17.2	$70.1	$16.9	$46.0	$122.8	$118.2	$96.9	$103.1	$137.2	$181.1	$243.6	$190.4
■2009	$17.3	$85.3	$18.4	$53.2	$131.3	$136.7	$111.1	$120.7	$139.6	$199.0	$256.7	$201.8
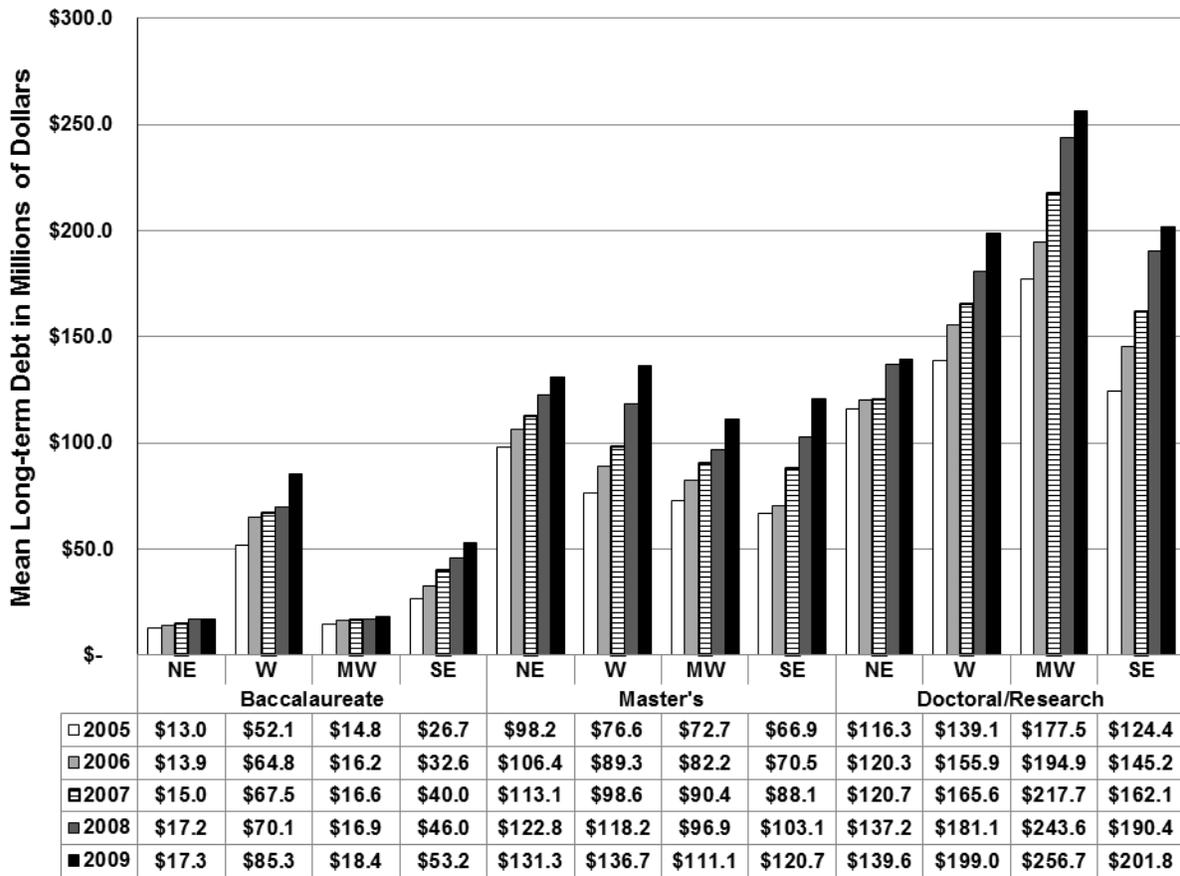
Figure 10. Mean long-term debt of U.S. four-year public colleges and universities for fiscal years 2005 to 2009 by Carnegie classification and geographic region shown in millions of dollars.
Note: Northeast (NE) *n* = 90; West (W) *n* = 97; Midwest (MW) *n* = 105; Southeast (SE) *n* = 123; Baccalaureate *n* = 71; Master's *n* = 215; Doctoral/Research *n* = 129; Total *n* = 415.

The dollar change in mean long-term debt for fiscal years 2005 through 2009 by

Carnegie classification and geographic region is provided in Figure 11. The most notable trend

revealed little consistency in the changes in mean long-term debt across geographic regions and

institutional types. This result is not surprising because in any one year an institution may repay

debt, issue new debt, or refinance existing debt. In addition, long-term debt may be repaid in

different ways. For example, bonds may mature at different times. Institutions may have

principal payments that are set up to be paid serially or at the end of a set term (Blustain et al.,

200

n.d.b). The only consistent trend is that every region and institutional type had an increase each year in the change in the amount of mean long-term debt over the prior year.

	NE	W	NW	SE	NE	W	MW	SE	NE	W	MW	SE
		Baccalaureate				Master's				Doctoral/Research		
□ 2005 to 2006	$857	$12,674	$1,313	$5,859	$8,221	$12,723	$9,450	$3,553	$3,977	$16,763	$17,333	$20,809
▦ 2006 to 2007	$1,150	$2,696	$404	$7,383	$6,761	$9,271	$8,192	$17,637	$438	$9,692	$22,892	$16,945
▨ 2007 to 2008	$2,133	$2,591	$324	$5,896	$9,751	$19,599	$6,499	$15,022	$16,525	$15,549	$25,872	$28,217
■ 2008 to 2009	$129	$15,214	$1,511	$7,321	$8,425	$18,479	$14,205	$17,529	$2,343	$17,921	$13,084	$11,463

Figure 11. Year-to-year change in mean long-term debt of U.S. four-year public colleges and universities for fiscal years 2005 to 2009 by Carnegie classification and geographic region shown in thousands of dollars. Note: Northeast (NE) $n = 90$; West (W) $n = 97$; Midwest (MW) $n = 105$; Southeast (SE) $n = 123$; Baccalaureate $n = 71$; Master's $n = 215$; Doctoral/Research $n = 129$; Total $n = 415$.

While the mean change in dollar amounts provides some indicator of the levels of mean long-term debt, analyzing the percentage change in mean long-term debt provides an equivalent gauge for comparison, which is shown in Figure 12. Again, the most notable trend showed large variances in the mean percentage changes each year. In other words, there is no constant

	NE	W	MW	SE	NE	W	MW	SE	NE	W	MW	SE
	Baccalaureate				Master's				Doctoral/Research			
☐ 2005 to 2006	6.57%	24.31%	8.85%	21.94%	8.38%	16.61%	12.99%	5.31%	3.42%	12.05%	9.76%	16.73%
▨ 2006 to 2007	8.28%	4.16%	2.50%	22.67%	6.36%	10.38%	9.97%	25.02%	0.36%	6.22%	11.75%	11.67%
▦ 2007 to 2008	14.17%	3.84%	1.96%	14.76%	8.62%	19.88%	7.19%	17.05%	13.69%	9.39%	11.88%	17.40%
■ 2008 to 2009	0.75%	21.70%	8.95%	15.97%	6.86%	15.64%	14.66%	17.00%	1.71%	9.90%	5.37%	6.02%
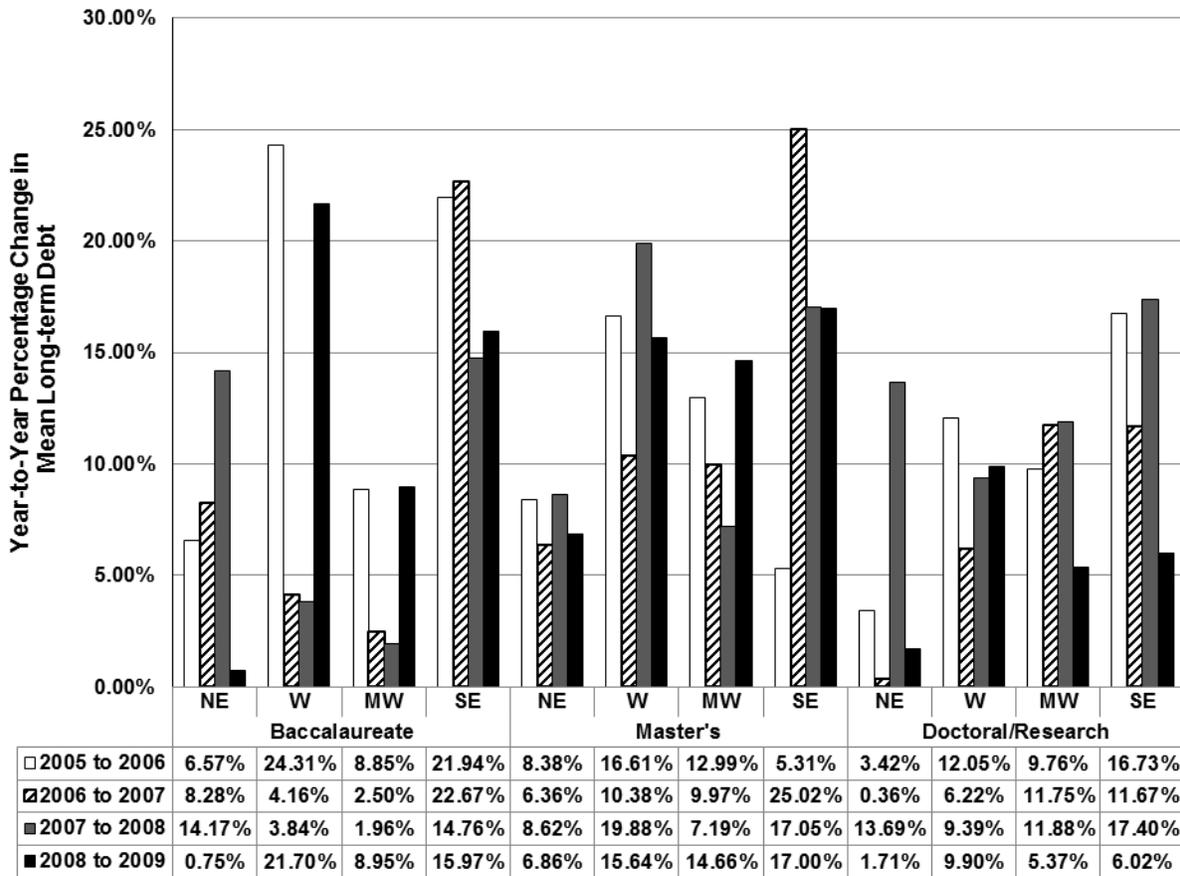
*Figure 12.* Year-to-year percentage change in mean long-term debt of U.S. four-year public colleges and universities for fiscal years 2005 to 2009 by Carnegie classification and geographic region.
Note: Northeast (NE) *n* = 90; West (W) *n* = 97; Midwest (MW) *n* = 105; Southeast (SE) *n* = 123; Baccalaureate *n* = 71; Master's *n* = 215; Doctoral/Research *n* = 129; Total *n* = 415.

percentage increase each year. The mean percentage changes are wide-ranging for all

institutional types and geographic regions.

The cumulative five-year change in mean long-term debt by Carnegie classification and

geographic region is shown in Table 27. Baccalaureate institutions located in the Midwest had

the smallest cumulative change in mean long-term of $3,552,974 of all institutional types and

geographic regions, while Doctoral/Research institutions in the Northeast had the smallest

cumulative percentage increase of 20.02% when compared to all other types and regions.

Doctoral/Research institutions located in the Midwest had the greatest cumulative increase in

mean long-term debt of $79,181,032, which represented a 44.6% increase over the five-year period. This amount was followed closely by the cumulative increase in mean long-term debt of $77,433,394 or 62.25% for Doctoral/Research institutions located in the Southeast. In addition, institutions in the Southeast had the largest percentage cumulative increase in mean long-term debt for each institutional type.

Table 27

Five-year Cumulative Change in Mean Long-term Debt in Dollars and Percent by Carnegie Classification and Geographic Region

Carnegie Classification	Region	*n*	Five-year Cumulative Change in Mean Long-term Debt	
			Dollars	Percent
Baccalaureate	Northeast	13	$ 4,268,753	32.74%
	West	23	$33,174,918	63.63%
	Midwest	13	$ 3,552,974	23.94%
	Southeast	22	$26,460,048	99.06%
Master's	Northeast	59	$33,158,735	33.78%
	West	45	$60,071,983	78.44%
	Midwest	55	$38,346,324	52.71%
	Southeast	56	$53,740,619	80.30%
Doctoral/Research	Northeast	18	$23,282,224	20.02%
	West	29	$59,924,395	43.08%
	Midwest	37	$79,181,032	44.60%
	Southeast	45	$77,433,394	62.25%

To determine if differences existed in mean long-term debt, a complex mixed design ANOVA with data transformation was performed using fiscal year as the within-subjects factor and with simplified Carnegie classification and geographic region as the between-subjects factors. Upon completion of the diagnostic tests, one limitation was noted; the assumption of

homogeneity of variances was violated. Consequently, it was not appropriate to report the
results of the inferential statistics.

Research Question Three

How did leverage of U.S. four-year public colleges and universities from question one differ based on (a) simplified Carnegie classification (i.e., baccalaureate, master's, and doctoral/research) and (b) geographic region?

Mean leverage of U.S. four-year public colleges and universities for fiscal years 2005 through 2009 by Carnegie classification is shown in Figure 13. Based on the descriptive statistics, mean leverage increased every year for Master's institutions. In addition, Master's institutions had the greatest mean leverage in each fiscal year, followed by Doctoral/Research institutions. In comparison, Baccalaureate institutions had the smallest mean leverage in every fiscal year across institutional type.

	2005	2006	2007	2008	2009
Baccalaureate	0.3158	0.3314	0.3309	0.3400	0.3596
Master's	0.4184	0.4236	0.4312	0.4458	0.4670
Doctoral/Research	0.3549	0.3654	0.3615	0.3771	0.3853
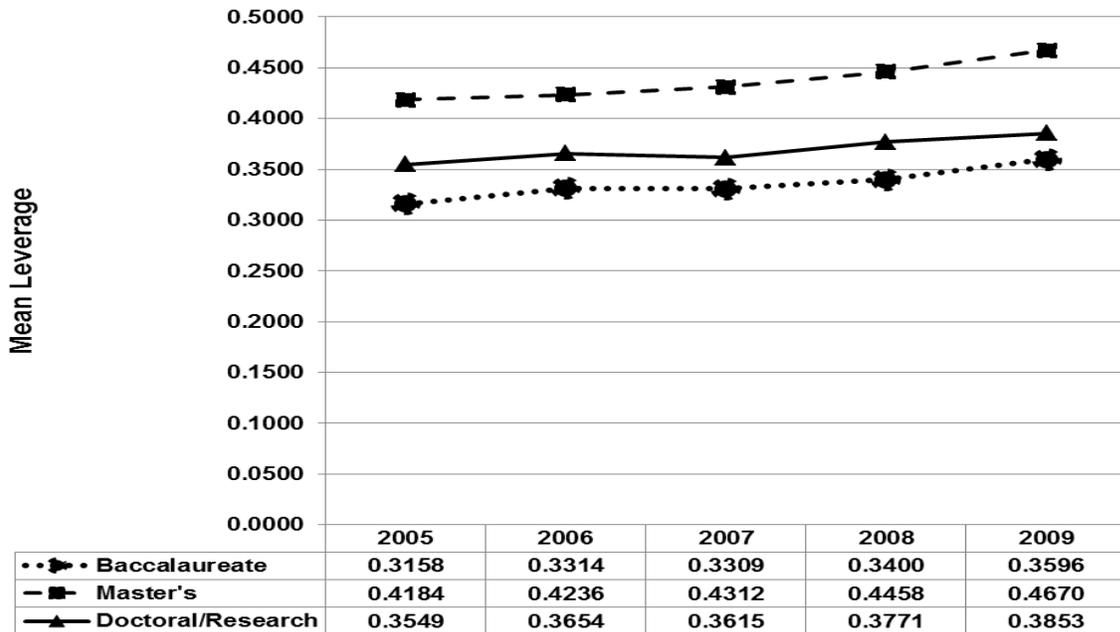
Figure 13. Mean leverage for fiscal years 2005 to 2009 by Carnegie classification
Note: Baccalaureate $n = 71$; Master's $n = 215$; Doctoral/Research $n = 129$; Total $n = 415$

Figure 14 illustrates the year-to year change in mean leverage by Carnegie classification. Both Baccalaureate and Doctoral/Research institutions experienced a decline in the change in mean leverage from 2006 to 2007. The change in mean leverage for Doctoral/Research institutions also declined again from 2008 to 2009. Master's institutions had a change in mean leverage that increased each year. Master's and Baccalaureate institutions had similar five-year cumulative changes in mean leverage with Master's institutions having the greatest cumulative change of .0486 followed by Baccalaureate institutions with a cumulative change in mean leverage of .0438. The cumulative change in mean leverage for Doctoral/Research institutions was the smallest change of .0304.

	2005 to 2006	2006 to 2007	2007 to 2008	2008 to 2009
— ◆ — Baccalaureate	0.0156	-0.0005	0.0091	0.0196
···■··· Master's	0.0052	0.0076	0.0146	0.0212
—▲— Doctoral/Research	0.0105	-0.0039	0.0156	0.0082
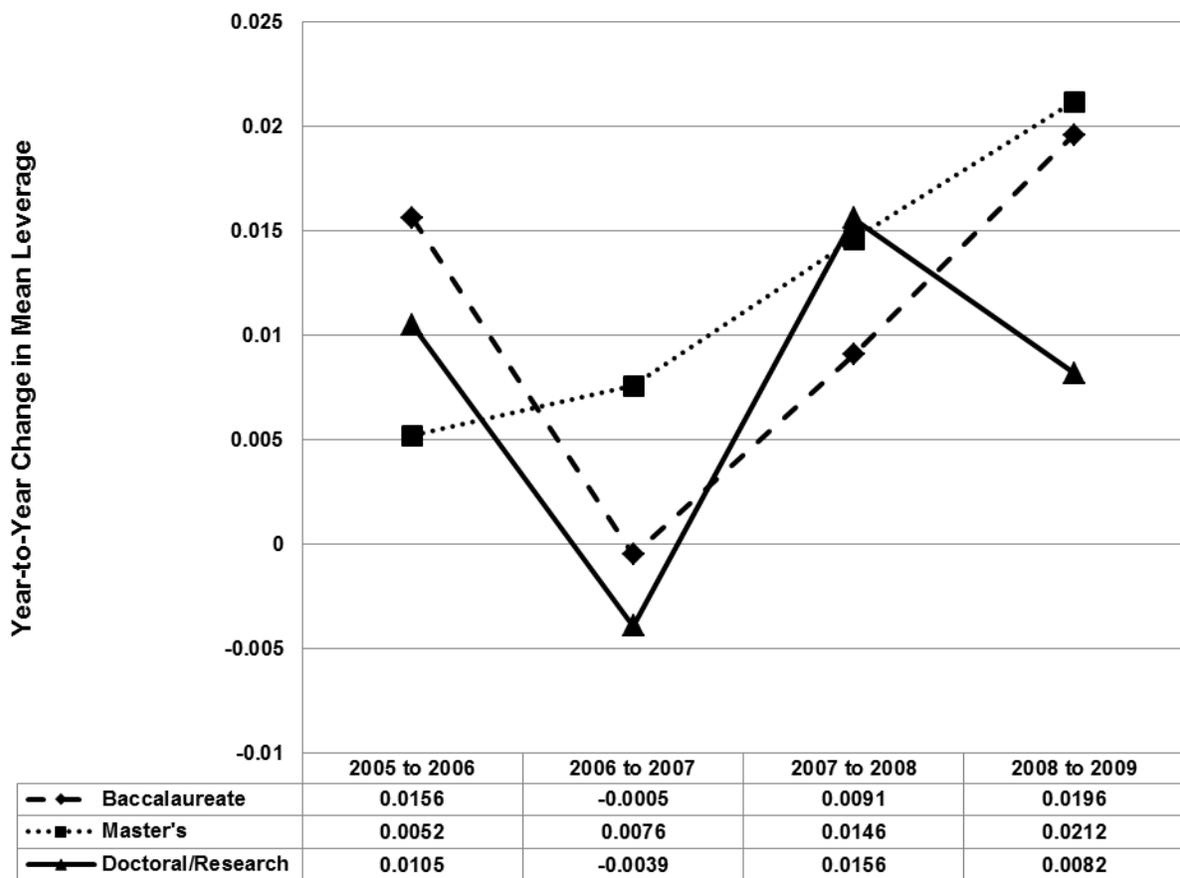
Figure 14. Year-to-year change in mean leverage for fiscal years 2005 through 2009 by Carnegie classification.
Note: Baccalaureate $n = 71$; Master's $n = 215$; Doctoral/Research $n = 129$; Total $n = 415$

The year-to-year percentage changes and cumulative percentage change in mean leverage by Carnegie classification are shown Table 28. No consistent percentage changes existed across the different classifications. For example, Baccalaureate and Master's institutions showed larger percentage increases in mean leverage from 2008 to 2009, but the greatest percentage increase for Doctoral/Research institutions occurred from 2007 to 2008. Baccalaureate institutions had the greatest five-year cumulative percentage increase of 13.87% compared to 11.62% for Master's institutions and 8.57% for Doctoral/Research institutions.

Table 28

Year-to-Year Change and Cumulative Change in Mean Leverage in Dollars and Percent by Carnegie Classification

	Year-to-Year Change (%)				
Carnegie Classification	2005 to 2006	2006 to 2007	2007 to 2008	2008 to 2009	Cumulative change
Baccalaureate	4.94%	-0.15%	2.75%	5.76%	13.87%
Master's	1.24%	1.79%	3.39%	4.76%	11.62%
Doctoral/Research	2.96%	-1.07%	4.32%	2.17%	8.57%

In Figure 15, mean leverage by geographic region is shown. The Northeast region had the greatest mean leverage of all regions by far for every year, and the mean leverage exceeded the recommended threshold of 50% in every year from fiscal year 2005 to 2009. In comparison, mean leverage was more comparable for the West, Midwest, and Southeast regions. The Southeast region maintained the smallest amount of mean leverage of all other regions until 2009 when its mean leverage of .3598 slightly exceeded the mean leverage of the Midwest region of .3543.

	2005	2006	2007	2008	2009
Northeast	0.5892	0.5846	0.5686	0.5855	0.5984
West	0.3572	0.3755	0.3727	0.3868	0.4158
Midwest	0.3238	0.3305	0.3373	0.3492	0.3543
Southeast	0.2967	0.3090	0.3259	0.3395	0.3598
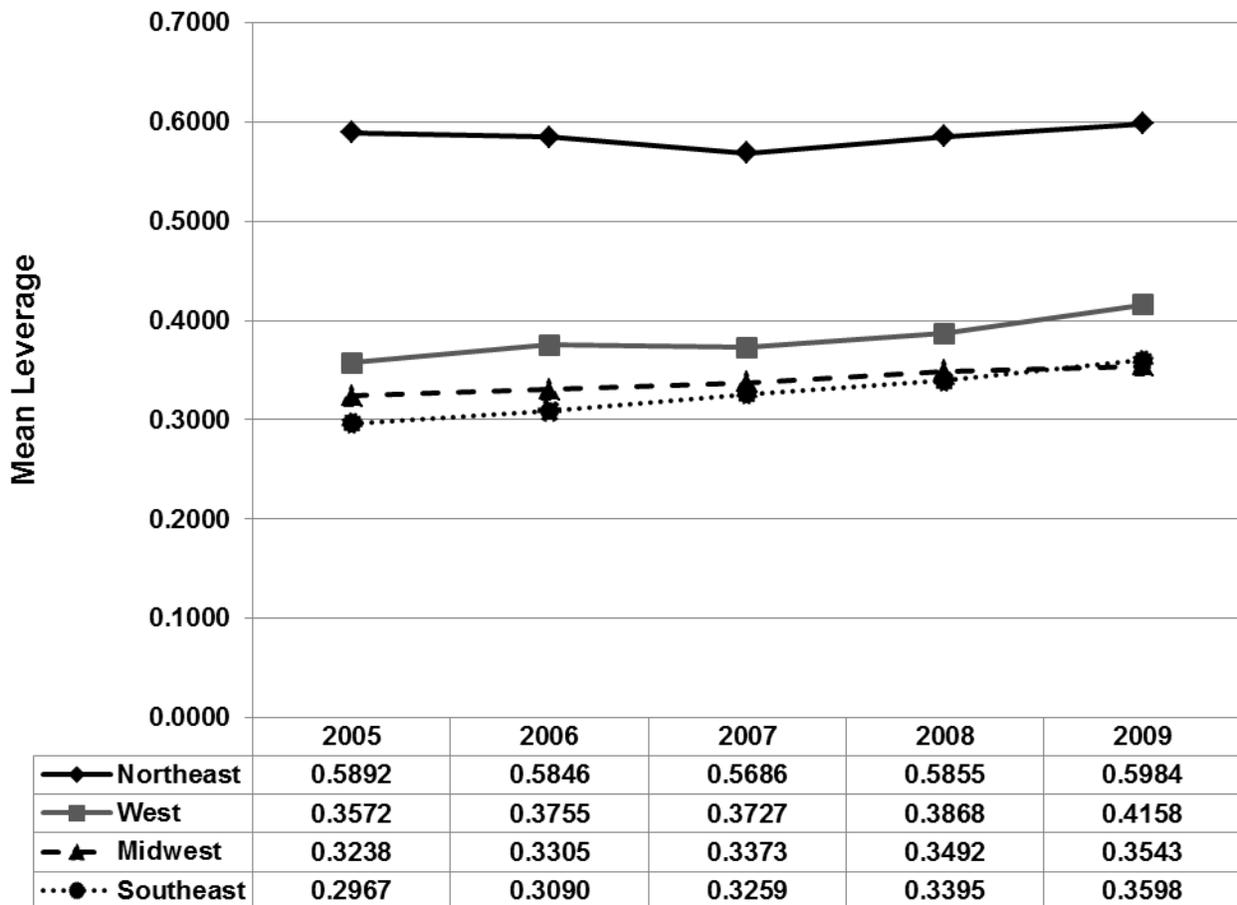
Figure 15. Mean leverage for fiscal years 2005 to 2009 by geographic region
Note: Northeast *n* = 90; West *n* = 97; Midwest *n* = 105; Southeast *n* = 123; Total *n* = 415

The year-to-year change in mean leverage by geographic region is illustrated in Figure 16. As illustrated, each geographic region had at least one decline in the amount of the change in mean leverage over the period from 2005 to 2009. The Northeast region showed two consecutive years of declining change in mean leverage in 2005 to 2006 and 2006 to 2007. The West region also experienced a decline in the change in mean leverage from 2006 to 2007. In comparison, the Southeast and Midwest regions had comparatively more constant yearly changes in mean leverage.

	2005 to 2006	2006 to 2007	2007 to 2008	2008 to 2009
◆ Northeast	-0.0046	-0.0160	0.0169	0.0129
■ West	0.0183	-0.0028	0.0141	0.0290
▲ Midwest	0.0067	0.0068	0.0119	0.0051
■ Southeast	0.0123	0.0169	0.0136	0.0203
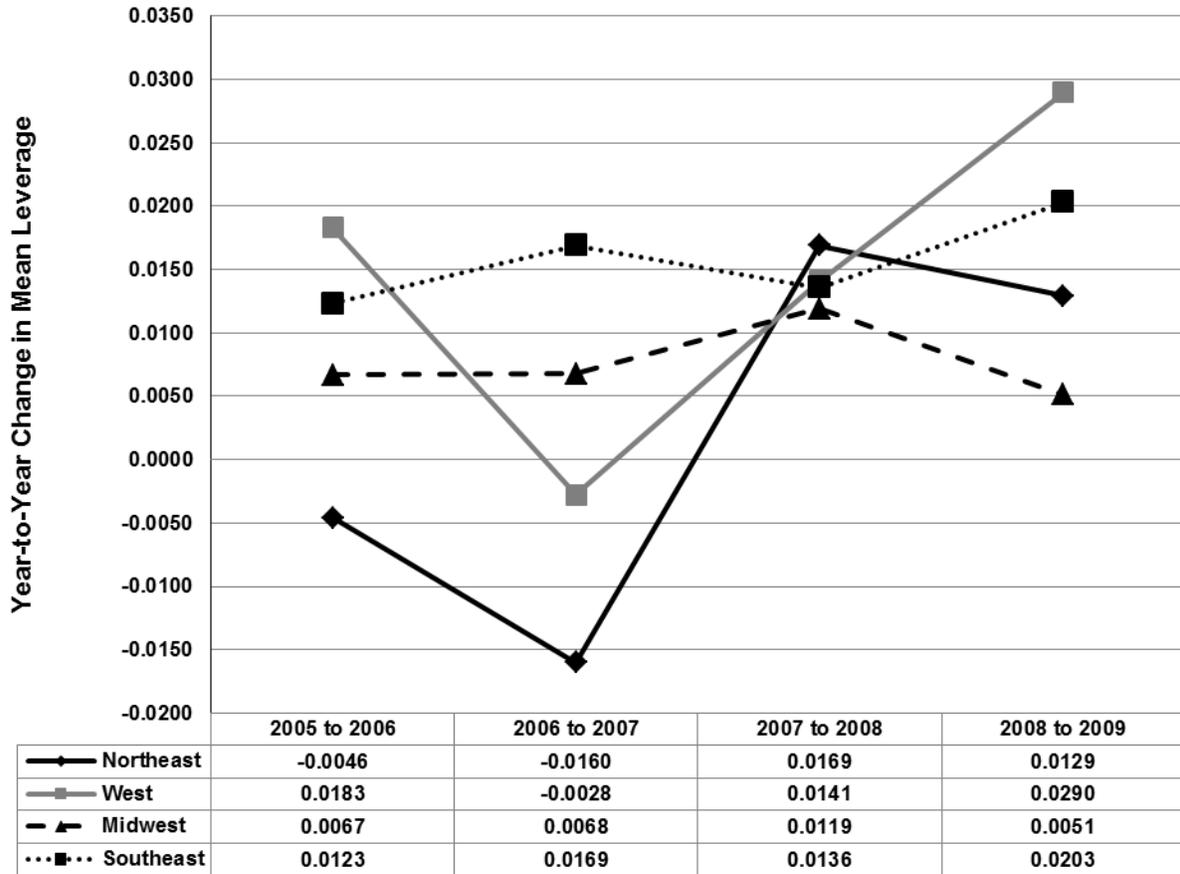
Figure 16. Year-to-year change in mean leverage for fiscal years 2005 to 2009 by geographic region. Note: Northeast $n = 90$; West $n = 97$; Midwest $n = 105$; Southeast $n = 123$; Total $n = 415$

Table 29 provides the year-to-year and cumulative percentage change by geographic regions. Similar to the year-to-year change in mean leverage, the Northeast and West regions showed wide-ranging year-to-year percentage variations in mean leverage, while the Midwest and Southeast showed steadier year-to-year percentage changes in mean leverage. For the five-year cumulative percentage change, the Southeast region experienced the greatest percentage change in mean leverage of 21.27%, followed by the West region with a five-year cumulative change of 16.41%. In comparison, the Northeast had an extremely small cumulative five-year change in mean leverage of 1.56%.

208

Table 29

Year-to-Year Change and Cumulative Change in Mean Leverage in Percent by Geographic Region

Geographic Region	Year-to-Year Change (%)				Cumulative change
	2005 to 2006	2006 to 2007	2007 to 2008	2008 to 2009	
Northeast	-0.78%	-2.74%	2.97%	2.20%	1.56%
West	5.12%	-0.75%	3.78%	7.50%	16.41%
Midwest	2.07%	2.06%	3.53%	1.46%	9.42%
Southeast	4.15%	5.47%	4.17%	5.98%	21.27%

Figure 17 further disaggregates mean leverage for U.S. four-year public institutions by Carnegie classification, geographic region, and fiscal year. When viewed in this manner, the results show some similarities and also reveal the institutional type and region with mean leverage greater than the recommended threshold. Baccalaureate institutions had the most comparable levels of mean leverage across regions. Similarly, the Doctoral/Research institutions in every region except for the Northeast had comparable levels of mean leverage. In addition, mean leverage for Master's and Doctoral/Research institutions in the Northeast exceeded the recommended threshold of 50% in every year. All other institutional types and regions had mean leverage below 50%.

	NE	W	MW	SE	NE	W	MW	SE	NE	W	MW	SE
		Baccalaureate				Master's				Doctoral/Research		
☐ 2005	0.3673	0.3027	0.3448	0.2820	0.6363	0.3840	0.3254	0.3080	0.5950	0.3589	0.3141	0.2898
▨ 2006	0.3498	0.3249	0.3472	0.3181	0.6327	0.3971	0.3337	0.3129	0.5966	0.3821	0.3200	0.2996
▧ 2007	0.3485	0.3177	0.3398	0.3292	0.6143	0.3997	0.3445	0.3486	0.5779	0.3743	0.3256	0.2961
▦ 2008	0.3702	0.3290	0.3330	0.3376	0.6269	0.4241	0.3558	0.3609	0.6052	0.3749	0.3451	0.3137
■ 2009	0.3740	0.3646	0.3242	0.3667	0.6426	0.4678	0.3632	0.3834	0.6155	0.3756	0.3517	0.3272

Figure 17. Mean leverage of U.S. four-year public colleges and universities for fiscal years 2005 t0 2009 by Carnegie classification and geographic region.
Note: Northeast (NE) $n = 90$; West (W) $n = 97$; Midwest (MW) $n = 105$; Southeast (SE) $n = 123$; Baccalaureate $n = 71$; Master's $n = 215$; Doctoral/Research $n = 129$; Total $n = 415$.

Figure 18 provides the mean year-to-year change in leverage by Carnegie Classification

and geographic region for fiscal years 2005 through 2009. The graph illustrates wide

fluctuations in the change in mean leverage between fiscal years. All Master's institutions in

every region except the Northeast experienced a year-to-year change in mean leverage that

represented an increase each year over the previous year. In addition, Baccalaureate institutions

in the Southeast and Doctoral/Research institutions in the Midwest had a year-to-year change in

210

mean leverage that increased over the prior year. Baccalaureate institutions in the Midwest experienced three consecutive years of decreases in the year-to-year change in mean leverage.

	NE	W	MW	SE		NE	W	MW	SE		NE	W	MW	SE
	Baccalaureate					Master's					Doctoral/Research			
□ 2005 to 2006	-.0175	.0222	.0024	.0361		-.0036	.0131	.0083	.0049		.0016	.0232	.0059	.0098
▨ 2006 to 2007	-.0013	-.0072	-.0074	.0111		-.0184	.0026	.0108	.0357		-.0187	-.0078	.0056	-.0035
▤ 2007 to 2008	.0217	.0113	-.0068	.0084		.0126	.0244	.0113	.0123		.0273	.0006	.0195	.0176
■ 2008 to 2009	.0038	.0356	-.0088	.0291		.0157	.0437	.0074	.0225		.0103	.0007	.0066	.0135
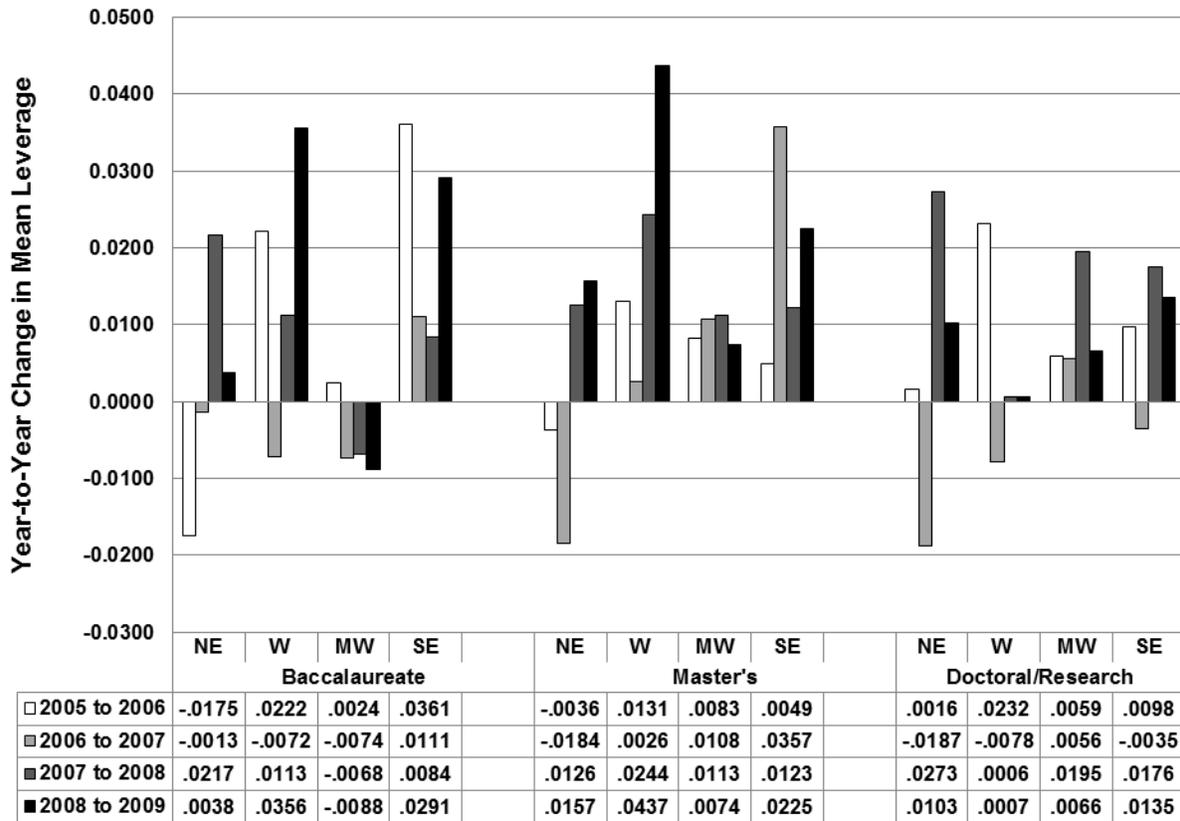
*Figure 18.* Year-to-year change in mean leverage of U.S. four-year public colleges and universities for fiscal years 2005 to 2009 by Carnegie classification and geographic region.
Note: Northeast (NE) $n = 90$; West (W) $n = 97$; Midwest (MW) $n = 105$; Southeast (SE) $n = 123$; Baccalaureate $n = 71$; Master's $n = 215$; Doctoral/Research $n = 129$; Total $n = 415$.

The year-to-year percentage change in mean leverage varied widely across institutional types and regions as illustrated in Figure 19. The largest single percentage increase in mean leverage of 12.80% occurred from 2005 to 2006 for Baccalaureate institutions located in the Southeast region followed closely by an increase of 11.41% in mean leverage from 2006 to 2007 for Master's institutions in the Southeast. In the West region, both Baccalaureate and Master's institutions in the West had a large percentage increase in mean leverage of 10.82% and 10.30%,

respectively, from 2008 to 2009.   Additionally, Doctoral/Research institutions had smaller

percentage changes in mean leverage over the five-year period in comparison to Baccalaureate

and Master's institutions, which experienced more significant changes.

|	NE	W	MW	SE		NE	W	MW	SE		NE	W	MW	SE
	Baccalaureate					Master's					Doctoral/Research			
□ 2005 to 2006	-4.76%	7.33%	0.70%	12.80%		-0.57%	3.41%	2.55%	1.59%		0.27%	6.46%	1.88%	3.38%
▣ 2006 to 2007	-0.37%	-2.22%	-2.13%	3.49%		-2.91%	0.65%	3.24%	11.41%		-3.13%	-2.04%	1.75%	-1.17%
▦ 2007 to 2008	6.23%	3.56%	-2.00%	2.55%		2.05%	6.10%	3.28%	3.53%		4.72%	0.16%	5.99%	5.94%
■ 2008 to 2009	1.03%	10.82%	-2.64%	8.62%		2.50%	10.30%	2.08%	6.23%		1.70%	0.19%	1.91%	4.30%
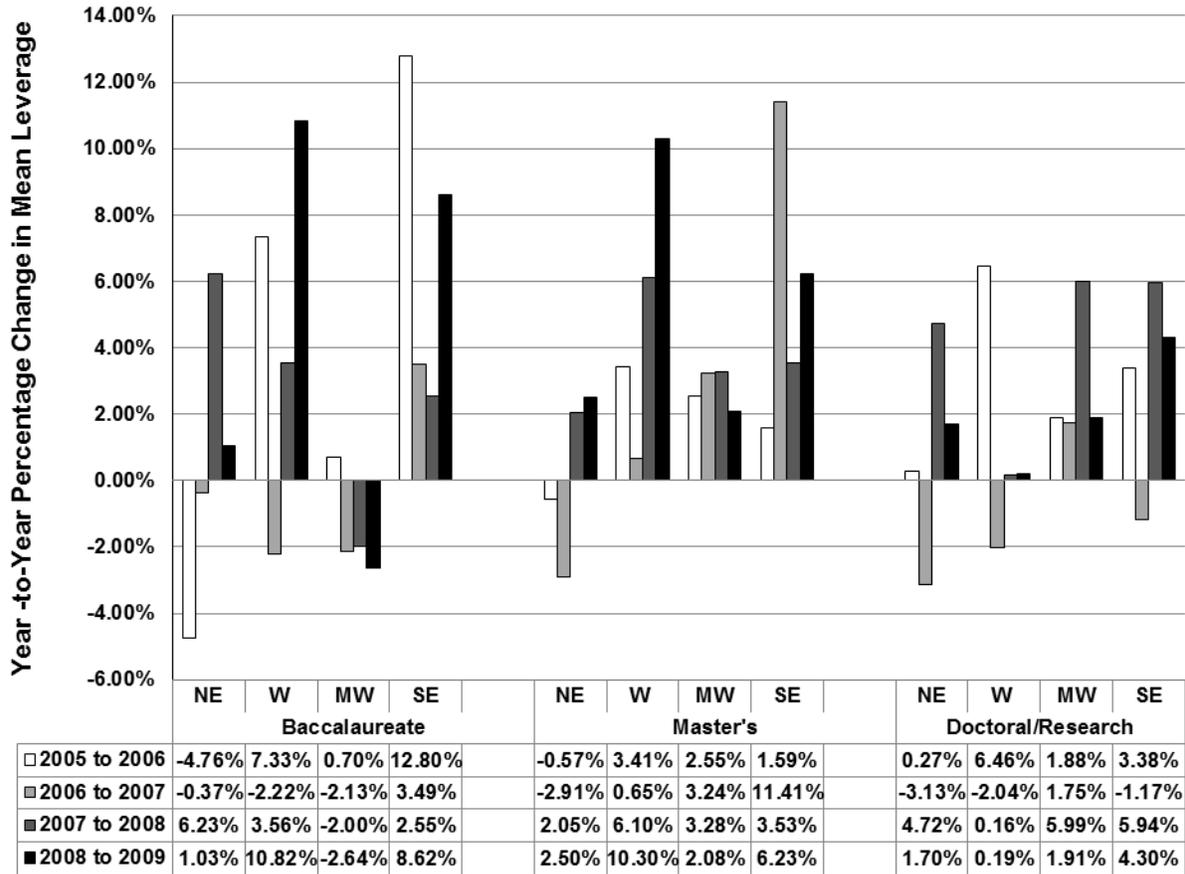
Figure 19. Year-to-year percentage change in mean leverage of U.S. four-year public colleges and universities for fiscal years 2005 to 2009 by Carnegie classification and geographic region.
Note: Northeast (NE) *n* = 90; West (W) *n* = 97; Midwest (MW) *n* = 105; Southeast (SE) *n* = 123; Baccalaureate *n* = 71; Master's *n* = 215; Doctoral/Research *n* = 129; Total *n* = 415.

Table 30 provides the five-year cumulative percentage change in mean leverage for fiscal

years 2005 through 2009 by Carnegie classification and geographic region. The most notable

finding is that Baccalaureate institutions in the Midwest experienced a cumulative decrease in

mean leverage of 5.97%. The Northeast region had the next smallest cumulative percentage

change in mean leverage with a .99% and 1.82% cumulative change for Master's and

Baccalaureate institutions.   In comparison, the Southeast region had the greatest cumulative

five-year change in mean leverage when comparing each institutional category. The greatest

cumulative change in mean leverage of 30.04% occurred in Baccalaureate institutions in the

Southeast followed by a 24.48% cumulative percentage increase for Master's institutions in the

Southeast.

Table 30

Five-year Cumulative Percentage Change in Mean Leverage from Fiscal Year 2005 to 2009 by Carnegie Classification and Geographic Region

Carnegie Classification	Region	Cumulative Change
Baccalaureate	Northeast	1.82%
	West	20.45%
	Midwest	-5.97%
	Southeast	30.04%
Master's	Northeast	0.99%
	West	21.82%
	Midwest	11.62%
	Southeast	24.48%
Doctoral/Research	Northeast	3.45%
	West	4.65%
	Midwest	11.97%
	Southeast	12.91%

A complex mixed design ANOVA with data transformation was performed to determine

if differences existed in mean leverage ($\log_{10}$) using fiscal year as the within-subjects factor and

simplified Carnegie classification and geographic region as the between-subjects factors. Upon

completion of diagnostic tests of statistical assumptions, one limitation was noted: the

assumption of homogeneity of variances was violated. Consequently, it was not appropriate to report the results of the inferential statistics.

Research Question Four

What institutional characteristics and financial factors of U.S. four-year public colleges and universities were related to long-term debt?

The regression equation is shown as $Y' = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5$, where Y' is the predicted value of mean long-term debt ($\log_{10}$), a is the constant or intercept, b_1 through b_5 represents the slope or regression coefficient for the independent variables, and X_1 through X_5 represents the independent variables that relate to mean long-term debt. The final regression equation from the best subsets model is reported as follows:

Y'(Long-term debt($\log_{10}$)) = -1.125 + 1.098(Property, plant, and equipment ($\log_{10}$))
+ (-.226)(Southeast region) + (-.019)(Age of facilities) + (-.140)(Midwest region)
+ (-.115)(West region)

The multiple regression analysis showed that approximately 68.4% of the variability in long-term debt ($\log_{10}$) was associated with property, plant, and equipment ($\log_{10}$), age of facilities, and the Southeast, Midwest, and West regions. Property, plant, and equipment ($\log_{10}$) was positively related to long-term debt ($\log_{10}$), while age of facilities was negatively related to long-term debt. These relationships indicate that institutions with more property, plant, and equipment ($\log_{10}$) will have more long-term debt ($\log_{10}$). In addition, institutions will have less long-term debt ($\log_{10}$) with older facilities as measured by the age of facilities in years. Furthermore, institutions in the Southeast, Midwest, and West regions have less long-term debt ($\log_{10}$) than institutions in the Northeast.

214

The independent variable that contributed the most to the adjusted R^2 was property, plant, and equipment ($\log_{10}$). Property, plant, and equipment ($\log_{10}$) alone explained 65.9% of the variance in long-term debt ($\log_{10}$). While significant, the remaining variables contributed much smaller percentages to the adjusted R^2 as follows: age of facilities (1.5%); Southeast region (.08%); West (.03%); and Midwest (.02%). In addition, property, plant, and equipment ($\log_{10}$) had the highest beta coefficient of .806, which indicates the importance of property, plant, and equipment ($\log_{10}$) in predicting long-term debt ($\log_{10}$). The remaining beta coefficients of the other independent variables were statistically significant but smaller as follows: Southeast region (-.159); age of facilities (-.109); Midwest region (-.090); and West region (-.074).

Research Question Five

What institutional characteristics and financial factors of U.S. four-year public colleges and universities were related to leverage?

The regression equation is shown as $Y' = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7$, where Y' is the predicted value of mean leverage, a is the constant or intercept, b_1 through b_5 represents the slope or regression coefficient for the independent variables, and X_1 through X_7 represents the independent variables that relate to mean leverage. The final regression equation from the best subsets model is listed as follows:

Y'(Leverage) = .160 + (-.288)(Southeast region) + (-.282)(Midwest region)
+ (-.236)(West region) + (-.075)(Doctoral/Research institutions)
+ .095(Enrollment ($\log_{10}$)) + .139(Property, plant, and equipment ratio)
+ .211(Grants and contracts ratio)

The multiple regression analysis showed that approximately 29.3% of the variability in long-term debt ($\log_{10}$) was related to the property, plant, and equipment ratio; the grants and contracts ratio; enrollment ($\log_{10}$); Doctoral/Research institutions; and the Southeast, Midwest,

and West regions. The property, plant, and equipment ratio, grants and contracts ratio, and enrollment ($\log_{10}$) were positively related to leverage. These relationships indicate that institutions that have more property, plant, and equipment, grants and contracts revenue, and enrollment will have higher leverage. The independent variables of Southeast region, Midwest region, West region, and institutions categorized as Doctoral/Research institutions were negatively related to leverage. These relationships indicate that institutions located in either the Southeast, Midwest, or West region will have lower leverage than institutions located in the Northeast. In addition, Doctoral/Research institutions will have lower leverage than Baccalaureate institutions.

The independent variable that contributed the most to the adjusted R^2 was the West region, which explained 12.7% of the variance in leverage. The Midwest and Southeast explained 9.3% and 5.1%, respectively of the variance in leverage. While significant, the remaining variables contributed much smaller percentages to the adjusted R^2 as follows: enrollment (1.5%); property, plant, and equipment ratio (.07%); grants and contracts ratio (.07%); and Doctoral/Research (.03%).

When analyzing the beta coefficients to determine which independent variables were the most predictive of leverage, the regional independent variables had the three strongest beta coefficients: Southeast (-.611); Midwest (-.550); and West (-.456). The weights for the beta coefficients for the remaining independent variables were smaller. The beta coefficients in descending order were: enrollment ($\log_{10}$) (.171); Doctoral/Research (-.158); grants and contracts ratio (.090); and property, plant, and equipment ratio (.086).

In comparison to the long-term debt regression model, the leverage regression model had a lower adjusted R^2 value. The difference between the two models is that the independent

variables and the dependent variable were not whole numbers but ratios, which was based on prior research. However, in prior research where the dependent variable was leverage, the adjusted R^2 values obtained in the various models were very similar to the adjusted R^2 in this study. In fact, more studies had an adjusted R^2 less than .50 than those that had greater than .50. Some examples of prior studies with statistically significant associated adjusted R^2 values less than .50 were Wedig (1988) .24; McCue and Ozcan (1992) .295 and .248; Wedig et al. (1998) .1971 and .2619; Jegers and Verschueren (2006) 0.06 and .13; and Shultz (2000) .01. Only two studies had adjusted R^2 values greater than .50: Bacon (1992) .7551 and Bowman (2002) .539. Bowman based his study on Bacon's study but modified his variable for growth and added other variables. Therefore, the lower adjusted R^2 appears to be more common in leverage models. Additionally, the leverage model in this study had a significantly higher adjusted R^2 value than the previous higher education study by Shultz (2000).

Other Findings

The aforementioned findings specifically addressed the research questions. However, in answering the research questions, other findings of interest were noted by the researcher. These other findings are provided below.

There was one instance in which the property, plant, and equipment ratio and the endowment ratio were calculated at values greater than 1.00.

Based on the maximum values shown in the descriptive statistics in research question five, there was one instance in which the property, plant, and equipment ratio was calculated as 1.1071, and the endowment ratio was calculated as 1.0009. The property, plant, and equipment ratio was computed as the dollar amount of property, plant, and equipment net of accumulated depreciation divided by the dollar amount of total assets. Similarly, the endowment ratio was

217

calculated as the dollar amount of the endowment value at the end of the year divided by the dollar amount of total assets. Both property, plant, and equipment and endowments are specific types of assets that comprise the total asset amount. Therefore, a ratio greater than 1.00 where property, plant, and equipment and endowment values would exceed total assets appears unusual. For example, if property, plant, and equipment net of accumulated depreciation or the endowment ratio were truly more than total assets, then from an accounting standpoint, some other asset would have be a negative number, which is not the normal balance for an asset. Good accounting practice would require an institution to review any asset balances with a credit balance to determine if they should be appropriately reclassified as a liability. This finding indicates that some institutions may not be reporting values correctly or the IPEDS system does not capture the data in a holistic accounting format. The data submitted for the Finance survey should be the same as an institution's financial statements, and numbers reported should reconcile to an institution's financial statements for the reporting entity.

There were a limited number of cases where a maximum leverage value greater than 1.00 was calculated in each fiscal year from 2005 to 2009.

As evidenced by the descriptive statistics shown in research question one, maximum leverage was reported as 1.4700 in 2005, 1.3008 in 2006, 1.2975 in 2007, 1.2890 in 2008, and 1.4911 in 2009. Leverage is calculated as total liabilities divided by total assets. For accounting purposes, the equation to determine an institution's reserve or net assets is:

$$Assets = Liabilities + Net\ Assets$$

$$or$$

$$Assets - Liabilities = Net\ Assets$$

Therefore, if the leverage value is greater than 1.00, this result indicates that an institution's liabilities exceeded its total assets. Consequently, the institution would have net assets that are in a deficit situation because from an accounting standpoint, assets must balance with the combined total of liabilities plus net assets. While the researcher does not know why these institutions' liabilities exceeded their assets, if these results were reported accurately, then any institution in a deficit situation would not only have trouble paying its debt, but also have difficulty operating on a daily basis without sufficient reserves.

Conclusions

The data analysis and findings from this study provide a basis for conclusions. Five conclusions were derived from this study.

Conclusion One

Examining U.S. four-year public colleges and universities as a whole, both long-term debt and leverage increased from 2005 to 2009, but leverage increased at a slower pace.

Simply examining increases in long-term debt in isolation can be misleading. From 2005 to 2009, mean long-term debt increased significantly by $47,701,306 or 52.89%. In comparison, leverage increased from .3811 to .4233 from 2005 to 2009, which was an increase of .0421 or 11.05%. In other words, 42.33% of public institutions' capital structures were financed with debt in fiscal year 2009, compared to 38.11% in fiscal year 2005. Even though long-term debt increased for public institutions, their associated leverage values increased by a much smaller cumulative percentage. An increasing rate in leverage means that more debt has been assumed in relation to institutional assets, which increases the risk profile for an institution because debt is being used more than other resources. However, during the five year period from 2005 to 2009, leverage did not exceed the recommended threshold of 50%, where one-half of an institution's

capital structure is funded from debt and the remainder is funded from net assets. Even so, this threshold is merely a recommendation, and each institution must determine the appropriate amount of leverage for their institution (Salluzzo et al., 2005).

Based on these results, the conceptual framework of utility maximization may be applied. Public institutions were obviously able to leverage their increases in debt with their available assets because leverage increased at a much smaller rate in comparison to long-term debt. Leverage allowed institutions to "generate extra utility from the pool of available assets" (Massy, 1996a, p. 122) and borrow funds to enhance the institution's utility to meet institutional goals.

Conclusion Two

While Doctoral/Research institutions had the greatest amount of long-term debt, Master's institutions had the greatest amount of leverage, which means they carry more debt in proportion to their associated assets.

Based on the descriptive statistics, differences existed in long-term debt by Carnegie classification. Over the five-year period from 2005 to 2009, Doctoral/Research institutions had the greatest amount of long-term debt in comparison to Master's and Baccalaureate institutions with debt ranging from $141,803,787 in 2005 to $208,246,333 in 2009. In comparison, Master's institutions had long-term debt that ranged from a low of $79,005,542 in 2005 to a high of $124,485,202 in 2009. Baccalaureate institutions had lower long-term debt than Master's institutions with long-term debt ranging from $30,270,053 in 2005 to $50,647,893 in 2009.

However, a shift occurs by institutional type when leverage is analyzed. Based on the descriptive statistics, Master's institutions had the greatest leverage in every fiscal year ranging from .4184 in fiscal year 2005 to .4670 in fiscal year 2009. In comparison, Doctoral/Research institutions had leverage that ranged from .3549 in 2005 to .3853 in 2009. Baccalaureate

220

institutions had the smallest mean leverage that ranged from .3158 in 2005 to .3596 in 2009. Baccalaureate institutions experienced the greatest five-year percentage change in leverage of 13.87%, followed by 11.62% for Master's institutions, and 8.57% for Doctoral/Research institutions. Both Baccalaureate and Doctoral/Research institutions had slight dips in leverage from fiscal year 2006 to 2007, but Master's institutions did not.

Therefore, the amount of long-term debt and the associated leverage depends on institutional size. In this study, larger institutional types like Doctoral/Research institutions had more long-term debt but had a greater ability to leverage their long-term debt over the five-year period. In comparison, Master's institutions carried more debt in proportion to their available assets to finance their mission. This conclusion follows the 2010 study of endowments by the National Association of College and University Business Officers and Commonfund Institute (2010) that indicated the size of an institution factors into the amount of debt an institution holds, with institutions with larger amounts of assets able to carry more debt (National Association of College and University Business Officers and Commonfund Institute, 2010). This conclusion also applies to the concept of utility or goal maximization. Nonprofit entities maximize social value subject to funding, competition, and legal constraints (Hughes, 2006), and colleges and universities have different financial situations (Cheslock, 2006). Applying this economic lens to the results of the study, the amount of debt a public college or university carries to achieve its goals depends on the mission of the institution as exhibited by different classifications of universities.

Conclusion Three

Master's and Doctoral/Research institutions in the Northeast had mean leverage that exceeded the recommended threshold in every fiscal year, indicating a reduced ability to utilize debt as a resource to fund the institutions' strategic plans.

Based on the descriptive statistics, mean leverage for Master's institutions in the Northeast exceeded .6000 for all five fiscal years with the highest mean leverage equal to .6426 in 2009. That is, 64.26% of the capital structure of Master's institutions located in the Northeast was financed with debt. Similarly, mean leverage for Doctoral/Research institutions exceeded .5700 for all five years with the highest mean leverage equal to .6155 in 2009. Surprisingly, Baccalaureate institutions in the Northeast did not have comparable values with the highest mean leverage equal to only .3740. For other regions, the next highest mean leverage in 2009 was associated with Master's and Doctoral/Research institutions in the West with mean leverage of .4678 and .3756, respectively. In addition, Master's and Doctoral/Research institutions in the Northeast had the smallest cumulative percentage changes in leverage over the five-year period of 0.99% and 3.45% compared to the other regions. Moreover, their cumulative five-year percentage changes in long-term debt were the lowest of all other regions. Master's and Doctoral/Research institutions in the Northeast had mean long-term debt that increased by 33.78% and 20.02%, respectively. These slower changes indicate that higher leverage ratios of Master's and Doctoral/Research institutions in the Northeast may have been limiting their ability to add more debt.

As noted earlier, the recommended threshold for leverage is 50% (Salluzzo et al., 2005), and only Doctoral/Research and Master's institutions in the Northeast had mean leverage above the recommended threshold ceiling. Although it is recommended that institutions establish their

own tolerance limits (Salluzzo et al., 2005), the higher amount of debt in proportion to assets has the potential to limit operational flexibility as more operating funds would be needed to pay debt service (Blustain et al., n.d.b; Tahey et al., 2010; Van Gorden, 2006). With higher leverage, these Doctoral/Research and Master's institutions may have less ability to increase compensation and benefits for faculty and staff or enhance staffing levels to manage enrollment growth. Moreover, for public institutions, state appropriations generally are not legally available to pay debt service (Blustain et al., n.d.b), and therefore, other revenue sources such as tuition and fees or auxiliary revenues would have to be increased to provide a source of funds for repayment. In addition, higher leverage could conceivably restrict the institutions from securing additional debt that may be needed to fund the institutions' mission (Van Gorden, 2006). While the researcher does not know why these Master's and Doctoral/Research have higher levels of mean leverage, it cannot be completely isolated to the Northeast region because Baccalaureate institutions located in the Northeast have mean leverage values that are far below the recommended level.

Conclusion Four

Property, plant, and equipment, age of facilities, and regional location are all predictors of long-term debt of U.S. four-year public colleges and universities but property, plant, and equipment has by far the strongest relationship with long-term debt.

The study found that the variable of property, plant, and equipment was the only financial factor that was related to long-term debt. The institutional characteristics' variables that were related to long-term debt were age of facilities and regional location. Property, plant, and equipment had the strongest relationship with long-term debt with an adjusted R^2 that explained 65.9% of the variance in long-term debt ($\log_{10}$). Although the remaining institutional characteristic variables were significant, they contributed much smaller percentages to the

adjusted R^2. In addition, property, plant, and equipment (log_{10}) had the highest beta coefficient of .806. Although age of facilities explained only 1.5% of the variance in long-term debt, this relationship is of interest. While property, plant, and equipment had a positive relationship with long-term debt, age of facilities was negatively related to long-term debt. In other words, as the age of facilities for public colleges and universities increased in years, long-term debt decreased.

The fact that such a strong relationship exists between property, plant, and equipment and long-term debt is not surprising. As noted in the literature review, public colleges and universities use debt financing to construct new buildings, renovate existing buildings, repair a backlog of deferred maintenance, purchase new equipment (Hornfischer, 1997), and fund infrastructure projects (King et al., 1994), which are all forms of property, plant, and equipment. In addition, prior research found, as with this study, that property, plant, and equipment was statistically significant and positively correlated with debt (Bacon, 1992; Bowman, 2002; McCue & Ozcan, 1992; Smith, 2010; Yan et al., 2009). One incongruity from prior research should be noted. Shultz (2000) did not find a statistically significant relationship between long-term debt and property, plant, and equipment. However, he used estimated replacement value of buildings and equipment in his study as opposed to the property, plant, and equipment net of accumulated depreciation. He acknowledged that a limitation of the study was the replacement value for buildings and equipment was reported as an estimate, and therefore, may not be accounted for consistently by all institutions. The researcher of this study contends that replacement value for buildings and equipment would be a significantly higher number than the amount of debt that would be owed, which also might account for the lack of statistical significance.

In addition to property, plant, and equipment, prior studies also found that age of facilities was statistically significant and negatively correlated with debt (Moody, 2007; Smith,

224

2010; Wedig et al., 1988; Wedig et al., 1998). In only one instance was prior research contradictory. McFall (2000) found that age of facilities was positively correlated with debt. However, his definition of age of facilities differed from this study. Age of facilities was defined by McFall as the number of years since the institution first opened its doors. This study computed age of facilities as accumulated depreciation divided by depreciation expense and is the calculation recommended for public institutions (Salluzzo et al., 2005). Additionally, this study's calculation of age of facilities used data by fiscal year, which is a dynamic number as opposed to a static number like historical age.

The strong relationship between long-term debt and property, plant, and equipment indicates that four-year public colleges and universities located in the U.S. use long-term debt to invest in their facilities, and this use of long-term debt has increased from 2005 to 2009. Using long-term debt means that four-year public colleges and universities are committing resources to finance capital investments. These resources include any legally available source of funds, which may include tuition and fees and auxiliary or other self-generated revenues. Therefore, as long-term debt increases, revenues that can be used as a source of repayment for debt must also rise. Over the past 20 years, a shift in revenues has occurred for public higher education. Tuition and fees continue to rise as state appropriations decline. In addition, self-generated revenues, such as funds from auxiliary enterprises, have become a more significant portion of four-year public colleges and universities' revenues streams. Hence, as long-term debt increases to pay for investments in facilities, students and their families may continue to bear more of the cost of higher education unless other funding sources for facilities can be identified.

In addition, public institutions continue to deal with deferred maintenance, and recent research indicates that capital appropriations do not sufficiently address this issue (Harris et al.,

2012). While the researcher does not know how the debt is used (i.e., deferred maintenance, renovations, new construction), the negative correlation of lower age of facilities with long-term debt could indicate that public institutions may not be taking corrective action to issue debt to repair deferred maintenance, which would in turn lower an institution's age of facilities.

Moreover, this conclusion may be applied to the conceptual framework of utility maximization. Nonprofit institutions, like public colleges and universities, cannot distribute profits to stakeholders like for-profit entities can. Therefore, maximizing profit is not a nonprofit public college or university's primary goal. Instead, they maximize utility, which allows public institutions to amplify the quality and quantity of services provided. Universities may maximize their utility to achieve their goals by constructing or renovating different types of facilities. These structures may be for academic, research, or student purposes such as constructing an academic building to meet enrollment demands or additional housing for students. Therefore, using long-term debt for property, plant, and equipment allows these institutions to invest in tangible goods that will maximize their utility.

Conclusion Five

Regional location, Doctoral/Research status, property, plant, and equipment, grants and contracts revenue, and enrollment are the best predictors of leverage.

The study found that the financial variables that were related to leverage were property, plant, and equipment and grants and contracts revenue. The institutional characteristics' variables that were related to leverage were regional location, Doctoral/Research status, and enrollment. The West region had the strongest relationship with leverage with an adjusted R^2 that explained 12.7% of the variance in leverage followed by the Midwest and Southeast regions, which contributed 9.3% and 5.1% respectively to the variance in leverage. The remaining

226

institutional characteristic, enrollment, had a much smaller adjusted R^2 of 1.5%. Although the

financial factors of property, plant, and equipment, and contracts and grants revenues were

significant, they contributed much smaller percentages to the adjusted R^2. In addition, the

Southeast, Midwest, and West had much higher beta coefficients than the other variables further

indicating a stronger relationship with leverage. These regions were negatively correlated with

leverage. Therefore, institutions located in the Southeast, Midwest, and West regions had lower

leverage than those institutions located in the Northeast.

Although not as predictive as the geographic regions, a statistically significant

relationship between property, plant, and equipment and leverage was a common finding in prior

research studies (Bacon, 1992; Bowman, 2002; McCue & Ozcan, 1992; Smith, 2010; Yan et al.,

2009). Similarly, grants and contracts revenue was not as predictive of leverage but was

statistically significant. Prior research studies of nonprofit entities also found that grant revenues

were statistically significant and positively correlated with leverage. In a study of the arts,

cultural, and humanities sector, Yan et al. (2009) found revenues from government grants were

statistically significant and positively related to leverage. The percentage of revenue from prior

year state and federal aid per student positively influenced the passage of bond referenda in K-12

schools (Strand et al., 1999). In contrast, Smith (2010) found that that support from gifts,

contributions, and grants was negatively related to debt.

Enrollment, as an institutional characteristic variable, was positively related to leverage

and statistically significant, although not a strong predictor. This finding mirrors prior research

studies. In prior debt studies of K-12 schools, total enrollment was statistically significant and

positively related (Bowers et al., 2010a; Denison et al., 2007; Harris & Munley, 2002). In prior

227

higher education studies, full-time equivalent student enrollment also was statistically significant and positively related to debt (McFall, 2000; Moody, 2007).

The significance of property, plant, and equipment as a predictor of leverage is not surprising as debt may be used to purchase property, plant, and equipment. Even though, grants and contracts revenue was found to be predictive of leverage, which is consistent with prior research, it seems unusual that it was the only revenue to be predictive of leverage. Grants and contracts revenues represent the third largest source of revenues for public institutions with only state appropriations and tuition and fees larger in amount. As noted earlier, debt service payments must be made from any legally available source. In general, contracts and grants revenues would be restricted revenue that would not be a source of debt repayment. However, to generate this type of revenue, public institutions may need specific types of research facilities in order to fulfill contract and grant requirements. As such, contracts and grants revenue as a predictor of leverage may suggest that public institutions increase leverage by issuing debt to build research facilities to compete for contracts and grants.

The positive relationship between enrollment and leverage follows the results of prior studies. This finding suggests that institutions with growing enrollment do not have sufficient space to meet current needs. Therefore, debt may be issued to build the facilities needed to deliver services, which in turn may increase leverage.

Recommendations

Recommendations are provided for policy and practice and for future research. These recommendations were derived from the findings and conclusions from the study. First, recommendations for policy and practice will be discussed followed by recommendations for future research.

Recommendations for Policy and Practice

Policymakers and legislators should investigate the facilities' needs of public institutions in their states, the manner in which public institutions are addressing their issues, and the long-term implications of using debt to fund facilities.

This study clearly establishes a strong and positive relationship between property, plant, and equipment and long-term debt. In addition, age of facilities was a predictor of long-term debt. Although not as significant of a predictor, property, plant, and equipment, grants and contracts revenue, and enrollment were positively related to leverage. These positive relationships suggest that public colleges and universities use long-term debt to fund facilities' needs, and this amount has increased from fiscal year 2005 to 2009. This debt may be used to construct additional structures to meet enrollment needs or provide infrastructure to support research. In addition, the negative relationship with age of facilities suggests that institutions may not be using debt to repair deferred maintenance. Yet, state appropriations have become a smaller percentage of revenues generated by public colleges and universities. Any legally available revenue may be used as a source of repayment of debt. If public colleges and universities are not provided the resources for capital purposes, they will be forced to increase tuition and fees and auxiliary revenues to cover debt service payments. This policy decision results in additional costs of higher education that will be passed down to students and their families.

Due to different amounts of long-term debt and leverage by Carnegie Classification and geographic region, administrators should evaluate their institution's debt in relation to peers in their institutional classification and region.

From the descriptive statistics of this study, institutions across each of the geographic regions and institutional types had different amounts of long-term debt and leverage. Doctoral/Research institutions had greater amounts of long-term debt and smaller leverage values on average in comparison to Master's institutions. In addition, Master's and Doctoral/Research institutions in the Northeast had larger leverage values. Debt can be an important resource to fund an institution's strategic plan. While determining the right amount of debt for an institution hinges on several factors including the legal ability to borrow and the cost of debt, administrators should investigate if they are using enough debt to finance their capital structure, or if their debt has become too onerous. A starting point for comparison would include selecting peers within the same Carnegie classification that are located in the same geographic region.

In planning for the use of debt, governing boards of public institutions should ensure that a debt strategy is in place for their institutions that allows the debt to be used strategically and prudently to meet institutional missions.

The study showed that Master's and Doctoral/Research institutions in the Northeast had mean leverage that was greater than the recommended threshold of 50%. A debt strategy would allow governing boards to determine if debt is an appropriate and affordable resource (Blustain, n.d.b). A debt strategy includes analyzing debt capacity, establishing debt benchmarks, developing policies and practices, and ensuring management oversight of debt (Blustain, n.d.b). As noted in the literature review, part of a debt strategy is to compute financial ratios that measure debt capacity to determine the maximum amount of debt that should be incurred and debt affordability to determine if debt payments can be sustained by ongoing operations (Mezzina et al., 2010). These calculations can be incorporated into an institution's debt policy

and practices and evaluated when debt is a proposed resource. For this study, if the data were available, additional financial ratios would have provided the ability to further analyze debt capacity and affordability for institutions with mean leverage greater than the recommended threshold. Once finalized, an institution's debt policy should be approved by an institution's governing board (Blustain et al., n.d.b; Van Gorden, 2006).

The National Center for Education Statistics (NCES) at the U.S. Department of Education, which is responsible for IPEDS, should implement checks and balances that provide assurances that financial data are accurate. Similarly, administrators at U.S. four-year public colleges and universities should develop processes that ensure that data entered into IPEDS are accurate.

The study showed that some data provided by institutions were questionable. For example, an age of facilities that is 28,000 years is simply not plausible. In addition, endowment ratios and property, plant, and equipment ratios should not exceed 1.00. NCES provides a valuable service by managing the postsecondary financial surveys and maintaining the data. These data are open to the public and provides an abundant amount of information that can be used by different groups including but not limited to researchers, higher education administrators, college and university governing boards, state legislators, policymakers, students and their families. However, the data are only valuable if they are accurate. NCES should implement a systematic process that would analyze data submitted for any outliers. Setting up a process that simply calculates ratios as was done in this study would be a starting point.

In turn, administrators at individual institutions and at system offices should ensure that the data submitted are accurate. Individuals who work in the central accounting department with

231

direct knowledge of the data should be assigned to inputting the data. In addition, institutions should have a process to reconcile the IPEDS data to their financial statements.

Recommendations for Future Research

Future studies should investigate how public colleges and universities used their existing long-term debt and the effect of this debt on financial operations.

The current study provides insight into the relationship between financial variables and institutional characteristics but does not establish what event occurred to trigger the need for long-term debt. Similar to studies from prior research (Murphy, 1959; Stewart & Lyon, 1948; Sturtz, 1990), a survey of chief financial officers at public universities could provide descriptive information on how the long-term debt was used (i.e., renovations, deferred maintenance, new construction), the interest rate of the debt, the term of the debt, the source of funds for repayment, and whether institutions had to increase or implement new revenue sources to support the debt. The survey could also capture additional information not provided by IPEDS, which could be used to calculate financial ratios. For example, while interest expense is available in IPEDS, principal payments are not clearly stated. While the change in long-term debt can be computed each year from IPEDS data, the researcher does not know if the change is due to a principal payment of debt, a refinancing of existing debt, or the issuance of new debt. The principal and interest amounts are key values used in the calculation of most financial ratios related to debt. These ratios include the debt burden ratio and debt service coverage ratio. These ratios would provide information about a public institution's capacity for debt and ability to afford debt (Mezzina et al., 2010). However, future accounting changes promulgated by GASB may impact the financial ratios of public institutions, making a trend analysis more challenging, and therefore, future researchers should proceed with caution when calculating ratios.

Future studies should replicate the current study using data in a period of economic prosperity.

This study used a model based on prior research and used data from a fiscal year that was during an economic recession. A study in a year where economic conditions have improved would determine if the model is consistent and if the predictors are the same or if different economic periods have an effect. Moreover, in better economic times, leverage values are more likely to improve because asset values would not be losing value. A study in more prosperous periods also would provide an indication if institutions are really more leveraged with debt or are the economic conditions affecting leverage. In addition, a shift in revenue sources has been occurring in higher education over the past 20 years. Revenues have become more diverse with state appropriations making up a smaller percentage of total revenues. A future study may indicate different predictors of long-term debt as revenues continue to shift and economic times improve.

However, because of the failure to meet the statistical assumption of homogeneity of variances using the ANOVA test for repeated measures, a different methodology may be needed to answer questions regarding differences in long-term debt and leverage by geographic region and Carnegie classification over time. Longitudinal analysis is one methodology that may be considered (Singer & Willett, 2003). Singer and Willett (2003) describe longitudinal analysis as a multi-level model that investigates individual change (within subjects) and interindividual change (between subjects) over time (Bryk & Raudenbush, 1987; Rogosa & Willett, 1985). This methodology allows the researcher to answer two questions concurrently. In the context of this study, the questions would be: a) how does an institution's long-term debt change over time; and b) does long-term debt differ across institutional types and geographic regions? Singer and

Willett (2003) also note that longitudinal analysis requires only a minimum of three years of data, and the data set does not have to be balanced in each year. OLS regression is commonly used in estimating the model; however, other methods may be used depending on the circumstances of the data set. For example, generalized least-squares estimation may be used if autocorrelation and heteroscedasticity exist (Singer & Willett, 2003).

Longitudinal studies of long-term debt by Carnegie classification and geographic region should be conducted.

Due to changes in the finance survey for IPEDS, this study only included five years of data. This study showed that over the five-year period mean debt and leverage increased each year and that differences existed in mean long-term debt and leverage by geographic region and Carnegie classification. A period of longer study would provide insight as to whether debt continues to increase, hold constant, or decrease. While leverage had not exceeded the maximum threshold for most institutional types, the trend was increasing. This type of study would also show if leverage continues to increase after 2009 and, therefore, increases public institutions' risk profile. As noted earlier, a different methodology other than ANOVA such as longitudinal analysis may need to be considered.

Case studies of the long-term debt of different public institutions in the same region should be explored.

This study demonstrated that regional differences exist in long-term debt and leverage. Of particular concern, Doctoral/Research and Master's institutions in the Northeast have much higher leverage than their institutional types in other regions. Understanding why the Northeast region is so leveraged with debt would provide insight to policymakers and administrators. Similarly, studying other regions and types of institutions that are not as encumbered with debt

234

would provide information to policy makers, legislators, and administrators as to what allows universities to have comparatively smaller debt loads.

A qualitative study should be conducted to understand the decision-making process for issuing debt and how this process links to an institution's strategic plan.

Ideally, borrowing funds should assist an institution in meeting its goals as outlined in a strategic plan. In addition, institutions should have a debt policy and process to determine if they can afford the debt and whether debt capacity exists. A qualitative study involving chief financial officers at public institutions would be helpful in determining if institutions follow their policies and recommended processes. In addition, this type of study could determine if the debt issuance process links to the strategic plan and identify best practices used for managing debt.

Conceptual Framework Significance

The conceptual framework for this study was based on the economic concept of utility maximization. Utility or the contribution that public colleges and universities make to society (Massy, 1996b) is based on financial constraints (Cheslock, 2006; Hughes, 2006). Because decision-makers maximize goals based on available resources (Paulsen and Toutkoushian, 2006), utility maximization was inferred by examining financial and nonfinancial factors that relate to long-term debt and leverage. In particular, the financial factors included those resources— revenues and assets— that enable a college or university to borrow funds to meet its mission and support institutional strategic plans. In addition, nonfinancial factors, such as institutional characteristics, were studied because public colleges and universities have varying objectives depending on their mission and location.

Utility maximization was evident in the strong relationship between long-term debt and property, plant, and equipment, which are assets. Assets, such as a dormitory, have the ability to

generate revenue that may be used to repay debt. In turn, these assets aid the university in fulfilling its mission. Although not as strong of a predictor, geographic region had the strongest relationship with leverage. In addition, the amount of utility that was maximized or debt that was borrowed was based on different institutional classifications of public institutions as the study showed that larger institutions like Doctoral/Research institutions held more debt than Master's institutions, and Master's institutions held more debt than Baccalaureate institutions. Finally, public institutions as a whole were able to generate additional utility from existing assets from 2005 to 2009 when long-term debt increased significantly while leverage increased at a substantially lower rate.

Concluding Remarks

This study filled a gap in existing literature related to long-term debt and leverage in public colleges and universities in two ways. First, more current financial data were used and included a period during an economic downturn. The study included data from 2005 to 2009, which included an economic recession that occurred from 2007 to 2009. Second, the relationship between long-term debt and leverage was evaluated by using financial factors and institutional characteristics that previously had not been studied in a higher education setting. This study also focused on differences in long-term debt and leverage according to fiscal year, Carnegie classification, and geographic region.

From fiscal year 2005 through 2009, both long-term debt and leverage increased. However, leverage increased at a slower pace, which indicates that public universities were able to use existing assets to offset the increase in liabilities associated with the additional long-term debt. This study also found that differences existed in long-term debt by Carnegie classification. Doctoral/Research institutions had more long-term debt than Master's institutions, and Master's

236

institutions had more long-term debt than Baccalaureate institutions.   Although Master's institutions did not have the greatest amount of long-term debt, they had greater amounts of mean leverage than Doctoral/Research and Baccalaureate institutions in all fiscal years. Additionally, Master's and Doctoral/Research institutions located in the Northeast had mean leverage in all five years that exceeded recommended thresholds. Accordingly, these institutions may have limited operational flexibility and less ability to issue future debt to further their strategic plans.

In evaluating the relationship between long-term debt and various financial factors and institutional characteristics, the variable with the strongest relationship with long-term debt was property, plant, and equipment. Approximately 65.9% of the variance in long-term debt was explained by property, plant, and equipment. This relationship is not surprising as institutions use long-term debt to construct or renovate buildings, fix deferred maintenance, and purchase land and equipment. In comparison, the leverage model showed that geographic regions had the strongest relationship with leverage. Collectively, the West, Midwest, and Southeast regions accounted for 27.1% of the variance in leverage.

The strong relationship between property, plant, and equipment and long-term debt indicates that public colleges and universities need long-term debt to meet their facilities' needs. Accordingly, policymakers and legislators need to understand what the facilities' needs of public colleges and universities are and the financial implications of using long-term debt to fund facilities. Long-term debt is a long-term commitment that requires an annual source of repayment. With deteriorating state support, public colleges and universities must self-generate the funds to repay long-term debt by increasing tuition and fees and raising room and board

237

rates. Therefore, carrying long-term debt has the potential to affect the cost of higher education and consequently, the amount that students and their families have to pay for a higher education.

Using debt prudently can be managed by implementing a debt strategy that is overseen by an institution's governing board. With board oversight, policies and practices can be established by university management to assist with the strategic management of debt. Utilizing this study as a starting point, administrators could benchmark the level of debt and leverage carried by their institution to their peers within the same Carnegie classification and geographic region. While holding debt may have a negative connotation, it can also be viewed as a resource that when used wisely can help public colleges and universities meet the needs of their students. Understanding the implications of using debt to achieve institutional goals of public colleges and universities should be a priority of legislators, governing boards, and administrators.

REFERENCES

American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, H.R. 1 Stat. (2009).

Ang, A., Bhansali, V., & Yuhang, X. (2010). Build america bonds. *Journal of Fixed Income, 20*(1), 67-73.

Augustine, J. H. (2002). Take a strategic direction with debt. *Business Officer, 36*(3), 16-26.

Bacon, P. W. (1992). Do capital structure theories apply to nonprofit hospitals? *Journal of Midwest Finance Association, 21*, 86-90.

Baskin, J. (1989). An empirical investigation of the pecking order hypothesis. *Financial Management, 18*(1), 26-35.

Baum, S., & Ma, J. (2010). Trends in college pricing 2010. Retrieved from http://trends.collegeboard.org/college_pricing/

Benson, E. D., & Marks, B. R. (2005). "Robin Hood" and Texas school district borrowing costs. *Public Budgeting & Finance, 25*(2), 84-105. doi: 10.1111/j.0275-1100.2005.00362.x

Blumenstyk, G. (2009, April 10). Debt bomb is ticking loudly on campuses. *The Chronicle of Higher Education*. Retrieved from http://chronicle.com/section/Home/5

Blumenstyk, G. (2010, March 9). Grassley: Colleges' endowment spending is still on the front burner. *The Chronicle of Higher Education*. Retrieved from http://chronicle.com/section/Home/5/

Blustain, H., Bruszewski, R. V., Daigneau, W., Roloff, C., & Ledbetter, R. (n.d.a). *Facilities management* (7th ed.). Washington, D.C.: National Association of College and University Business Officers.

Blustain, H., Cobine, S. T., Gore, E. S., Palmucci, J. A., Townsley, M. K., & Gorden, J. V. V. (n.d.b). *Strategic debt management* (7th ed.). Washington, D.C.: National Association of College and University Business Officers.

Bodie, Z., Kane, A., & Marcus, A. J. (2004). *Investments* (6th ed.). New York: McGraw-Hill/Irwin.

Bolten, S. E., & Stansell, S. R. (1978-1979). School bond ratings and the cost of capital. *Review of Business and Economic Research, 14*(2), 54-67.

Bowers, A. J., Metzger, S. A., & Militello, M. (2010a). Knowing the odds: Parameters that predict passing or failing school district bonds. *Educational Policy, 24*(2), 398-420.

Bowers, A. J., Metzger, S. A., & Militello, M. (2010b). Knowing what matters: An expanded study of school bond elections in Michigan, 1998-2006. *Journal of Education Finance, 35*(4), 374-396.

Bowman, W. (2002). The uniqueness of nonprofit finance and the decision to borrow. *Nonprofit Management & Leadership, 12*(3), 293-311.

Brainard, J. (2008, July 25). Sen. Grassley pressures universities on science conflicts and financial aid. *The Chronicle of Higher Education*. Retrieved from http://chronicle.com/section/Home/5

Bruszewski, R. V., Jung, S., & Turner, J. (2010). Facilities funding thaws. *Business Officer*. Retrieved from http://www.nacubo.org/Business_Officer_Magazine/Magazine_Archives/January_2010/Facilities_Funding_Thaws.html

Bryce, H. J. (2000). *Financial and strategic management for nonprofit organizations: A comprehensive reference to legal, financial, management, and operations rules and guidelines for nonprofits* (3rd ed.). San Francisco: Jossey-Bass Inc.

Bryk, A. S., & Raudenbush, S. W. (1987). Application of hierarchical linear models to assessing change. *Psychological Bulletin, 101*(1), 147-158. doi: 10.1037/0033-2909.101.1.147

Bunch, B. S., & Smith, T. (2002). The viability of lease purchases as a means for funding school facilities. *Journal of Education Finance, 27*(4), 1049-1065.

Carroll, D. A., & Stater, K. J. (2009). Revenue diversification in nonprofit organizations: Does it lead to financial stability? [Article]. *Journal of Public Administration Research & Theory, 19*(4), 947-966. doi: 10.1093/jopart/mun025

Caruthers, J. K., & Layzell, D. T. (1999). Campus master planning and capital budgeting. *New Directions for Higher Education, 1999*(107), 73-81. doi: 10.1002/he.10707

Chabotar, K. J. (1989). Financial ratio analysis comes to nonprofits. *The Journal of Higher Education, 60*(2), 188-208.

Chang, C. F., & Tuckman, H. P. (1994). Revenue diversification among nonprofits. *Voluntas, 5*(3), 273-290. doi: DOI: 10.1007/BF02354036

Cheslock, J. J. (2006). Applying economics to institutional research on higher education revenues. *New Directions for Institutional Research, 2006*(132), 25-41. doi: 10.1002/ir.194

Cheslock, J. J., & Gianneschi, M. (2008). Replacing state appropriations with alternative revenue sources: the case of Voluntary Support.(Report). *Journal of Higher Education, 79*(2), 208(222).

Cirino, A. M. (2004). Alleviating the housing headache. *Business Officer*. Retrieved from http://www.nacubo.org/Business_Officer_Magazine/Magazine_Archives/June_2004/Alleviating_the_Housing_Headache.html

Clark, B. R. (2003). Sustaining change in universities: Continuities in case studies and concepts. *Tertiary Education and Management, 9*(2), 99-116. doi: 10.1023/A:1023538118918

Crampton, F. E., Thompson, D. C., & Vesely, R. S. (2004). The forgotten side of school finance equity: The role of infrastructure funding in student success. *NASSP Bulletin, 88*(640), 29-56.

Denison, D. V. (2009). Which nonprofit organizations borrow? *Public Budgeting & Finance, 29*(3), 110-123. doi: 10.1111/j.1540-5850.2009.00939.x

Denison, D. V., Yan, W., & Zhao, Z. (2007). Is management performance a factor in municipal bond credit ratings? The case of Texas school districts. *Public Budgeting & Finance, 27*(4), 86-98. doi: 10.1111/j.1540-5850.2007.00889.x

Dennison, G. M. (2003). Privatization: An unheralded trend in public higher education. *Innovative Higher Education, 28*(1), 7-20.

DesJardins, S. L., & Bell, A. (2006). Using economic concepts to inform enrollment management. *New Directions for Institutional Research, 2006*(132), 59-74. doi: 10.1002/ir.196

Desrochers, D. M., Lenihan, C. M., & Wellman, J. V. (2010). Trends in college spending 1998-2008: Where does the money come from? Where does it go? What does it buy? Retrieved from http://www.deltacostproject.org/analyses/delta_reports.asp

Dickmeyer, N. (1992). Budgeting (3rd ed., pp. 243-280). Washington, D.C.: National Association of College and University Business Officers.

Eden, C. G. (1987). Tax exempt leasing for colleges and universities. *New Directions for Higher Education, 1987*(58), 41-51.

Ehrenberg, R. G. (2000). Financial forecasts for the next decade. [Feature ABI: Y FTI: Y; P]. *The Presidency, 3*(2), 30-35.

Fabozzi, F. J. (2002). Municipal securities. In F. J. Fabozzi (Ed.), *The handbook of financial instruments,* (pp. 229-250). Hoboken: John Wiley & Sons, Inc.

Fain, P. (2009, April 22). Trustee survey paints grim budget picture for public universities. *The Chronicle of Higher Education*. Retrieved from http://chronicle.com/section/Home/5

Felix, F. J. (1979). *Capital facility financing alternatives in higher education* (Unpublished doctoral dissertation). The University of Arizona, Tucson, Arizona.

Gall, J. P., Gall, M. D., & Borg, W. R. (2005). *Applying educational research: A practical guide* (5th ed.). Boston, MA: Pearson Education, Inc.

Gall, M. D., Gall, J. P., & Borg, W. R. (2003). *Educational research: An introduction* (7th ed.). Boston, MA: Pearson Education, Inc.

Gamkhar, S., & Koerner, M. (2002). Capital financing of schools: A comparison of lease purchase revenue bonds and general obligation bonds. *Public Budgeting & Finance, 22*(2), 21.

Gamst, G., Meyers, L. S., & Guarino, A. J. (2008). *Analysis of Variance Designs: A Conceptual and Computational Approach with SPSS and SAS*. New York, NY: Cambridge University Press.

Gentry, W. M. (2002). Debt, investment and endowment accumulation: the case of not-for-profit hospitals. *Journal of Health Economics, 21*(5), 845-872. doi: 10.1016/s0167-6296(02)00056-5

Gist, W. E. (1992). The market for school district bonds: An empirical analysis of Texas independent school districts. *Southwest Journal of Business and Economics, 9*(1), 31-39.

Gould, W. S. (1986). *Debt issues in the nonprofit private sector of the education industry* (Unpublished doctoral dissertation). The University of Rochester, Rochester, New York.

Hair, J. F., Jr., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). Upper Saddle River, NJ: Prentice Hall.

Hamill, M. (2011). 111th congress closes with compromises. *Business Officer, 44*(6), 5.

Harris, D., Manns, D., & Katsinas, S. (2012). A study of state tax appropriations for capital needs in U.S. public higher education. *Facilities Manager*, 25-29. Retrieved from http://www.appa.org/library/more.cfm?biblio_id=3376

Harris, M. H., & Munley, V. G. (2002). The sequence of decisions facing school district officials in the bond issuing process: A multistage model. *Journal of Education Finance, 28*(1), 113-131.

Hearn, J. C. (2006). Alternative revenue sources. In D. M. Priest & E. P. St. John (Eds.), *Privatization and public universities* (pp. 87-108). Bloomington: Indiana University Press.

Hoffman, A. E. (1993). Federal funding upheaval: The impact on blacks *The Journal of Blacks in Higher Education* (2), 123-126.

Hollowell, D., Middaugh, M., & Sibolski, E. (2006). Integrating higher education planning and assessment: A practical guide.   Retrieved from www.scup.org

Hopkins, B. R. (2004). *The law of tax-exempt organizations planning guide: Strategies and commentaries*. Hoboken, N.J.: John Wiley & Sons, Inc. .

Hopusch, E. L. (1970). *Case studies on long-term debt financing by three state universities in the rocky mountain region* (Unpublished doctoral dissertation). University of Colorado at Boulder, Boulder, Colorado.

Hornfischer, D. (1997). The strategic use of debt financing. *Planning for Higher Education, 25*, 16-21.

Hovey, H. A. (1999). State spending for higher education in the next decade: The battle to sustain current support (Report #99-3). San Jose, CA: National Center for Public Policy and Higher Education (ERIC Document Reproduction Service No. ED439633).

Hsueh, L. P., & Kidwell, D. S. (1988). The impact of a state bond guarantee on state credit markets and individual municipalities. *National Tax Journal, 41*(2), 235.

Hughes, P. (2006). The economics of nonprofit organizations. *Nonprofit Management and Leadership, 16*(4), 429-450. doi: 10.1002/nml.119

Integrated Postsecondary Education Data System. (n.d.a). IPEDS Data Center, from http://nces.ed.gov/ipeds/datacenter/SelectVariables.aspx?stepId=1

Integrated Postsecondary Education Data System. (n.d.b). IPEDS Survey Components and Data Collection and Dissemination Cycle, from http://nces.ed.gov/ipeds/resource/survey_components.asp

Integrated Postsecondary Education Data System. (n.d.c). Online glossary. Retrieved from http://nces.ed.gov/ipeds/glossary/?charindex=G

Integrated Postsecondary Education Data System. (n.d.d). Statutory Requirements for Reporting IPEDS Data

 from http://nces.ed.gov/ipeds/resource/survey_components.asp

Internal Revenue Service. (2012). Exemption organizations select check. Retrieved from http://www.irs.gov/charities/article/0,,id=249767,00.html

Israel, P. E. (2008). Summary of federal tax requirements for tax-exempt bonds. In S. G. Feldstein & F. J. Fabozzi (Eds.), *The Handbook of Municipal Bonds* (pp. 91-125). Hoboken, NJ: John Wiley & Sons, Inc.

Jegers, M., & Verschueren, I. (2006). On the capital structure of non-profit organisations: An empirical study for Californian organisations. *Financial Accountability & Management, 22*(4), 309-329. doi: 10.1111/j.1468-0408.2006.00428.x

Johnson, C., & Maiden, J. (2010). An examination of capital outlay funding mechanisms in Oklahoma. *Journal of Education Finance, 36*(1), 1-21.

Johnstone, D. B. (2001). Response to austerity: The imperatives and limitations of revenue diversification in higher education. Retrieved from http://www.teacherscollege.edu/centers/coce/detail.asp?Id=Publications&Info=%28S%29+Presentations+in+Seminar+on+Chinese+Education+at+Teachers+College

Kaiser, H. H. (1996). *A foundation to uphold: A study of facilities conditions at U.S. colleges and universities*. Alexandria, VA: Association of Physical Plant Administrators.

Kaiser, H. H. (2001). The value of comprehensive capital planning. *Planning for Higher Education, 29*(4), 5-15.

Katsinas, S. G., & Tollefson, T. A. (2009). *Funding and access issues in public higher education: A community college perspective. Findings from the 2009 survey of the National Council of State Directors of Community Colleges*. Retrieved from http://uaedpolicy.weebly.com/uploads/6/1/7/1/6171842/uncertain_report.pdf

King, G. A., Anderson, R. E., Cyganowski, D. M., & Hennigan, P. J. (1994). *NACUBO guide to issuing and managing debt*. Washington, D.C.: National Association of College and University Business Officers.

Klein, E. (1992). Debt financing and management (3rd ed., Vol. 2, pp. 509-586). Washington, DC: National Association of College and University Business Officers.

Lapovsky, L. (2007). Critical endowment policy issues. *New Directions for Higher Education, 2007*(140), 99-110. doi: 10.1002/he.284

Layzell, D. T., & Caruthers, J. K. (2002). Higher education costs: Concepts, measurement issues, data sources, and uses. *Planning for Higher Education, 30*(3), 6-14.

Libby, P. A. (1984). *Debt financing at major research universities* (Unpublished doctoral dissertation). University of Michigan, Ann Arbor, Michigan.

Libby, P. A. (1985). Historical perspectives on university debt financing. *Creative Financing for Higher Education Facilities and Equipment* (pp. 1-16). Denver: State Higher Education Executive Officers.

Lomax, R. G. (2007). *An introduction to statistical concepts* (2nd ed.). Mahwah, N.J.: Lawrence Erlbaum Associates, Inc.

Long, J. D., & Weimer, A. M. (1957). *Summary of a research report on financing of college and university student permanent housing*. Washington, DC: American Council on Education.

Magnus, S. A., Smith, D. G., & Wheeler, J. R. C. (2004a). The association of debt financing with not-for-profit hospitals' provision of uncompensated care. *Journal of Health Care Finance, 30*(4), 46-58.

Magnus, S. A., Wheeler, J. R., & Smith, D. G. (2004b). The association of debt financing with not-for-profit hospitals' operational and capital-investment efficiency. *Journal of Health Care Finance, 30*(4), 33-45.

Mankiw, N. G. (2002). *Macroeconomics* (5th ed.). New York, NY: Worth Publishing.

Manns, D. A., & Katsinas, S. G. (2006). Capital budgeting practices in public higher education. *Facilities Manager*. Retrieved from http://www.appa.org/FacilitiesManager/article.cfm?ItemNumber=2551&parentid=2540

Mason, P. M., & Alfano, A. (1986). Innovations in university finance: A growing necessity, and intelligent too! *Research in Higher Education, 24*(4), 419-432.

Massy, W. F. (1996a). Optimizing capital decisions. In W. F. Massy (Ed.), *Resource allocation in higher education* (pp. 115-140). Ann Arbor: The University of Michigan Press.

Massy, W. F. (1996b). Productivity issues in higher education. In W. F. Massy (Ed.), *Resource Allocation in Higher Education* (pp. 49-86). Ann Arbor: The University of Michigan Press.

Matthews, A. V., & Cook, D. M. (1997). Project financing. In D. P. Cesari (Ed.), *Part IV: Facilities Planning, Design, Construction, and Administration* (3rd ed., pp. 1681-1697). Alexandria, VA: APPA: The Association of Higher Education Facilities Officers.

McCue, M. J., & Ozcan, Y. A. (1992). Determinants of capital structure. *Hospital & Health Services Administration, 37*(3), 333-346.

McFall, D. R. (2000). *The debt management utility of creditworthiness ratio analysis of level six universities as accredited by the Southern Association of Colleges and Schools* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3000253)

McPherson, P., & Shulenburger, D. (2010). Understanding the cost of public higher education. *Planning for Higher Education, 38*(3), 15-24.

Mezzina, L., Prager, F., Salluzzo, R., & Tahey, P. (2010). *Strategic financial analysis for higher education: Identifying, measuring & reproting financial risks* (7th ed.): Prager, Sealy & Co., LLC; KPMG LLP; and Attain LLC.

Millett, J. D. (1952). Financing higher education in the United States (pp. xix, 503 p.). New York: Columbia University Press.

Mincke, B. D. (2008). How to analyze higher education bonds. In S. G. Feldstein & F. J. Fabozzi (Eds.), *The Handbook of Municipal Bonds* (pp. 1055-1076). Hoboken, NJ: John Wiley & Sons, Inc.

Moody, M. (2007). Do state debt policies and oversight affect how much public universities borrow? *Municipal Finance Journal, 28*(3), 1-17.

Moody, M. J. (2006). *Three essays on public university debt management* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3236104)

Moody, M. J. (2008). State debt policies and the credit ratings of public universities. *Public Finance Review, 36*(3), 287-307. doi: 10.1177/1091142107311460

Moore, R. S., & Field, D. W. (1965). A status report: The higher education facilities act. *The Phi Delta Kappan, 46*(6), 277-279.

Muijs, D. (2004). *Doing quantitative research in education with SPSS*. Los Angeles: SAGE Publications Inc.

Mumper, M. (2001). State efforts to keep public colleges affordable in the face of fiscal stress. In M. B. Paulsen & J. C. Smart (Eds.), *The Finance of Higher Education: Theory, Research, Policy & Practice* (pp. 321-354). New York: Agathon Press.

Murphy, J. M. (1959). *The use of long-term debt by state supported institutions of higher education in the United States, 1947-1953* (Unpublished doctoral dissertation). Indiana University, Bloomington, Indiana.

National Association of College and University Business Officers. (2006). *Essentials of college and university accounting: A reference companion to NACUBO's online self-study course*. Washington, DC: Author.

National Association of College and University Business Officers and Commonfund Institute. (2010). 2009 NACUBO-Commonfund Study of Endowments.

National Association of College and University Business Officers and Commonfund Institute. (2011). 2010 NACUBO-Commonfund study of endowments   Retrieved from http://www.nacubo.org/Products/Online_Research_Products/2010_NACUBO_-_Commonfund_Study_of_Endowments.html

National Bureau of Economic Research. (2010). Retrieved from US Business Cycle Expansions and Contractions website: http://www.nber.org/cycles/cyclesmain.html

National Center for Charitable Statistics. (2011). National taxonomy of exempt entities. Retrieved from http://nccs.urban.org/classification/NTEE.cfm.

Okunade, A. A. (2004). What factors influence state appropriations for public higher education in the United States? *Journal of Education Finance, 30*(2), 123-138.

Paulsen, M. B., & Toutkoushian, R. K. (2006). Overview of economic concepts, models, and methods for institutional research. *New Directions for Institutional Research, 2006*(132), 5-24. doi: 10.1002/ir.193

Plummer, E. (2006). The effects of state funding on property tax rates and school construction. [Article]. *Economics of Education Review, 25*(5), 532-542. doi: 10.1016/j.econedurev.2005.04.002

Posey, R. B. (1980). *An investigation of the differences in bond disclosures made by public and private colleges* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 8103324)

Potter, R. (2006). Public higher education capital funding: A survey of 37 states. Austin: Texas Council of Public University Presidents and Chancellors: Retrieved from http://www.cpupc.org.

Powell, D. B. (1992) Auxiliary enterprises and other services. *Vol. 3. College and University Business Administration* (5th ed., pp. 1193-1273). Washington, D.C.: National Association of College and University Business Officers.

Robbins, M. D., & Simonsen, B. (2010). Build america bonds. *Municipal Finance Journal, 30*(4), 53-77.

Rogosa, D. R., & Willett, J. B. (1985). Understanding correlates of change by modeling individual differences in growth. *Psychometrika, 50*, 203-228.

Russell, J. D. (1954). The finance of higher education (2nd ed., pp. 416 p.). Chicago: University of Chicago Press.

Sabo, S. R. (2006). Tapping partnership potential. *Business Officer*. Retrieved from http://www.nacubo.org/Business_Officer_Magazine/Magazine_Archives/November_200 6/Tapping_Partnership_Potential.html

Salluzzo, R., Lipnick, J., DeBose, A., Cowen, C., Prager, F., Mezzina, L., & Tahey, P. (2005). *Strategic financial analysis for higher education*: Prager, Sealy & Co., LLC; KPMG LLP; and BearingPoint Inc.

Shultz, J. A. (2000). *Long-term debt in college and university institutional finance* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 9961162)

Sielke, C. (2001). Funding school infrastructure needs across the states. *Journal of Education Finance, 27*(2), 653-662.

Singer, J. D., & Willett, J. B. (2003). *Applied longitudinal data analysis: Modeling change and event occurrence*. New York, NY: Oxford University Press, Inc.

Smith, G. P. (2010). What are the capital structure determinants for tax-exempt organizations? *Financial Review, 45*(3), 845-872. doi: 10.1111/j.1540-6288.2010.00274.x

Snyder, T. D., & Dillow, S. A. (2010). *Digest of Higher Education Statistics, 2009* (NCES Number: 2010-013). Retrieved from http://nces.ed.gov/programs/digest/2009menu_tables.asp

Snyder, T. D., & Dillow, S. A. (2011). *Digest of Higher Education Statistics, 2010* (NCES Number: 2011-015). Retrieved from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2011015

Speck, B. W. (2010). The growing role of private giving in financing the modern university. *New Directions for Higher Education, 2010*(149), 7-16. doi: 10.1002/he.376

Spitz, W. T. (1999). Investment policies for college and university endowments. *New Directions for Higher Education, 1999*(107), 51-59.

State Higher Education Executive Officers. (2011). State higher education finance FY 2010. Retrieved from http://www.sheeo.org/finance/shef/SHEF_FY10.pdf

Stevens, G. L., & Wood, R. P. (1998). Comparative financing costs for competitive and negotiated Pennsylvania school district bonds. *Journal of Public Budgeting, Accounting & Financial Management, 9*(4), 529-551.

Stewart, R. B., & Lyon, R. (1948). *Debt financing of plant additions for state colleges and universities*. West Lafayette, IN: Purdue Research Foundation.

Strand, C. A., Giroux, G., & Thorne, J. (1999). A public choice analysis of bond referenda and capital outlays of Texas school districts. *Journal of Public Budgeting, Accounting & Financial Management, 11*(4), 509-532.

Stripling, J. (2010, June 16). Moody's probes colleges on cash. Retrieved from http://www.insidehighered.com/layout/set/print/news/2010/06/16/moodys

Stump, M. (2002). Long-term debt at public four-year colleges and universities. *Educational Considerations, 30*(1), 19-24.

Sturtz, C. F. (1990). *An examination of the implications of creative financing mechanisms upon the debt management program of senior public research universities* (Unpublished doctoral dissertation). University of Maryland College Park, College Park, Maryland.

Suyderhoud, J. P. (1994). State-local revenue diversification, balance, and fiscal performance. *Public Finance Quarterly, 22*(2), 168-194.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston: Pearson Education, Inc. .

Tahey, P., Salluzzo, R., Prager, F., Mezzina, L., & Cowen, C. (2010). *Strategic financial analysis for higher education: Identifying, measuring, & reporting financial risks* (7th ed.): Prager, Sealy & Co., LLC; KPMG LLP; and Attain LLC.

Taylor, J. (1949). College Revenue Bonds to Finance Self-Supporting Projects. *Journal of Finance, 4*(4), 328-341.

Toutkoushian, R. K. (2003). Weathering the storm: Generating revenues for higher education during a recession. *New Directions for Institutional Research, 2003*(119), 27-40. doi: 10.1002/ir.82

Tuby, K. S. (2011). 2011 Outlook for U.S. Higher Education (Report No.: 129939): Moody's Investors Service.

U. S. Government Accountability Office. (2006). *Capital financing: Department management improvements could enhance education's loan program for historcially black colleges and universities (GAO-07-64).* Retrieved from http://www.gao.gov/new.items/d0764.pdf.

Van Gorden, J. (2006). Debt rules. *Business Officer*. Retrieved from http://www.nacubo.org/Business_Officer_Magazine/Magazine_Archives/March_2006/Debt_Rules.html

Wedig, G., Sloan, F. A., Hassan, M., & Morrisey, M. A. (1988). Capital structure, ownership, and capital payment policy: The case of hospitals. *Journal of Finance, 43*(1), 21-40.

Wedig, G. J. (1994). Risk, leverage, donations and dividends-in-kind: A theory of nonprofit financial behavior. *International Review of Economics & Finance, 3*(3), 257-278. doi: Doi: 10.1016/1059-0560(94)90011-6

Wedig, G. J., Hassan, M., & Morrisey, M. A. (1996). Tax-exempt debt and the capital structure of nonprofit organizations: An application to hospitals. *Journal of Finance, 51*(4), 1247-1283.

Wedig, G. J., Hassan, M., Van Horn, R. L., & Morrissey, M. A. (1998). Hospital affiliation and capital structure: How will capital markets guide health care restructuring? *Journal of Public Budgeting, Accounting and Financial Management, 10*(3), 413-440.

Weerts, D. J., & Ronca, J. M. (2006). Examining differences in state support for higher education: A comparative study of state appropriations for research I universities. *Journal of Higher Education, 77*(6), 935-967.

Welch, I. (2010). Common problems in capital structure research: The financial-debt-to-asset ratio, and issuing activity vs. leverage changes. *SSRN eLibrary*. Retrieved from http://ssrn.com/paper=931675

Wellman, J. V., Desrochers, D. M., & Lenihan, C. M. (2008). The growing imbalance: Recent trends in U.S. postsecondary education finance. Retrieved from http://www.deltacostproject.org/analyses/delta_reports.asp

Wilson, R. (2008, October 10). As credit crisis chills campuses, worries mount. *The Chronicle of Higher Education*. Retrieved from http://chronicle.com/section/Home/5

Woeppel, S., & Gusta, M. (2010). U.S. Public University Medians for Fiscal Year 2009 Show Tuition Pricing Power Amidst Rising Challenges (Report No.: 127197): Moody's Investors Service.

Wolverton, B. (2008, March 14). Colleges' debt Is fed by rising bond rates. *Chronicle of Higher Education, 54*(27), A1. Retrieved from http://chronicle.com/section/Home/5/

Yan, W., Denison, D. V., & Butler, J. S. (2009). Revenue structure and nonprofit borrowing. *Public Finance Review, 37*(1), 47-67.

Zimmer, R., & Jones, J. T. (2005). Unintended consequence of centralized public school funding in Michigan education. *Southern Economic Journal, 71*(3), 534-545.

Zumeta, W. (2004). State higher education financing: Demand imperatives meet structural, cyclical, and political constraints. In E. P. St. John & M. D. Parsons (Eds.), *Public Funding of Higher Education: Changing Contexts and New Rationales* (pp. 79-107).

APPENDICES

APPENDIX A

Institutions included to answer Research Questions One, Two, and Three shown in order by state and then alphabetized by institution

Unit ID	Institution	City	State	Geographic Region	Simplified Carnegie Classification
102553	University of Alaska Anchorage	Anchorage	AK	West	Master's
102614	University of Alaska Fairbanks	Fairbanks	AK	West	Doctoral/Research
102632	University of Alaska Southeast	Juneau	AK	West	Master's
100654	Alabama A & M University	Portales	AL	Southeast	Master's
100724	Alabama State University	Montgomery	AL	Southeast	Master's
100812	Athens State University	Athens	AL	Southeast	Baccalaureate
100858	Auburn University	Auburn University	AL	Southeast	Doctoral/Research
100830	Auburn University at Montgomery	Montgomery	AL	Southeast	Master's
101480	Jacksonville State University	Jacksonville	AL	Southeast	Master's
100751	The University of Alabama	Tuscaloosa	AL	Southeast	Doctoral/Research
102368	Troy University	Troy	AL	Southeast	Master's
100663	University of Alabama at Birmingham	Birmingham	AL	Southeast	Doctoral/Research
100706	University of Alabama in Huntsville	Huntsville	AL	Southeast	Doctoral/Research
101709	University of Montevallo	Montevallo	AL	Southeast	Master's
101879	University of North Alabama	Florence	AL	Southeast	Master's
102094	University of South Alabama	Mobile	AL	Southeast	Master's
101587	University of West Alabama	Livingston	AL	Southeast	Master's
106458	Arkansas State University-Main Campus	State University	AR	Southeast	Master's
106467	Arkansas Tech University	Russellville	AR	Southeast	Master's
107071	Henderson State University	Arkadelphia	AR	Southeast	Master's
107983	Southern Arkansas University Main Campus	Magnolia	AR	Southeast	Baccalaureate
106397	University of Arkansas	Fayetteville	AR	Southeast	Doctoral/Research
106245	University of Arkansas at Little Rock	Little Rock	AR	Southeast	Doctoral/Research
106485	University of Arkansas at Monticello	Monticello	AR	Southeast	Master's
106412	University of Arkansas at Pine Bluff	Pine Bluff	AR	Southeast	Baccalaureate
108092	University of Arkansas-Fort Smith	Fort Smith	AR	Southeast	Baccalaureate
106704	University of Central Arkansas	Conway	AR	Southeast	Master's
104151	Arizona State University	Tempe	AZ	West	Doctoral/Research
105330	Northern Arizona University	Flagstaff	AZ	West	Doctoral/Research
104179	University of Arizona	Tucson	AZ	West	Doctoral/Research
111188	California Maritime Academy	Vallejo	CA	West	Baccalaureate
110422	California Polytechnic State University-San Luis Obispo	San Luis Obispo	CA	West	Master's
110529	California State Polytechnic University-Pomona	Pomona	CA	West	Master's
110486	California State University-Bakersfield	Bakersfield	CA	West	Master's
441937	California State University-Channel Islands	Camarillo	CA	West	Baccalaureate
110538	California State University-Chico	Chico	CA	West	Master's
110547	California State University-Dominguez Hills	Carson	CA	West	Master's
110574	California State University-East Bay	Hayward	CA	West	Master's
110556	California State University-Fresno	Fresno	CA	West	Master's
110565	California State University-Fullerton	Fullerton	CA	West	Master's
110583	California State University-Long Beach	Long Beach	CA	West	Master's
110592	California State University-Los Angeles	Los Angeles	CA	West	Master's
409698	California State University-Monterey Bay	Seaside	CA	West	Baccalaureate
110608	California State University-Northridge	Northridge	CA	West	Master's
110617	California State University-Sacramento	Sacramento	CA	West	Master's
110510	California State University-San Bernardino	San Bernardino	CA	West	Master's

252

Unit ID	Institution	City	State	Geographic Region	Simplified Carnegie Classification
366711	California State University-San Marcos	San Marcos	CA	West	Master's
110495	California State University-Stanislaus	Turlock	CA	West	Master's
115755	Humboldt State University	Arcata	CA	West	Master's
122597	San Francisco State University	San Francisco	CA	West	Master's
122755	San Jose State University	San Jose	CA	West	Master's
123572	Sonoma State University	Rohnert Park	CA	West	Master's
126182	Adams State College	Alamosa	CO	West	Master's
126775	Colorado School of Mines	Golden	CO	West	Doctoral/Research
126818	Colorado State University	Fort Collins	CO	West	Doctoral/Research
128106	Colorado State University-Pueblo	Pueblo	CO	West	Baccalaureate
127185	Fort Lewis College	Durango	CO	West	Baccalaureate
127556	Mesa State College	Grand Junction	CO	West	Baccalaureate
126580	University of Colorado at Colorado Springs	Colorado Springs	CO	West	Master's
126614	University of Colorado Boulder	Boulder	CO	West	Doctoral/Research
126562	University of Colorado Denver	Denver	CO	West	Doctoral/Research
127741	University of Northern Colorado	Greeley	CO	West	Doctoral/Research
128391	Western State College of Colorado	Gunnison	CO	West	Baccalaureate
128771	Central Connecticut State University	New Britain	CT	Northeast	Master's
130934	Delaware State University	Dover	DE	Northeast	Master's
133650	Florida Agricultural and Mechanical University	Tallahassee	FL	Southeast	Doctoral/Research
133669	Florida Atlantic University	Boca Raton	FL	Southeast	Doctoral/Research
433660	Florida Gulf Coast University	Fort Myers	FL	Southeast	Master's
133951	Florida International University	Miami	FL	Southeast	Doctoral/Research
134097	Florida State University	Tallahassee	FL	Southeast	Doctoral/Research
262129	New College of Florida	Sarasota	FL	Southeast	Baccalaureate
138354	The University of West Florida	Pensacola	FL	Southeast	Doctoral/Research
132903	University of Central Florida	Orlando	FL	Southeast	Doctoral/Research
134130	University of Florida	Gainesville	FL	Southeast	Doctoral/Research
136172	University of North Florida	Jacksonville	FL	Southeast	Master's
137351	University of South Florida-Main Campus	Tampa	FL	Southeast	Doctoral/Research
138716	Albany State University	Albany	GA	Southeast	Master's
139861	Georgia College & State University	Milledgeville	GA	Southeast	Master's
139755	Georgia Institute of Technology-Main Campus	Atlanta	GA	Southeast	Doctoral/Research
139931	Georgia Southern University	Statesboro	GA	Southeast	Doctoral/Research
139940	Georgia State University	Atlanta	GA	Southeast	Doctoral/Research
140164	Kennesaw State University	Kennesaw	GA	Southeast	Master's
139959	University of Georgia	Athens	GA	Southeast	Doctoral/Research
141334	University of West Georgia	Carrollton	GA	Southeast	Master's
141264	Valdosta State University	Valdosta	GA	Southeast	Master's
141565	University of Hawaii at Hilo	Hilo	HI	West	Baccalaureate
141574	University of Hawaii at Manoa	Honolulu	HI	West	Doctoral/Research
153603	Iowa State University	Ames	IA	Midwest	Doctoral/Research
153658	University of Iowa	Iowa City	IA	Midwest	Doctoral/Research
154095	University of Northern Iowa	Cedar Falls	IA	Midwest	Master's
142115	Boise State University	Boise	ID	West	Master's
142276	Idaho State University	Pocatello	ID	West	Doctoral/Research
142328	Lewis-Clark State College	Lewiston	ID	West	Baccalaureate
142285	University of Idaho	Moscow	ID	West	Doctoral/Research
144005	Chicago State University	Chicago	IL	Midwest	Master's
144892	Eastern Illinois University	Charleston	IL	Midwest	Master's
145336	Governors State University	University Park	IL	Midwest	Master's
145813	Illinois State University	Normal	IL	Midwest	Doctoral/Research
147776	Northeastern Illinois University	Chicago	IL	Midwest	Master's

Unit ID	Institution	City	State	Geographic Region	Simplified Carnegie Classification
147703	Northern Illinois University	Dekalb	IL	Midwest	Doctoral/Research
149222	Southern Illinois University Carbondale	Carbondale	IL	Midwest	Doctoral/Research
149231	Southern Illinois University Edwardsville	Edwardsville	IL	Midwest	Master's
145600	University of Illinois at Chicago	Chicago	IL	Midwest	Doctoral/Research
148654	University of Illinois at Springfield	Springfield	IL	Midwest	Master's
145637	University of Illinois at Urbana-Champaign	Champaign	IL	Midwest	Doctoral/Research
149772	Western Illinois University	Macomb	IL	Midwest	Master's
150136	Ball State University	Muncie	IN	Midwest	Doctoral/Research
151324	Indiana State University	Terre Haute	IN	Midwest	Doctoral/Research
151351	Indiana University-Bloomington	Bloomington	IN	Midwest	Doctoral/Research
151388	Indiana University-East	Richmond	IN	Midwest	Baccalaureate
151333	Indiana University-Kokomo	Kokomo	IN	Midwest	Baccalaureate
151360	Indiana University-Northwest	Gary	IN	Midwest	Master's
151102	Indiana University-Purdue University-Fort Wayne	Fort Wayne	IN	Midwest	Master's
151111	Indiana University-Purdue University-Indianpolis	Indianapolis	IN	Midwest	Doctoral/Research
151342	Indiana University-South Bend	South Bend	IN	Midwest	Master's
151379	Indiana University-Southeast	New Albany	IN	Midwest	Master's
152248	Purdue University-Calumet Campus	Hammond	IN	Midwest	Master's
243780	Purdue University-Main Campus	West Lafayette	IN	Midwest	Master's
151306	University of Southern Indiana	Evansville	IN	Midwest	Master's
155025	Emporia State University	Emporia	KS	Midwest	Master's
155061	Fort Hays State University	Hays	KS	Midwest	Master's
155399	Kansas State University	Manhattan	KS	Midwest	Doctoral/Research
155681	Pittsburg State University	Pittsburg	KS	Midwest	Master's
155317	University of Kansas	Lawrence	KS	Midwest	Doctoral/Research
156082	Washburn University	Topeka	KS	Midwest	Master's
156125	Wichita State University	Wichita	KS	Midwest	Doctoral/Research
156620	Eastern Kentucky University	Richmond	KY	Southeast	Master's
157058	Kentucky State University	Frankfort	KY	Southeast	Baccalaureate
157386	Morehead State University	Morehead	KY	Southeast	Master's
157401	Murray State University	Murray	KY	Southeast	Master's
157447	Northern Kentucky University	Highland Heights	KY	Southeast	Master's
157085	University of Kentucky	Lexington	KY	Southeast	Doctoral/Research
157289	University of Louisville	Louisville	KY	Southeast	Doctoral/Research
157951	Western Kentucky University	Bowling Green	KY	Southeast	Master's
159009	Grambling State University	Grambling	LA	Southeast	Master's
159391	Louisiana State University and Agricultural and Mechanical College	Baton Rouge	LA	Southeast	Doctoral/Research
159647	Louisiana Tech University	Ruston	LA	Southeast	Doctoral/Research
159717	McNeese State University	Lake Charles	LA	Southeast	Master's
160038	Northwestern State University of Louisiana	Natchitoches	LA	Southeast	Master's
160612	Southeastern Louisiana University	Hammond	LA	Southeast	Master's
160658	University of Louisiana at Lafayette	Lafayette	LA	Southeast	Doctoral/Research
159993	University of Louisiana Monroe	Monroe	LA	Southeast	Master's
159939	University of New Orleans	New Orleans	LA	Southeast	Doctoral/Research
165024	Bridgewater State University	Bridgewater	MA	Northeast	Master's
165820	Fitchburg State University	Fitchburg	MA	Northeast	Master's
165866	Framingham State University	Framingham	MA	Northeast	Master's
167288	Massachusetts College of Liberal Arts	North Adams	MA	Northeast	Baccalaureate
166692	Massachusetts Maritime Academy	Buzzards Bay	MA	Northeast	Baccalaureate
167729	Salem State University	Salem	MA	Northeast	Master's
166629	University of Massachusetts Amherst	Amherst	MA	Northeast	Doctoral/Research

Unit ID	Institution	City	State	Geographic Region	Simplified Carnegie Classification
166638	University of Massachusetts-Boston	Boston	MA	Northeast	Doctoral/Research
167987	University of Massachusetts-Dartmouth	North Dartmouth	MA	Northeast	Master's
166513	University of Massachusetts-Lowell	Lowell	MA	Northeast	Doctoral/Research
168263	Westfield State University	Westfield	MA	Northeast	Master's
168430	Worcester State University	Worcester	MA	Northeast	Master's
162007	Bowie State University	Bowie	MD	Northeast	Master's
162283	Coppin State University	Baltimore	MD	Northeast	Master's
162584	Frostburg State University	Frostburg	MD	Northeast	Master's
163453	Morgan State University	Baltimore	MD	Northeast	Doctoral/Research
163851	Salisbury University	Salisbury	MD	Northeast	Master's
163912	St. Mary's College of Maryland	Saint Mary's City	MD	Northeast	Baccalaureate
164076	Towson University	Towson	MD	Northeast	Master's
161873	University of Baltimore	Baltimore	MD	Northeast	Master's
163338	University of Maryland Eastern Shore	Princess Anne	MD	Northeast	Master's
163268	University of Maryland-Baltimore County	Baltimore	MD	Northeast	Doctoral/Research
163286	University of Maryland-College Park	College Park	MD	Northeast	Doctoral/Research
163204	University of Maryland-University College	Adelphi	MD	Northeast	Master's
161299	Maine Maritime Academy	Castine	ME	Northeast	Baccalaureate
161253	University of Maine	Orono	ME	Northeast	Doctoral/Research
161217	University of Maine at Augusta	Augusta	ME	Northeast	Baccalaureate
161226	University of Maine at Farmington	Farmington	ME	Northeast	Baccalaureate
161235	University of Maine at Fort Kent	Fort Kent	ME	Northeast	Baccalaureate
161244	University of Maine at Machias	Machias	ME	Northeast	Baccalaureate
161341	University of Maine at Presque Isle	Presque Isle	ME	Northeast	Baccalaureate
161554	University of Southern Maine	Portland	ME	Northeast	Master's
169248	Central Michigan University	Mount Pleasant	MI	Midwest	Doctoral/Research
169798	Eastern Michigan University	Ypsilanti	MI	Midwest	Master's
169910	Ferris State University	Big Rapids	MI	Midwest	Master's
170082	Grand Valley State University	Allendale	MI	Midwest	Master's
170639	Lake Superior State University	Sault Ste Marie	MI	Midwest	Baccalaureate
171100	Michigan State University	East Lansing	MI	Midwest	Doctoral/Research
171128	Michigan Technological University	Houghton	MI	Midwest	Doctoral/Research
171456	Northern Michigan University	Marquette	MI	Midwest	Master's
171571	Oakland University	Rochester Hills	MI	Midwest	Doctoral/Research
172051	Saginaw Valley State University	University Center	MI	Midwest	Master's
170976	University of Michigan-Ann Arbor	Ann Arbor	MI	Midwest	Doctoral/Research
171137	University of Michigan-Dearborn	Dearborn	MI	Midwest	Master's
171146	University of Michigan-Flint	Flint	MI	Midwest	Master's
172644	Wayne State University	Detroit	MI	Midwest	Doctoral/Research
172699	Western Michigan University	Kalamazoo	MI	Midwest	Doctoral/Research
173124	Bemidji State University	Bemidji	MN	Midwest	Master's
174020	Metropolitan State University	Saint Paul	MN	Midwest	Master's
173920	Minnesota State University-Mankato	Mankato	MN	Midwest	Master's
174358	Minnesota State University-Moorhead	Moorhead	MN	Midwest	Master's
174783	Saint Cloud State University	Saint Cloud	MN	Midwest	Master's
175078	Southwest Minnesota State University	Marshall	MN	Midwest	Master's
175272	Winona State University	Winona	MN	Midwest	Master's
177940	Lincoln University	Jefferson City	MO	Midwest	Master's
178341	Missouri Southern State University	Joplin	MO	Midwest	Baccalaureate
179566	Missouri State University	Springfield	MO	Midwest	Master's
178411	Missouri University of Science and Technology	Rolla	MO	Midwest	Doctoral/Research
178387	Missouri Western State University	Saint Joseph	MO	Midwest	Baccalaureate
178624	Northwest Missouri State University	Maryville	MO	Midwest	Master's

Unit ID	Institution	City	State	Geographic Region	Simplified Carnegie Classification
179557	Southeast Missouri State University	Cape Girardeau	MO	Midwest	Master's
178615	Truman State University	Kirksville	MO	Midwest	Master's
176965	University of Central Missouri	Warrensburg	MO	Midwest	Master's
178396	University of Missouri-Columbia	Columbia	MO	Midwest	Doctoral/Research
178402	University of Missouri-Kansas City	Kansas City	MO	Midwest	Doctoral/Research
178420	University of Missouri-St Louis	Saint Louis	MO	Midwest	Doctoral/Research
175342	Alcorn State University	Alcorn State	MS	Southeast	Master's
175616	Delta State University	Cleveland	MS	Southeast	Master's
175856	Jackson State University	Jackson	MS	Southeast	Doctoral/Research
176080	Mississippi State University	Mississippi State	MS	Southeast	Doctoral/Research
176035	Mississippi University for Women	Columbus	MS	Southeast	Master's
176044	Mississippi Valley State University	Itta Bena	MS	Southeast	Master's
176017	University of Mississippi Main Campus	University	MS	Southeast	Doctoral/Research
176372	University of Southern Mississippi	Hattiesburg	MS	Southeast	Doctoral/Research
180461	Montana State University	Bozeman	MT	West	Doctoral/Research
180522	Montana State University-Northern	Havre	MT	West	Baccalaureate
180489	The University of Montana	Missoula	MT	West	Doctoral/Research
180692	The University of Montana-Western	Dillon	MT	West	Baccalaureate
197869	Appalachian State University	Boone	NC	Southeast	Doctoral/Research
198464	East Carolina University	Greenville	NC	Southeast	Baccalaureate
198507	Elizabeth City State University	Elizabeth City	NC	Southeast	Doctoral/Research
198543	Fayetteville State University	Fayetteville	NC	Southeast	Doctoral/Research
199102	North Carolina A & T State University	Greensboro	NC	Southeast	Doctoral/Research
199157	North Carolina Central University	Durham	NC	Southeast	Baccalaureate
199193	North Carolina State University at Raleigh	Raleigh	NC	Southeast	Master's
199111	University of North Carolina at Asheville	Asheville	NC	Southeast	Master's
199120	University of North Carolina at Chapel Hill	Chapel Hill	NC	Southeast	Doctoral/Research
199139	University of North Carolina at Charlotte	Charlotte	NC	Southeast	Master's
199148	University of North Carolina at Greensboro	Greensboro	NC	Southeast	Master's
199281	University of North Carolina at Pembroke	Pembroke	NC	Southeast	Baccalaureate
199218	University of North Carolina-Wilmington	Wilmington	NC	Southeast	Baccalaureate
200004	Western Carolina University	Cullowhee	NC	Southeast	Doctoral/Research
199999	Winston-Salem State University	Winston-Salem	NC	Southeast	Master's
200059	Dickinson State University	Dickinson	ND	Midwest	Doctoral/Research
200226	Mayville State University	Mayville	ND	Midwest	Baccalaureate
200253	Minot State University	Minot	ND	Midwest	Baccalaureate
200332	North Dakota State University-Main Campus	Fargo	ND	Midwest	Doctoral/Research
200280	University of North Dakota	Grand Forks	ND	Midwest	Doctoral/Research
200572	Valley City State University	Valley City	ND	Midwest	Baccalaureate
180948	Chadron State College	Chadron	NE	Midwest	Baccalaureate
181534	Peru State College	Peru	NE	Midwest	Baccalaureate
181215	University of Nebraska at Kearney	Kearney	NE	Midwest	Master's
181394	University of Nebraska at Omaha	Omaha	NE	Midwest	Master's
181464	University of Nebraska-Lincoln	Lincoln	NE	Midwest	Doctoral/Research
181783	Wayne State College	Wayne	NE	Midwest	Master's
183062	Keene State College	Keene	NH	Northeast	Master's
183080	Plymouth State University	Plymouth	NH	Northeast	Master's
183044	University of New Hampshire-Main Campus	Durham	NH	Northeast	Doctoral/Research
185262	Kean University	Union	NJ	Northeast	Master's
185590	Montclair State University	Montclair	NJ	Northeast	Master's
185129	New Jersey City University	Jersey City	NJ	Northeast	Master's
185828	New Jersey Institute of Technology	Newark	NJ	Northeast	Doctoral/Research
186201	Ramapo College of New Jersey	Mahwah	NJ	Northeast	Master's

Unit ID	Institution	City	State	Geographic Region	Simplified Carnegie Classification
184782	Rowan University	Glassboro	NJ	Northeast	Master's
187134	The College of New Jersey	Ewing	NJ	Northeast	Master's
186876	The Richard Stockton College of New Jersey	Pomona	NJ	Northeast	Master's
187046	Thomas Edison State College	Trenton	NJ	Northeast	Baccalaureate
187444	William Paterson University of New Jersey	Wayne	NJ	Northeast	Master's
187897	New Mexico Highlands University	Las Vegas	NM	West	Master's
188030	New Mexico State University-Main Campus	Las Cruces	NM	West	Doctoral/Research
188304	Western New Mexico University	Silver City	NM	West	Master's
182306	Great Basin College	Elko	NV	West	Baccalaureate
182281	University of Nevada-Las Vegas	Las Vegas	NV	West	Doctoral/Research
182290	University of Nevada-Reno	Reno	NV	West	Doctoral/Research
190594	CUNY Hunter College	New York	NY	Northeast	Master's
196042	Farmingdale State College	Farmingdale	NY	Northeast	Doctoral/Research
191126	Fashion Institute of Technology	New York	NY	Northeast	Baccalaureate
196176	State University of New York at New Paltz	New Paltz	NY	Northeast	Master's
196097	Stony Brook University	Stony Brook	NY	Northeast	Master's
196060	SUNY at Albany	Albany	NY	Northeast	Doctoral/Research
196079	SUNY at Binghamton	Binghamton	NY	Northeast	Master's
196158	SUNY at Fredonia	Fredonia	NY	Northeast	Master's
196167	SUNY at Geneseo	Geneseo	NY	Northeast	Master's
196219	SUNY at Purchase College	Purchase	NY	Northeast	Master's
196121	SUNY College at Brockport	Brockport	NY	Northeast	Master's
196130	SUNY College at Buffalo	Buffalo	NY	Northeast	Master's
196149	SUNY College at Cortland	Cortland	NY	Northeast	Master's
196237	SUNY College at Old Westbury	Old Westbury	NY	Northeast	Master's
196185	SUNY College at Oneonta	Oneonta	NY	Northeast	Baccalaureate
196194	SUNY College at Oswego	Oswego	NY	Northeast	Master's
196246	SUNY College at Plattsburgh	Plattsburgh	NY	Northeast	Doctoral/Research
196200	SUNY College at Potsdam	Potsdam	NY	Northeast	Master's
196033	SUNY College of Agriculture and Technology at Cobleskill	Cobleskill	NY	Northeast	Doctoral/Research
196103	SUNY College of Environmental Science and Forestry	Syracuse	NY	Northeast	Master's
196006	SUNY College of Technology at Alfred	Alfred	NY	Northeast	Doctoral/Research
196024	SUNY College of Technology at Delhi	Delhi	NY	Northeast	Doctoral/Research
196264	SUNY Empire State College	Saratoga Springs	NY	Northeast	Baccalaureate
196112	SUNY Institute of Technology at Utica-Rome	Utica	NY	Northeast	Master's
196291	SUNY Maritime College	Bronx	NY	Northeast	Master's
196088	University at Buffalo	Buffalo	NY	Northeast	Master's
201690	Central State University	Wilberforce	OH	Midwest	Doctoral/Research
202134	Cleveland State University	Cleveland	OH	Midwest	Master's
204796	Ohio State University-Main Campus	Columbus	OH	Midwest	Master's
205443	Shawnee State University	Portsmouth	OH	Midwest	Master's
206084	University of Toledo	Toledo	OH	Midwest	Master's
206695	Youngstown State University	Youngstown	OH	Midwest	Baccalaureate
206914	Cameron University	Lawton	OK	West	Master's
207041	East Central University	Ada	OK	West	Baccalaureate
207209	Langston University	Langston	OK	West	Doctoral/Research
207263	Northeastern State University	Tahlequah	OK	West	Doctoral/Research
207306	Northwestern Oklahoma State University	Alva	OK	West	Baccalaureate
207351	Oklahoma Panhandle State University	Goodwell	OK	West	Baccalaureate
207661	Rogers State University	Claremore	OK	West	Master's
207847	Southeastern Oklahoma State University	Durant	OK	West	Doctoral/Research

Unit ID	Institution	City	State	Geographic Region	Simplified Carnegie Classification
207865	Southwestern Oklahoma State University	Weatherford	OK	West	Doctoral/Research
206941	University of Central Oklahoma	Edmond	OK	West	Baccalaureate
207500	University of Oklahoma Norman Campus	Norman	OK	West	Master's
207722	University of Science and Arts of Oklahoma	Chickasha	OK	West	Baccalaureate
208646	Eastern Oregon University	La Grande	OR	West	Master's
209506	Oregon Institute of Technology	Klamath Falls	OR	West	Master's
209807	Portland State University	Portland	OR	West	Master's
210146	Southern Oregon University	Ashland	OR	West	Master's
209551	University of Oregon	Eugene	OR	West	Master's
210429	Western Oregon University	Monmouth	OR	West	Master's
211158	Bloomsburg University of Pennsylvania	Bloomsburg	PA	Northeast	Master's
211361	California University of Pennsylvania	California	PA	Northeast	Master's
211608	Cheyney University of Pennsylvania	Cheyney	PA	Northeast	Doctoral/Research
211644	Clarion University of Pennsylvania	Clarion	PA	Northeast	Master's
212115	East Stroudsburg University of Pennsylvania	East Stroudsburg	PA	Northeast	Master's
212160	Edinboro University of Pennsylvania	Edinboro	PA	Northeast	Master's
213020	Indiana University of Pennsylvania-Main Campus	Indiana	PA	Northeast	Master's
213349	Kutztown University of Pennsylvania	Kutztown	PA	Northeast	Master's
213613	Lock Haven University	Lock Haven	PA	Northeast	Master's
213783	Mansfield University of Pennsylvania	Mansfield	PA	Northeast	Master's
214041	Millersville University of Pennsylvania	Millersville	PA	Northeast	Master's
216010	Shippensburg University of Pennsylvania	Shippensburg	PA	Northeast	Doctoral/Research
216038	Slippery Rock University of Pennsylvania	Slippery Rock	PA	Northeast	Master's
216764	West Chester University of Pennsylvania	West Chester	PA	Northeast	Master's
217420	Rhode Island College	Providence	RI	Northeast	Doctoral/Research
217484	University of Rhode Island	Kingston	RI	Northeast	Master's
217864	Citadel Military College of South Carolina	Charleston	SC	Southeast	Baccalaureate
217882	Clemson University	Clemson	SC	Southeast	Doctoral/Research
218724	Coastal Carolina University	Conway	SC	Southeast	Baccalaureate
217819	College of Charleston	Charleston	SC	Southeast	Baccalaureate
218061	Francis Marion University	Florence	SC	Southeast	Baccalaureate
218229	Lander University	Greenwood	SC	Southeast	Doctoral/Research
218733	South Carolina State University	Orangeburg	SC	Southeast	Baccalaureate
218645	University of South Carolina-Aiken	Aiken	SC	Southeast	Baccalaureate
218663	University of South Carolina-Columbia	Columbia	SC	Southeast	Master's
218742	University of South Carolina-Upstate	Spartanburg	SC	Southeast	Baccalaureate
218964	Winthrop University	Rock Hill	SC	Southeast	Doctoral/Research
219046	Black Hills State University	Spearfish	SD	Midwest	Doctoral/Research
219082	Dakota State University	Madison	SD	Midwest	Master's
219259	Northern State University	Aberdeen	SD	Midwest	Doctoral/Research
219356	South Dakota State University	Brookings	SD	Midwest	Doctoral/Research
219471	University of South Dakota	Vermillion	SD	Midwest	Master's
219602	Austin Peay State University	Clarksville	TN	Southeast	Master's
220075	East Tennessee State University	Johnson City	TN	Southeast	Doctoral/Research
220978	Middle Tennessee State University	Murfreesboro	TN	Southeast	Doctoral/Research
221838	Tennessee State University	Nashville	TN	Southeast	Master's
221847	Tennessee Technological University	Cookeville	TN	Southeast	Doctoral/Research
221759	The University of Tennessee	Knoxville	TN	Southeast	Master's
221740	The University of Tennessee at Chattanooga	Chattanooga	TN	Southeast	Master's
221768	The University of Tennessee-Martin	Martin	TN	Southeast	Baccalaureate
220862	University of Memphis	Memphis	TN	Southeast	Master's
226833	Midwestern State University	Wichita Falls	TX	West	Master's

Unit ID	Institution	City	State	Geographic Region	Simplified Carnegie Classification
228431	Stephen F Austin State University	Nacogdoches	TX	West	Master's
229063	Texas Southern University	Houston	TX	West	Master's
228459	Texas State University-San Marcos	San Marcos	TX	West	Doctoral/Research
229115	Texas Tech University	Lubbock	TX	West	Baccalaureate
229179	Texas Woman's University	Denton	TX	West	Doctoral/Research
228778	The University of Texas at Austin	Austin	TX	West	Doctoral/Research
229018	The University of Texas of the Permian Basin	Odessa	TX	West	Baccalaureate
225511	University of Houston	Houston	TX	West	Master's
225414	University of Houston-Clear Lake	Houston	TX	West	Master's
225432	University of Houston-Downtown	Houston	TX	West	Doctoral/Research
225502	University of Houston-Victoria	Victoria	TX	West	Master's
227216	University of North Texas	Denton	TX	West	Master's
230171	Dixie State College of Utah	Saint George	UT	West	Master's
230603	Southern Utah University	Cedar City	UT	West	Doctoral/Research
230764	University of Utah	Salt Lake City	UT	West	Baccalaureate
230737	Utah Valley University	Orem	UT	West	Doctoral/Research
230782	Weber State University	Ogden	UT	West	Doctoral/Research
231712	Christopher Newport University	Newport News	VA	Southeast	Master's
231624	College of William and Mary	Williamsburg	VA	Southeast	Master's
232186	George Mason University	Fairfax	VA	Southeast	Master's
232423	James Madison University	Harrisonburg	VA	Southeast	Doctoral/Research
232566	Longwood University	Farmville	VA	Southeast	Master's
232937	Norfolk State University	Norfolk	VA	Southeast	Doctoral/Research
232982	Old Dominion University	Norfolk	VA	Southeast	Doctoral/Research
233897	The University of Virginia's College at Wise	Wise	VA	Southeast	Baccalaureate
232681	University of Mary Washington	Fredericksburg	VA	Southeast	Baccalaureate
234076	University of Virginia-Main Campus	Charlottesville	VA	Southeast	Master's
234030	Virginia Commonwealth University	Richmond	VA	Southeast	Master's
234085	Virginia Military Institute	Lexington	VA	Southeast	Master's
233921	Virginia Polytechnic Institute and State University	Blacksburg	VA	Southeast	Master's
234155	Virginia State University	Petersburg	VA	Southeast	Doctoral/Research
231174	University of Vermont	Burlington	VT	Northeast	Master's
234827	Central Washington University	Ellensburg	WA	West	Doctoral/Research
235097	Eastern Washington University	Cheney	WA	West	Master's
235167	The Evergreen State College	Olympia	WA	West	Baccalaureate
236939	Washington State University	Pullman	WA	West	Baccalaureate
237011	Western Washington University	Bellingham	WA	West	Baccalaureate
240268	University of Wisconsin-Eau Claire	Eau Claire	WI	Midwest	Baccalaureate
240277	University of Wisconsin-Green Bay	Green Bay	WI	Midwest	Master's
240329	University of Wisconsin-La Crosse	La Crosse	WI	Midwest	Master's
240444	University of Wisconsin-Madison	Madison	WI	Midwest	Master's
240453	University of Wisconsin-Milwaukee	Milwaukee	WI	Midwest	Doctoral/Research
240365	University of Wisconsin-Oshkosh	Oshkosh	WI	Midwest	Doctoral/Research
240374	University of Wisconsin-Parkside	Kenosha	WI	Midwest	Doctoral/Research
240462	University of Wisconsin-Platteville	Platteville	WI	Midwest	Doctoral/Research
240471	University of Wisconsin-River Falls	River Falls	WI	Midwest	Baccalaureate
240480	University of Wisconsin-Stevens Point	Stevens Point	WI	Midwest	Master's
240417	University of Wisconsin-Stout	Menomonie	WI	Midwest	Master's
240426	University of Wisconsin-Superior	Superior	WI	Midwest	Master's
240189	University of Wisconsin-Whitewater	Whitewater	WI	Midwest	Master's
237215	Bluefield State College	Bluefield	WV	Southeast	Baccalaureate
237330	Concord University	Athens	WV	Southeast	Baccalaureate

Unit ID	Institution	City	State	Geographic Region	Simplified Carnegie Classification
237385	Glenville State College	Glenville	WV	Southeast	Doctoral/Research
237932	West Liberty University	West Liberty	WV	Southeast	Master's
237686	West Virginia University at Parkersburg	Parkersburg	WV	Southeast	Master's
240727	University of Wyoming	Laramie	WY	West	Master's

Institutions excluded from Research Questions One, Two, and Three shown in order by state and then alphabetized by institution

Unit ID	Institution	City	State	Geographic Region	Carnegie Classification	Reason
102322	Troy State University-Dothan Campus	Dothan	AL	Southeast	Master's	No 5 Years of Data
102359	Troy State University-Montgomery	Montgomery	AL	Southeast	Master's	No 5 Years of Data
420574	Arizona State University at the Polytechnic Campus	Mesa	AZ	West	Master's	No 5 Years of Data
407009	Arizona State University at the West Campus	Glendale	AZ	West	Master's	No 5 Years of Data
122409	San Diego State University	San Diego	CA	West	Doctoral/Research	Not reporting independently
441186	San Diego State University-Imperial Valley Campus	Calexico	CA	West	Baccalaureate	Not reporting independently
110635	University of California-Berkeley	Berkeley	CA	West	Doctoral/Research	Not reporting independently
110644	University of California-Davis	Davis	CA	West	Doctoral/Research	Not reporting independently
110653	University of California-Irvine	Irvine	CA	West	Doctoral/Research	Not reporting independently
110662	University of California-Los Angeles	Los Angeles	CA	West	Doctoral/Research	Not reporting independently
110671	University of California-Riverside	Riverside	CA	West	Doctoral/Research	Not reporting independently
110680	University of California-San Diego	La Jolla	CA	West	Doctoral/Research	Not reporting independently
110705	University of California-Santa Barbara	Santa Barbara	CA	West	Doctoral/Research	Not reporting independently
110714	University of California-Santa Cruz	Santa Cruz	CA	West	Doctoral/Research	Not reporting independently
127565	Metropolitan State College of Denver	Denver	CO	West	Baccalaureate	No 5 Years of Data
128780	Charter Oak State College	New Britain	CT	Northeast	Baccalaureate	No long-term debt
129215	Eastern Connecticut State University	Willimantic	CT	Northeast	Master's	No long-term debt
130493	Southern Connecticut State University	New Haven	CT	Northeast	Master's	No long-term debt
129020	University of Connecticut	Storrs	CT	Northeast	Doctoral/Research	Not reporting independently
130776	Western Connecticut State University	Danbury	CT	Northeast	Master's	No long-term debt
131399	University of the District of Columbia	Washington	DC	Northeast	Master's	Not reporting independently

Unit ID	Institution	City	State	Geographic Region	Carnegie Classification	Reason
130943	University of Delaware	Newark	DE	Northeast	Doctoral/Research	Not GASB reporting
451671	University of South Florida Sarasota-Manatee	Sarasota	FL	Southeast	Doctoral/Research	No 5 Years of Data
451680	University of South Florida-Polytechnic	Lakeland	FL	Southeast	Doctoral/Research	No 5 Years of Data
448840	University of South Florida-St. Petersburg Campus	St. Petersburg	FL	Southeast	Doctoral/Research	No 5 Years of Data
138789	Armstrong Atlantic State University	Savannah	GA	Southeast	Master's	No 5 Years of Data
138983	Augusta State University	Augusta	GA	Southeast	Master's	No 5 Years of Data
139311	Clayton State University	Morrow	GA	Southeast	Baccalaureate	No 5 Years of Data
139366	Columbus State University	Columbus	GA	Southeast	Master's	No 5 Years of Data
139463	Dalton State College	Dalton	GA	Southeast	Baccalaureate	No long-term debt
139719	Fort Valley State University	Fort Valley	GA	Southeast	Master's	No long-term debt
139764	Georgia Southwestern State University	Americus	GA	Southeast	Master's	No 5 Years of Data
140322	Macon State College	Macon	GA	Southeast	Baccalaureate	No long-term debt
140669	North Georgia College & State University	Dahlonega	GA	Southeast	Master's	No long-term debt
140960	Savannah State University	Savannah	GA	Southeast	Master's	No long-term debt
141097	Southern Polytechnic State University	Marietta	GA	Southeast	Master's	No 5 Years of Data
141981	University of Hawaii-West Oahu	Pearl City	HI	West	Baccalaureate	No 5 Years of Data
152266	Purdue University-North Central Campus	Westville	IN	Midwest	Baccalaureate	No long-term debt
159382	Louisiana State University at Alexandria	Alexandria	LA	Southeast	Baccalaureate	No 5 Years of Data
159416	Louisiana State University-Shreveport	Shreveport	LA	Southeast	Master's	No long-term debt
159966	Nicholls State University	Thibodaux	LA	Southeast	Master's	No 5 Years of Data
160621	Southern University and A & M College	Baton Rouge	LA	Southeast	Master's	Not reporting independently
160630	Southern University at New Orleans	New Orleans	LA	Southeast	Master's	No 5 Years of Data
174075	University of Minnesota-Crookston	Crookston	MN	Midwest	Baccalaureate	No long-term debt

Unit ID	Institution	City	State	Geographic Region	Carnegie Classification	Reason
174233	University of Minnesota-Duluth	Duluth	MN	Midwest	Master's	No long-term debt
174251	University of Minnesota-Morris	Morris	MN	Midwest	Baccalaureate	No long-term debt
174066	University of Minnesota-Twin Cities	Minneapolis	MN	Midwest	Doctoral/Research	Not reporting independently
177551	Harris-Stowe State University	Saint Louis	MO	Midwest	Baccalaureate	No 5 Years of Data
180179	Montana State University-Billings	Billings	MO	West	Master's	Not reporting independently
180416	Montana Tech of the University of Montana	Butte	MO	West	Baccalaureate	Not reporting independently
183257	Granite State College	Concord	NH	Northeast	Baccalaureate	No long-term debt
183071	University of New Hampshire at Manchester	Manchester	NH	Northeast	Baccalaureate	No long-term debt
186371	Rutgers University-Camden	Camden	NJ	Northeast	Master's	Not reporting independently
186380	Rutgers University-New Brunswick	New Brunswick	NJ	Northeast	Doctoral/Research	Not reporting independently
186399	Rutgers University-Newark	Newark	NJ	Northeast	Doctoral/Research	Not reporting independently
187648	Eastern New Mexico University-Main Campus	Portales	NM	West	Master's	No 5 Years of Data
187967	New Mexico Institute of Mining and Technology	Socorro	NM	West	Master's	No long-term debt
187985	University of New Mexico-Main Campus	Albuquerque	NM	West	Doctoral/Research	Not reporting independently
441900	Nevada State College	Henderson	NV	West	Baccalaureate	No long-term debt
190512	CUNY Bernard M Baruch College	New York	NY	Northeast	Master's	No 5 Years of Data
190549	CUNY Brooklyn College	Brooklyn	NY	Northeast	Master's	No 5 Years of Data
190567	CUNY City College	New York	NY	Northeast	Master's	No 5 Years of Data
190558	CUNY College of Staten Island	Staten Island	NY	Northeast	Master's	No 5 Years of Data
190576	CUNY Graduate School and University Center	New York	NY	Northeast	Doctoral/Research	No 5 Years of Data
190600	CUNY John Jay College of Criminal Justice	New York	NY	Northeast	Master's	No 5 Years of Data
190637	CUNY Lehman College	Bronx	NY	Northeast	Master's	No 5 Years of Data
190646	CUNY Medgar Evers College	Brooklyn	NY	Northeast	Baccalaureate	No 5 Years of Data

Unit ID	Institution	City	State	Geographic Region	Carnegie Classification	Reason
190655	CUNY New York City College of Technology	Brooklyn	NY	Northeast	Baccalaureate	No 5 Years of Data
190664	CUNY Queens College	Flushing	NY	Northeast	Master's	No 5 Years of Data
190691	CUNY York College	Jamaica	NY	Northeast	Baccalaureate	No 5 Years of Data
201441	Bowling Green State University-Main Campus	Bowling Green	OH	Midwest	Doctoral/Research	Not reporting independently
203447	Kent State University at Ashtabula	Ashtabula	OH	Midwest	Baccalaureate	Not reporting independently
203526	Kent State University at Geauga	Burton	OH	Midwest	Baccalaureate	Not reporting independently
203517	Kent State University at Kent	Kent	OH	Midwest	Doctoral/Research	Not reporting independently
203465	Kent State University at Stark	Canton	OH	Midwest	Baccalaureate	Not reporting independently
203474	Kent State University at Trumbull	Warren	OH	Midwest	Baccalaureate	Not reporting independently
204024	Miami University-Oxford	Oxford	OH	Midwest	Doctoral/Research	Not reporting independently
204820	Ohio University-Chillicothe Campus	Chillicothe	OH	Midwest	Baccalaureate	Not reporting independently
204802	Ohio University-Eastern Campus	Saint Clairsville	OH	Midwest	Baccalaureate	Not reporting independently
204848	Ohio University-Lancaster Campus	Lancaster	OH	Midwest	Baccalaureate	Not reporting independently
204857	Ohio University-Main Campus	Athens	OH	Midwest	Doctoral/Research	Not reporting independently
204839	Ohio University-Southern Campus	Ironton	OH	Midwest	Baccalaureate	Not reporting independently
204866	Ohio University-Zanesville Campus	Zanesville	OH	Midwest	Baccalaureate	Not reporting independently
200800	University of Akron Main Campus	Akron	OH	Midwest	Doctoral/Research	Not reporting independently
201885	University of Cincinnati-Main Campus	Cincinnati	OH	Midwest	Doctoral/Research	Not reporting independently
206604	Wright State University-Main Campus	Dayton	OH	Midwest	Doctoral/Research	Not reporting independently
207388	Oklahoma State University-Main Campus	Stillwater	OK	West	Doctoral/Research	No 5 Years of Data
209542	Oregon State University	Corvallis	OR	West	Doctoral/Research	Not reporting independently
213598	Lincoln University of Pennsylvania	Lincoln University	PA	Northeast	Master's	Not GASB reporting
366252	Pennsylvania College of Technology	Williamsport	PA	Northeast	Baccalaureate	Not GASB reporting

Unit ID	Institution	City	State	Geographic Region	Carnegie Classification	Reason
214731	Pennsylvania State University-Brandywine	Media	PA	Northeast	Baccalaureate	Not reporting independently
214777	Pennsylvania State University-Main Campus	University Park	PA	Northeast	Doctoral/Research	Not GASB reporting
214801	Pennsylvania State University-Penn State Abington	Abington	PA	Northeast	Baccalaureate	Not reporting independently
214689	Pennsylvania State University-Penn State Altoona	Altoona	PA	Northeast	Baccalaureate	Not reporting independently
214698	Pennsylvania State University-Penn State Beaver	Monaca	PA	Northeast	Baccalaureate	Not reporting independently
214704	Pennsylvania State University-Penn State Berks	Reading	PA	Northeast	Baccalaureate	Not reporting independently
214740	Pennsylvania State University-Penn State Dubois	Dubois	PA	Northeast	Baccalaureate	Not reporting independently
214591	Pennsylvania State University-Penn State Erie-Behrend College	Erie	PA	Northeast	Baccalaureate	Not reporting independently
214759	Pennsylvania State University-Penn State Fayette- Eberly Campus	Uniontown	PA	Northeast	Baccalaureate	Not reporting independently
214607	Pennsylvania State University-Penn State Great Valley	Malvern	PA	Northeast	Master's	Not reporting independently
214786	Pennsylvania State University-Penn State Greater Allegheny	McKeesport	PA	Northeast	Baccalaureate	Not reporting independently
214713	Pennsylvania State University-Penn State Harrisburg	Middletown	PA	Northeast	Master's	Not reporting independently
214768	Pennsylvania State University-Penn State Hazleton	Hazleton	PA	Northeast	Baccalaureate	Not reporting independently
214670	Pennsylvania State University-Penn State Lehigh Valley	Fogelsville	PA	Northeast	Baccalaureate	Not reporting independently
214795	Pennsylvania State University-Penn State Mont Alto	Mont Alto	PA	Northeast	Baccalaureate	Not reporting independently
214625	Pennsylvania State University-Penn State New Kensington	Upper Burrell	PA	Northeast	Baccalaureate	Not reporting independently
214810	Pennsylvania State University-Penn State Schuylkill	Schuylkill Haven	PA	Northeast	Baccalaureate	Not reporting independently
214634	Pennsylvania State University-Penn State Shenango	Sharon	PA	Northeast	Baccalaureate	Not reporting independently
214643	Pennsylvania State University-Penn State Wilkes-Barre	Lehman	PA	Northeast	Baccalaureate	Not reporting independently
214652	Pennsylvania State University-Penn State Worthington Scranton	Dunmore	PA	Northeast	Baccalaureate	Not reporting independently
214829	Pennsylvania State University-Penn State York	York	PA	Northeast	Baccalaureate	Not reporting independently
216339	Temple University	Philadelphia	PA	Northeast	Doctoral/Research	Not GASB reporting
215266	University of Pittsburgh-Bradford	Bradford	PA	Northeast	Baccalaureate	Not GASB reporting

Unit ID	Institution	City	State	Geographic Region	Carnegie Classification	Reason
215275	University of Pittsburgh-Greensburg	Greensburg	PA	Northeast	Baccalaureate	Not GASB reporting
215284	University of Pittsburgh-Johnstown	Johnstown	PA	Northeast	Baccalaureate	Not GASB reporting
215293	University of Pittsburgh-Pittsburgh Campus	Pittsburgh	PA	Northeast	Doctoral/Research	Not GASB reporting
222831	Angelo State University	San Angelo	TX	West	Master's	No 5 Years of Data
226091	Lamar University	Beaumont	TX	West	Master's	No long-term debt
227526	Prairie View A & M University	Prairie View	TX	West	Master's	No 5 Years of Data
227881	Sam Houston State University	Huntsville	TX	West	Master's	No long-term debt
228501	Sul Ross State University	Alpine	TX	West	Master's	No long-term debt
228529	Tarleton State University	Stephenville	TX	West	Master's	No long-term debt
226152	Texas A & M International University	Laredo	TX	West	Master's	No long-term debt
228723	Texas A & M University	College Station	TX	West	Doctoral/Research	No long-term debt
228714	Texas A & M University at Galveston	Galveston	TX	West	Baccalaureate	No long-term debt
224554	Texas A & M University-Commerce	Commerce	TX	West	Doctoral/Research	No long-term debt
224147	Texas A & M University-Corpus Christi	Corpus Christi	TX	West	Master's	Not reporting independently
228705	Texas A & M University-Kingsville	Kingsville	TX	West	Doctoral/Research	No long-term debt
224545	Texas A & M University-Texarkana	Texarkana	TX	West	Master's	No long-term debt
228769	The University of Texas at Arlington	Arlington	TX	West	Doctoral/Research	No long-term debt
227377	The University of Texas at Brownsville	Brownsville	TX	West	Master's	Not reporting independently
228787	The University of Texas at Dallas	Richardson	TX	West	Doctoral/Research	No long-term debt
228796	The University of Texas at El Paso	El Paso	TX	West	Doctoral/Research	No long-term debt
229027	The University of Texas at San Antonio	San Antonio	TX	West	Master's	No long-term debt
228802	The University of Texas at Tyler	Tyler	TX	West	Master's	No long-term debt
227368	The University of Texas-Pan American	Edinburg	TX	West	Master's	No long-term debt

Unit ID	Institution	City	State	Geographic Region	Carnegie Classification	Reason
229814	West Texas A & M University	Canyon	TX	West	Master's	No long-term debt
230728	Utah State University	Logan	UT	West	Doctoral/Research	Not reporting independently
442833	Utah State University-Regional Campuses and Distance Education	Logan	UT	West	Baccalaureate	Not reporting independently
233277	Radford University	Radford	VA	Southeast	Master's	No 5 Years of Data
230834	Castleton State College	Castleton	VT	Northeast	Master's	Not reporting independently
230913	Johnson State College	Johnson	VT	Northeast	Master's	Not reporting independently
230931	Lyndon State College	Lyndonville	VT	Northeast	Baccalaureate	Not reporting independently
231165	Vermont Technical College	Randolph Center	VT	Northeast	Baccalaureate	Not reporting independently
377555	University of Washington-Bothell Campus	Bothell	WA	West	Master's	Not reporting independently
236948	University of Washington-Seattle Campus	Seattle	WA	West	Doctoral/Research	Not reporting independently
377564	University of Washington-Tacoma Campus	Tacoma	WA	West	Master's	Not reporting independently
237367	Fairmont State University	Fairmont	WV	Southeast	Baccalaureate	Not reporting independently
237525	Marshall University	Huntington	WV	Southeast	Master's	No 5 Years of Data
237792	Shepherd University	Shepherdstown	WV	Southeast	Baccalaureate	No 5 Years of Data
237899	West Virginia State University	Institute	WV	Southeast	Baccalaureate	No 5 Years of Data
238032	West Virginia University	Morgantown	WV	Southeast	Doctoral/Research	Not reporting independently
237950	West Virginia University Institute of Technology	Montgomery	WV	Southeast	Baccalaureate	Not reporting independently

APPENDIX C

Institutions included to answer Research Questions Four and Five in order by state and then alphabetized by institution

Unit ID	Institution	City	State	Geographic Region	Simplified Carnegie Classification
102553	University of Alaska Anchorage	Anchorage	AK	West	Master's
102614	University of Alaska Fairbanks	Fairbanks	AK	West	Doctoral/Research
102632	University of Alaska Southeast	Juneau	AK	West	Master's
100654	Alabama A & M University	Normal	AL	Southeast	Master's
100724	Alabama State University	Montgomery	AL	Southeast	Master's
100812	Athens State University	Athens	AL	Southeast	Baccalaureate
100858	Auburn University	Auburn University	AL	Southeast	Doctoral/Research
100830	Auburn University at Montgomery	Montgomery	AL	Southeast	Master's
101480	Jacksonville State University	Jacksonville	AL	Southeast	Master's
100751	The University of Alabama	Tuscaloosa	AL	Southeast	Doctoral/Research
102368	Troy University	Troy	AL	Southeast	Master's
100663	University of Alabama at Birmingham	Birmingham	AL	Southeast	Doctoral/Research
100706	University of Alabama in Huntsville	Huntsville	AL	Southeast	Doctoral/Research
101709	University of Montevallo	Montevallo	AL	Southeast	Master's
101879	University of North Alabama	Florence	AL	Southeast	Master's
102094	University of South Alabama	Mobile	AL	Southeast	Master's
101587	University of West Alabama	Livingston	AL	Southeast	Master's
106458	Arkansas State University-Main Campus	Jonesboro	AR	Southeast	Master's
106467	Arkansas Tech University	Russellville	AR	Southeast	Master's
107071	Henderson State University	Arkadelphia	AR	Southeast	Master's
107983	Southern Arkansas University Main Campus	Magnolia	AR	Southeast	Baccalaureate
106397	University of Arkansas	Fayetteville	AR	Southeast	Doctoral/Research
106245	University of Arkansas at Little Rock	Little Rock	AR	Southeast	Doctoral/Research
106485	University of Arkansas at Monticello	Monticello	AR	Southeast	Master's
106412	University of Arkansas at Pine Bluff	Pine Bluff	AR	Southeast	Baccalaureate
108092	University of Arkansas-Fort Smith	Fort Smith	AR	Southeast	Baccalaureate
106704	University of Central Arkansas	Conway	AR	Southeast	Master's
104151	Arizona State University	Tempe	AZ	West	Doctoral/Research
105330	Northern Arizona University	Flagstaff	AZ	West	Doctoral/Research
104179	University of Arizona	Tucson	AZ	West	Doctoral/Research
111188	California Maritime Academy	Vallejo	CA	West	Baccalaureate
110422	California Polytechnic State University-San Luis Obispo	San Luis Obispo	CA	West	Master's
110529	California State Polytechnic University-Pomona	Pomona	CA	West	Master's
110486	California State University-Bakersfield	Bakersfield	CA	West	Master's
441937	California State University-Channel Islands	Camarillo	CA	West	Baccalaureate
110538	California State University-Chico	Chico	CA	West	Master's
110547	California State University-Dominguez Hills	Carson	CA	West	Master's
110574	California State University-East Bay	Hayward	CA	West	Master's
110556	California State University-Fresno	Fresno	CA	West	Master's
110565	California State University-Fullerton	Fullerton	CA	West	Master's
110583	California State University-Long Beach	Long Beach	CA	West	Master's
110592	California State University-Los Angeles	Los Angeles	CA	West	Master's
409698	California State University-Monterey Bay	Seaside	CA	West	Baccalaureate
110608	California State University-Northridge	Northridge	CA	West	Master's

Unit ID	Institution	City	State	Geographic Region	Simplified Carnegie Classification
110617	California State University-Sacramento	Sacramento	CA	West	Master's
110510	California State University-San Bernardino	San Bernardino	CA	West	Master's
366711	California State University-San Marcos	San Marcos	CA	West	Master's
110495	California State University-Stanislaus	Turlock	CA	West	Master's
115755	Humboldt State University	Arcata	CA	West	Master's
122597	San Francisco State University	San Francisco	CA	West	Master's
122755	San Jose State University	San Jose	CA	West	Master's
123572	Sonoma State University	Rohnert Park	CA	West	Master's
126182	Adams State College	Alamosa	CO	West	Master's
126775	Colorado School of Mines	Golden	CO	West	Doctoral/Research
126818	Colorado State University	Fort Collins	CO	West	Doctoral/Research
128106	Colorado State University-Pueblo	Pueblo	CO	West	Baccalaureate
127185	Fort Lewis College	Durango	CO	West	Baccalaureate
127556	Mesa State College	Grand Junction	CO	West	Baccalaureate
127565	Metropolitan State College of Denver	Denver	CO	West	Baccalaureate
126580	University of Colorado at Colorado Springs	Colorado Springs	CO	West	Master's
126614	University of Colorado Boulder	Boulder	CO	West	Doctoral/Research
126562	University of Colorado Denver	Denver	CO	West	Doctoral/Research
127741	University of Northern Colorado	Greeley	CO	West	Doctoral/Research
128391	Western State College of Colorado	Gunnison	CO	West	Baccalaureate
128771	Central Connecticut State University	New Britain	CT	Northeast	Master's
130934	Delaware State University	Dover	DE	Northeast	Master's
133650	Florida Agricultural and Mechanical University	Tallahassee	FL	Southeast	Doctoral/Research
133669	Florida Atlantic University	Boca Raton	FL	Southeast	Doctoral/Research
433660	Florida Gulf Coast University	Fort Myers	FL	Southeast	Master's
133951	Florida International University	Miami	FL	Southeast	Doctoral/Research
134097	Florida State University	Tallahassee	FL	Southeast	Doctoral/Research
262129	New College of Florida	Sarasota	FL	Southeast	Baccalaureate
138354	The University of West Florida	Pensacola	FL	Southeast	Doctoral/Research
132903	University of Central Florida	Orlando	FL	Southeast	Doctoral/Research
134130	University of Florida	Gainesville	FL	Southeast	Doctoral/Research
136172	University of North Florida	Jacksonville	FL	Southeast	Master's
451671	University of South Florida Sarasota-Manatee	Sarasota	FL	Southeast	Doctoral/Research
137351	University of South Florida-Main Campus	Tampa	FL	Southeast	Doctoral/Research
451680	University of South Florida-Polytechnic	Lakeland	FL	Southeast	Doctoral/Research
448840	University of South Florida-St. Petersburg Campus	St. Petersburg	FL	Southeast	Doctoral/Research
138716	Albany State University	Albany	GA	Southeast	Master's
138789	Armstrong Atlantic State University	Savannah	GA	Southeast	Master's
138983	Augusta State University	Augusta	GA	Southeast	Master's
139311	Clayton State University	Morrow	GA	Southeast	Baccalaureate
139366	Columbus State University	Columbus	GA	Southeast	Master's
139861	Georgia College & State University	Milledgeville	GA	Southeast	Master's
139755	Georgia Institute of Technology-Main Campus	Atlanta	GA	Southeast	Doctoral/Research
139931	Georgia Southern University	Statesboro	GA	Southeast	Doctoral/Research
139764	Georgia Southwestern State University	Americus	GA	Southeast	Master's
139940	Georgia State University	Atlanta	GA	Southeast	Doctoral/Research
140164	Kennesaw State University	Kennesaw	GA	Southeast	Master's
141097	Southern Polytechnic State University	Marietta	GA	Southeast	Master's
139959	University of Georgia	Athens	GA	Southeast	Doctoral/Research
141334	University of West Georgia	Carrollton	GA	Southeast	Master's

Unit ID	Institution	City	State	Geographic Region	Simplified Carnegie Classification
141264	Valdosta State University	Valdosta	GA	Southeast	Master's
141565	University of Hawaii at Hilo	Hilo	HI	West	Baccalaureate
141574	University of Hawaii at Manoa	Honolulu	HI	West	Doctoral/Research
141981	University of Hawaii-West Oahu	Pearl City	HI	West	Baccalaureate
153603	Iowa State University	Ames	IA	Midwest	Doctoral/Research
153658	University of Iowa	Iowa City	IA	Midwest	Doctoral/Research
154095	University of Northern Iowa	Cedar Falls	IA	Midwest	Master's
142115	Boise State University	Boise	ID	West	Master's
142276	Idaho State University	Pocatello	ID	West	Doctoral/Research
142328	Lewis-Clark State College	Lewiston	ID	West	Baccalaureate
142285	University of Idaho	Moscow	ID	West	Doctoral/Research
144005	Chicago State University	Chicago	IL	Midwest	Master's
144892	Eastern Illinois University	Charleston	IL	Midwest	Master's
145336	Governors State University	University Park	IL	Midwest	Master's
145813	Illinois State University	Normal	IL	Midwest	Doctoral/Research
147776	Northeastern Illinois University	Chicago	IL	Midwest	Master's
147703	Northern Illinois University	Dekalb	IL	Midwest	Doctoral/Research
149222	Southern Illinois University Carbondale	Carbondale	IL	Midwest	Doctoral/Research
149231	Southern Illinois University Edwardsville	Edwardsville	IL	Midwest	Master's
145600	University of Illinois at Chicago	Chicago	IL	Midwest	Doctoral/Research
148654	University of Illinois at Springfield	Springfield	IL	Midwest	Master's
145637	University of Illinois at Urbana-Champaign	Champaign	IL	Midwest	Doctoral/Research
149772	Western Illinois University	Macomb	IL	Midwest	Master's
150136	Ball State University	Muncie	IN	Midwest	Doctoral/Research
151324	Indiana State University	Terre Haute	IN	Midwest	Doctoral/Research
151351	Indiana University-Bloomington	Bloomington	IN	Midwest	Doctoral/Research
151388	Indiana University-East	Richmond	IN	Midwest	Baccalaureate
151333	Indiana University-Kokomo	Kokomo	IN	Midwest	Baccalaureate
151360	Indiana University-Northwest	Gary	IN	Midwest	Master's
151102	Indiana University-Purdue University-Fort Wayne	Fort Wayne	IN	Midwest	Master's
151111	Indiana University-Purdue University-Indianapolis	Indianapolis	IN	Midwest	Doctoral/Research
151342	Indiana University-South Bend	South Bend	IN	Midwest	Master's
151379	Indiana University-Southeast	New Albany	IN	Midwest	Master's
152248	Purdue University-Calumet Campus	Hammond	IN	Midwest	Master's
243780	Purdue University-Main Campus	West Lafayette	IN	Midwest	Doctoral/Research
151306	University of Southern Indiana	Evansville	IN	Midwest	Master's
155025	Emporia State University	Emporia	KS	Midwest	Master's
155061	Fort Hays State University	Hays	KS	Midwest	Master's
155399	Kansas State University	Manhattan	KS	Midwest	Doctoral/Research
155681	Pittsburg State University	Pittsburg	KS	Midwest	Master's
155317	University of Kansas	Lawrence	KS	Midwest	Doctoral/Research
156082	Washburn University	Topeka	KS	Midwest	Master's
156125	Wichita State University	Wichita	KS	Midwest	Doctoral/Research
156620	Eastern Kentucky University	Richmond	KY	Southeast	Master's
157058	Kentucky State University	Frankfort	KY	Southeast	Baccalaureate
157386	Morehead State University	Morehead	KY	Southeast	Master's
157401	Murray State University	Murray	KY	Southeast	Master's
157447	Northern Kentucky University	Highland Heights	KY	Southeast	Master's
157085	University of Kentucky	Lexington	KY	Southeast	Doctoral/Research
157289	University of Louisville	Louisville	KY	Southeast	Doctoral/Research

Unit ID	Institution	City	State	Geographic Region	Simplified Carnegie Classification
157951	Western Kentucky University	Bowling Green	KY	Southeast	Master's
159009	Grambling State University	Grambling	LA	Southeast	Master's
159391	Louisiana State University and Agricultural & Mechanical College	Baton Rouge	LA	Southeast	Doctoral/Research
159382	Louisiana State University at Alexandria	Alexandria	LA	Southeast	Baccalaureate
159647	Louisiana Tech University	Ruston	LA	Southeast	Doctoral/Research
159717	McNeese State University	Lake Charles	LA	Southeast	Master's
159966	Nicholls State University	Thibodaux	LA	Southeast	Master's
160038	Northwestern State University of Louisiana	Natchitoches	LA	Southeast	Master's
160612	Southeastern Louisiana University	Hammond	LA	Southeast	Master's
160630	Southern University at New Orleans	New Orleans	LA	Southeast	Master's
160658	University of Louisiana at Lafayette	Lafayette	LA	Southeast	Doctoral/Research
159993	University of Louisiana Monroe	Monroe	LA	Southeast	Master's
159939	University of New Orleans	New Orleans	LA	Southeast	Doctoral/Research
165024	Bridgewater State University	Bridgewater	MA	Northeast	Master's
165820	Fitchburg State University	Fitchburg	MA	Northeast	Master's
165866	Framingham State University	Framingham	MA	Northeast	Master's
167288	Massachusetts College of Liberal Arts	North Adams	MA	Northeast	Baccalaureate
166692	Massachusetts Maritime Academy	Buzzards Bay	MA	Northeast	Baccalaureate
167729	Salem State University	Salem	MA	Northeast	Master's
166629	University of Massachusetts Amherst	Amherst	MA	Northeast	Doctoral/Research
166638	University of Massachusetts-Boston	Boston	MA	Northeast	Doctoral/Research
167987	University of Massachusetts-Dartmouth	North Dartmouth	MA	Northeast	Master's
166513	University of Massachusetts-Lowell	Lowell	MA	Northeast	Doctoral/Research
168263	Westfield State University	Westfield	MA	Northeast	Master's
162007	Bowie State University	Bowie	MD	Northeast	Master's
162283	Coppin State University	Baltimore	MD	Northeast	Master's
162584	Frostburg State University	Frostburg	MD	Northeast	Master's
163453	Morgan State University	Baltimore	MD	Northeast	Doctoral/Research
163851	Salisbury University	Salisbury	MD	Northeast	Master's
163912	St. Mary's College of Maryland	Saint Mary's City	MD	Northeast	Baccalaureate
164076	Towson University	Towson	MD	Northeast	Master's
161873	University of Baltimore	Baltimore	MD	Northeast	Master's
163338	University of Maryland Eastern Shore	Princess Anne	MD	Northeast	Master's
163268	University of Maryland-Baltimore County	Baltimore	MD	Northeast	Doctoral/Research
163286	University of Maryland-College Park	College Park	MD	Northeast	Doctoral/Research
163204	University of Maryland-University College	Adelphi	MD	Northeast	Master's
161299	Maine Maritime Academy	Castine	ME	Northeast	Baccalaureate
161253	University of Maine	Orono	ME	Northeast	Doctoral/Research
161217	University of Maine at Augusta	Augusta	ME	Northeast	Baccalaureate
161226	University of Maine at Farmington	Farmington	ME	Northeast	Baccalaureate
161235	University of Maine at Fort Kent	Fort Kent	ME	Northeast	Baccalaureate
161244	University of Maine at Machias	Machias	ME	Northeast	Baccalaureate
161341	University of Maine at Presque Isle	Presque Isle	ME	Northeast	Baccalaureate
161554	University of Southern Maine	Portland	ME	Northeast	Master's
169248	Central Michigan University	Mount Pleasant	MI	Midwest	Doctoral/Research
169798	Eastern Michigan University	Ypsilanti	MI	Midwest	Master's
169910	Ferris State University	Big Rapids	MI	Midwest	Master's
170082	Grand Valley State University	Allendale	MI	Midwest	Master's
170639	Lake Superior State University	Sault Ste Marie	MI	Midwest	Baccalaureate

Unit ID	Institution	City	State	Geographic Region	Simplified Carnegie Classification
171100	Michigan State University	East Lansing	MI	Midwest	Doctoral/Research
171128	Michigan Technological University	Houghton	MI	Midwest	Doctoral/Research
171456	Northern Michigan University	Marquette	MI	Midwest	Master's
171571	Oakland University	Rochester Hills	MI	Midwest	Doctoral/Research
172051	Saginaw Valley State University	University Center	MI	Midwest	Master's
170976	University of Michigan-Ann Arbor	Ann Arbor	MI	Midwest	Doctoral/Research
171137	University of Michigan-Dearborn	Dearborn	MI	Midwest	Master's
171146	University of Michigan-Flint	Flint	MI	Midwest	Master's
172644	Wayne State University	Detroit	MI	Midwest	Doctoral/Research
172699	Western Michigan University	Kalamazoo	MI	Midwest	Doctoral/Research
173124	Bemidji State University	Bemidji	MN	Midwest	Master's
174020	Metropolitan State University	Saint Paul	MN	Midwest	Master's
173920	Minnesota State University-Mankato	Mankato	MN	Midwest	Master's
174358	Minnesota State University-Moorhead	Moorhead	MN	Midwest	Master's
174783	Saint Cloud State University	Saint Cloud	MN	Midwest	Master's
175078	Southwest Minnesota State University	Marshall	MN	Midwest	Master's
175272	Winona State University	Winona	MN	Midwest	Master's
177551	Harris-Stowe State University	Saint Louis	MO	Midwest	Baccalaureate
177940	Lincoln University	Jefferson City	MO	Midwest	Master's
178341	Missouri Southern State University	Joplin	MO	Midwest	Baccalaureate
179566	Missouri State University	Springfield	MO	Midwest	Master's
178411	Missouri University of Science and Technology	Rolla	MO	Midwest	Doctoral/Research
178387	Missouri Western State University	Saint Joseph	MO	Midwest	Baccalaureate
178624	Northwest Missouri State University	Maryville	MO	Midwest	Master's
179557	Southeast Missouri State University	Cape Girardeau	MO	Midwest	Master's
178615	Truman State University	Kirksville	MO	Midwest	Master's
176965	University of Central Missouri	Warrensburg	MO	Midwest	Master's
178396	University of Missouri-Columbia	Columbia	MO	Midwest	Doctoral/Research
178402	University of Missouri-Kansas City	Kansas City	MO	Midwest	Doctoral/Research
178420	University of Missouri-St Louis	Saint Louis	MO	Midwest	Doctoral/Research
175342	Alcorn State University	Alcorn State	MS	Southeast	Master's
175616	Delta State University	Cleveland	MS	Southeast	Master's
175856	Jackson State University	Jackson	MS	Southeast	Doctoral/Research
176080	Mississippi State University	Mississippi State	MS	Southeast	Doctoral/Research
176035	Mississippi University for Women	Columbus	MS	Southeast	Master's
176044	Mississippi Valley State University	Itta Bena	MS	Southeast	Master's
176017	University of Mississippi Main Campus	University	MS	Southeast	Doctoral/Research
176372	University of Southern Mississippi	Hattiesburg	MS	Southeast	Doctoral/Research
180461	Montana State University	Bozeman	MT	West	Doctoral/Research
180522	Montana State University-Northern	Havre	MT	West	Baccalaureate
180489	The University of Montana	Missoula	MT	West	Doctoral/Research
180692	The University of Montana-Western	Dillon	MT	West	Baccalaureate
197869	Appalachian State University	Boone	NC	Southeast	Master's
198464	East Carolina University	Greenville	NC	Southeast	Doctoral/Research
198507	Elizabeth City State University	Elizabeth City	NC	Southeast	Baccalaureate
198543	Fayetteville State University	Fayetteville	NC	Southeast	Master's
199102	North Carolina A & T State University	Greensboro	NC	Southeast	Doctoral/Research
199157	North Carolina Central University	Durham	NC	Southeast	Master's
199193	North Carolina State University at Raleigh	Raleigh	NC	Southeast	Doctoral/Research
199111	University of North Carolina at Asheville	Asheville	NC	Southeast	Baccalaureate

Unit ID	Institution	City	State	Geographic Region	Simplified Carnegie Classification
199120	University of North Carolina at Chapel Hill	Chapel Hill	NC	Southeast	Doctoral/Research
199139	University of North Carolina at Charlotte	Charlotte	NC	Southeast	Doctoral/Research
199148	University of North Carolina at Greensboro	Greensboro	NC	Southeast	Doctoral/Research
199281	University of North Carolina at Pembroke	Pembroke	NC	Southeast	Master's
199218	University of North Carolina-Wilmington	Wilmington	NC	Southeast	Master's
200004	Western Carolina University	Cullowhee	NC	Southeast	Master's
199999	Winston-Salem State University	Winston-Salem	NC	Southeast	Baccalaureate
200059	Dickinson State University	Dickinson	ND	Midwest	Baccalaureate
200226	Mayville State University	Mayville	ND	Midwest	Baccalaureate
200253	Minot State University	Minot	ND	Midwest	Master's
200332	North Dakota State University-Main Campus	Fargo	ND	Midwest	Doctoral/Research
200280	University of North Dakota	Grand Forks	ND	Midwest	Doctoral/Research
200572	Valley City State University	Valley City	ND	Midwest	Baccalaureate
180948	Chadron State College	Chadron	NE	Midwest	Baccalaureate
181534	Peru State College	Peru	NE	Midwest	Baccalaureate
181215	University of Nebraska at Kearney	Kearney	NE	Midwest	Master's
181394	University of Nebraska at Omaha	Omaha	NE	Midwest	Master's
181464	University of Nebraska-Lincoln	Lincoln	NE	Midwest	Doctoral/Research
181783	Wayne State College	Wayne	NE	Midwest	Master's
183062	Keene State College	Keene	NH	Northeast	Master's
183080	Plymouth State University	Plymouth	NH	Northeast	Master's
183044	University of New Hampshire-Main Campus	Durham	NH	Northeast	Doctoral/Research
185262	Kean University	Union	NJ	Northeast	Master's
185590	Montclair State University	Montclair	NJ	Northeast	Master's
185129	New Jersey City University	Jersey City	NJ	Northeast	Master's
185828	New Jersey Institute of Technology	Newark	NJ	Northeast	Doctoral/Research
186201	Ramapo College of New Jersey	Mahwah	NJ	Northeast	Master's
184782	Rowan University	Glassboro	NJ	Northeast	Master's
187134	The College of New Jersey	Ewing	NJ	Northeast	Master's
186876	The Richard Stockton College of New Jersey	Pomona	NJ	Northeast	Master's
187046	Thomas Edison State College	Trenton	NJ	Northeast	Baccalaureate
187444	William Paterson University of New Jersey	Wayne	NJ	Northeast	Master's
187648	Eastern New Mexico University-Main Campus	Portales	NM	West	Master's
187897	New Mexico Highlands University	Las Vegas	NM	West	Master's
188030	New Mexico State University-Main Campus	Las Cruces	NM	West	Doctoral/Research
188304	Western New Mexico University	Silver City	NM	West	Master's
182306	Great Basin College	Elko	NV	West	Baccalaureate
182281	University of Nevada-Las Vegas	Las Vegas	NV	West	Doctoral/Research
182290	University of Nevada-Reno	Reno	NV	West	Doctoral/Research
190512	CUNY Bernard M Baruch College	New York	NY	Northeast	Master's
190549	CUNY Brooklyn College	Brooklyn	NY	Northeast	Master's
190567	CUNY City College	New York	NY	Northeast	Master's
190558	CUNY College of Staten Island	Staten Island	NY	Northeast	Master's
190576	CUNY Graduate School and University Center	New York	NY	Northeast	Doctoral/Research
190594	CUNY Hunter College	New York	NY	Northeast	Master's
190600	CUNY John Jay College of Criminal Justice	New York	NY	Northeast	Master's
190637	CUNY Lehman College	Bronx	NY	Northeast	Master's
190646	CUNY Medgar Evers College	Brooklyn	NY	Northeast	Baccalaureate
190655	CUNY New York City College of Technology	Brooklyn	NY	Northeast	Baccalaureate
190664	CUNY Queens College	Flushing	NY	Northeast	Master's

Unit ID	Institution	City	State	Geographic Region	Simplified Carnegie Classification
190691	CUNY York College	Jamaica	NY	Northeast	Baccalaureate
196042	Farmingdale State College	Farmingdale	NY	Northeast	Baccalaureate
191126	Fashion Institute of Technology	New York	NY	Northeast	Baccalaureate
196176	State University of New York at New Paltz	New Paltz	NY	Northeast	Master's
196097	Stony Brook University	Stony Brook	NY	Northeast	Doctoral/Research
196060	SUNY at Albany	Albany	NY	Northeast	Doctoral/Research
196079	SUNY at Binghamton	Binghamton	NY	Northeast	Doctoral/Research
196158	SUNY at Fredonia	Fredonia	NY	Northeast	Master's
196167	SUNY at Geneseo	Geneseo	NY	Northeast	Master's
196219	SUNY at Purchase College	Purchase	NY	Northeast	Baccalaureate
196121	SUNY College at Brockport	Brockport	NY	Northeast	Master's
196130	SUNY College at Buffalo	Buffalo	NY	Northeast	Master's
196149	SUNY College at Cortland	Cortland	NY	Northeast	Master's
196237	SUNY College at Old Westbury	Old Westbury	NY	Northeast	Baccalaureate
196185	SUNY College at Oneonta	Oneonta	NY	Northeast	Master's
196194	SUNY College at Oswego	Oswego	NY	Northeast	Master's
196246	SUNY College at Plattsburgh	Plattsburgh	NY	Northeast	Master's
196200	SUNY College at Potsdam	Potsdam	NY	Northeast	Master's
196033	SUNY College of Agriculture and Technology at Cobleskill	Cobleskill	NY	Northeast	Baccalaureate
196103	SUNY College of Environmental Science and Forestry	Syracuse	NY	Northeast	Doctoral/Research
196006	SUNY College of Technology at Alfred	Alfred	NY	Northeast	Baccalaureate
196024	SUNY College of Technology at Delhi	Delhi	NY	Northeast	Baccalaureate
196264	SUNY Empire State College	Saratoga Springs	NY	Northeast	Master's
196112	SUNY Institute of Technology at Utica-Rome	Utica	NY	Northeast	Master's
196291	SUNY Maritime College	Throggs Neck	NY	Northeast	Baccalaureate
196088	University at Buffalo	Buffalo	NY	Northeast	Doctoral/Research
201690	Central State University	Wilberforce	OH	Midwest	Baccalaureate
202134	Cleveland State University	Cleveland	OH	Midwest	Doctoral/Research
204796	Ohio State University-Main Campus	Columbus	OH	Midwest	Doctoral/Research
205443	Shawnee State University	Portsmouth	OH	Midwest	Baccalaureate
206084	University of Toledo	Toledo	OH	Midwest	Doctoral/Research
206695	Youngstown State University	Youngstown	OH	Midwest	Master's
206914	Cameron University	Lawton	OK	West	Master's
207041	East Central University	Ada	OK	West	Master's
207209	Langston University	Langston	OK	West	Baccalaureate
207263	Northeastern State University	Tahlequah	OK	West	Master's
207306	Northwestern Oklahoma State University	Alva	OK	West	Baccalaureate
207351	Oklahoma Panhandle State University	Goodwell	OK	West	Baccalaureate
207388	Oklahoma State University-Main Campus	Stillwater	OK	West	Doctoral/Research
207661	Rogers State University	Claremore	OK	West	Baccalaureate
207847	Southeastern Oklahoma State University	Durant	OK	West	Master's
207865	Southwestern Oklahoma State University	Weatherford	OK	West	Master's
206941	University of Central Oklahoma	Edmond	OK	West	Master's
207500	University of Oklahoma Norman Campus	Norman	OK	West	Doctoral/Research
207722	University of Science and Arts of Oklahoma	Chickasha	OK	West	Baccalaureate
208646	Eastern Oregon University	La Grande	OR	West	Master's
209506	Oregon Institute of Technology	Klamath Falls	OR	West	Baccalaureate
209807	Portland State University	Portland	OR	West	Doctoral/Research

Unit ID	Institution	City	State	Geographic Region	Simplified Carnegie Classification
210146	Southern Oregon University	Ashland	OR	West	Master's
209551	University of Oregon	Eugene	OR	West	Doctoral/Research
210429	Western Oregon University	Monmouth	OR	West	Master's
211158	Bloomsburg University of Pennsylvania	Bloomsburg	PA	Northeast	Master's
211361	California University of Pennsylvania	California	PA	Northeast	Master's
211608	Cheyney University of Pennsylvania	Cheyney	PA	Northeast	Master's
211644	Clarion University of Pennsylvania	Clarion	PA	Northeast	Master's
212115	East Stroudsburg University of Pennsylvania	East Stroudsburg	PA	Northeast	Master's
212160	Edinboro University of Pennsylvania	Edinboro	PA	Northeast	Master's
213020	Indiana University of Pennsylvania-Main Campus	Indiana	PA	Northeast	Doctoral/Research
213349	Kutztown University of Pennsylvania	Kutztown	PA	Northeast	Master's
213613	Lock Haven University	Lock Haven	PA	Northeast	Master's
213783	Mansfield University of Pennsylvania	Mansfield	PA	Northeast	Master's
214041	Millersville University of Pennsylvania	Millersville	PA	Northeast	Master's
216010	Shippensburg University of Pennsylvania	Shippensburg	PA	Northeast	Master's
216038	Slippery Rock University of Pennsylvania	Slippery Rock	PA	Northeast	Master's
216764	West Chester University of Pennsylvania	West Chester	PA	Northeast	Master's
217420	Rhode Island College	Providence	RI	Northeast	Master's
217484	University of Rhode Island	Kingston	RI	Northeast	Doctoral/Research
217864	Citadel Military College of South Carolina	Charleston	SC	Southeast	Master's
217882	Clemson University	Clemson	SC	Southeast	Doctoral/Research
218724	Coastal Carolina University	Conway	SC	Southeast	Baccalaureate
217819	College of Charleston	Charleston	SC	Southeast	Master's
218061	Francis Marion University	Florence	SC	Southeast	Master's
218229	Lander University	Greenwood	SC	Southeast	Baccalaureate
218733	South Carolina State University	Orangeburg	SC	Southeast	Doctoral/Research
218645	University of South Carolina-Aiken	Aiken	SC	Southeast	Baccalaureate
218663	University of South Carolina-Columbia	Columbia	SC	Southeast	Doctoral/Research
218742	University of South Carolina-Upstate	Spartanburg	SC	Southeast	Baccalaureate
218964	Winthrop University	Rock Hill	SC	Southeast	Master's
219046	Black Hills State University	Spearfish	SD	Midwest	Baccalaureate
219082	Dakota State University	Madison	SD	Midwest	Baccalaureate
219259	Northern State University	Aberdeen	SD	Midwest	Baccalaureate
219356	South Dakota State University	Brookings	SD	Midwest	Doctoral/Research
219471	University of South Dakota	Vermillion	SD	Midwest	Doctoral/Research
219602	Austin Peay State University	Clarksville	TN	Southeast	Master's
220075	East Tennessee State University	Johnson City	TN	Southeast	Doctoral/Research
220978	Middle Tennessee State University	Murfreesboro	TN	Southeast	Master's
221838	Tennessee State University	Nashville	TN	Southeast	Doctoral/Research
221847	Tennessee Technological University	Cookeville	TN	Southeast	Master's
221759	The University of Tennessee	Knoxville	TN	Southeast	Doctoral/Research
221740	The University of Tennessee at Chattanooga	Chattanooga	TN	Southeast	Master's
221768	The University of Tennessee-Martin	Martin	TN	Southeast	Master's
220862	University of Memphis	Memphis	TN	Southeast	Doctoral/Research
222831	Angelo State University	San Angelo	TX	West	Master's
226833	Midwestern State University	Wichita Falls	TX	West	Master's
227526	Prairie View A & M University	Prairie View	TX	West	Master's
228431	Stephen F Austin State University	Nacogdoches	TX	West	Master's
229063	Texas Southern University	Houston	TX	West	Master's
228459	Texas State University-San Marcos	San Marcos	TX	West	Master's

Unit ID	Institution	City	State	Geographic Region	Simplified Carnegie Classification
229115	Texas Tech University	Lubbock	TX	West	Doctoral/Research
229179	Texas Woman's University	Denton	TX	West	Doctoral/Research
228778	The University of Texas at Austin	Austin	TX	West	Doctoral/Research
229018	The University of Texas of the Permian Basin	Odessa	TX	West	Master's
225511	University of Houston	Houston	TX	West	Doctoral/Research
225414	University of Houston-Clear Lake	Houston	TX	West	Master's
225432	University of Houston-Downtown	Houston	TX	West	Baccalaureate
225502	University of Houston-Victoria	Victoria	TX	West	Master's
227216	University of North Texas	Denton	TX	West	Doctoral/Research
230171	Dixie State College of Utah	Saint George	UT	West	Baccalaureate
230603	Southern Utah University	Cedar City	UT	West	Master's
230764	University of Utah	Salt Lake City	UT	West	Doctoral/Research
230737	Utah Valley University	Orem	UT	West	Baccalaureate
230782	Weber State University	Ogden	UT	West	Master's
231712	Christopher Newport University	Newport News	VA	Southeast	Baccalaureate
231624	College of William and Mary	Williamsburg	VA	Southeast	Doctoral/Research
232186	George Mason University	Fairfax	VA	Southeast	Doctoral/Research
232423	James Madison University	Harrisonburg	VA	Southeast	Master's
232566	Longwood University	Farmville	VA	Southeast	Master's
232937	Norfolk State University	Norfolk	VA	Southeast	Master's
232982	Old Dominion University	Norfolk	VA	Southeast	Doctoral/Research
233277	Radford University	Radford	VA	Southeast	Master's
233897	The University of Virginia's College at Wise	Wise	VA	Southeast	Baccalaureate
232681	University of Mary Washington	Fredericksburg	VA	Southeast	Master's
234076	University of Virginia-Main Campus	Charlottesville	VA	Southeast	Doctoral/Research
234030	Virginia Commonwealth University	Richmond	VA	Southeast	Doctoral/Research
234085	Virginia Military Institute	Lexington	VA	Southeast	Baccalaureate
233921	Virginia Polytechnic Institute and State University	Blacksburg	VA	Southeast	Doctoral/Research
234155	Virginia State University	Petersburg	VA	Southeast	Master's
231174	University of Vermont	Burlington	VT	Northeast	Doctoral/Research
234827	Central Washington University	Ellensburg	WA	West	Master's
235097	Eastern Washington University	Cheney	WA	West	Master's
235167	The Evergreen State College	Olympia	WA	West	Master's
236939	Washington State University	Pullman	WA	West	Doctoral/Research
237011	Western Washington University	Bellingham	WA	West	Master's
240268	University of Wisconsin-Eau Claire	Eau Claire	WI	Midwest	Master's
240277	University of Wisconsin-Green Bay	Green Bay	WI	Midwest	Baccalaureate
240329	University of Wisconsin-La Crosse	La Crosse	WI	Midwest	Master's
240444	University of Wisconsin-Madison	Madison	WI	Midwest	Doctoral/Research
240453	University of Wisconsin-Milwaukee	Milwaukee	WI	Midwest	Doctoral/Research
240365	University of Wisconsin-Oshkosh	Oshkosh	WI	Midwest	Master's
240374	University of Wisconsin-Parkside	Kenosha	WI	Midwest	Baccalaureate
240462	University of Wisconsin-Platteville	Platteville	WI	Midwest	Master's
240471	University of Wisconsin-River Falls	River Falls	WI	Midwest	Master's
240480	University of Wisconsin-Stevens Point	Stevens Point	WI	Midwest	Master's
240417	University of Wisconsin-Stout	Menomonie	WI	Midwest	Master's
240426	University of Wisconsin-Superior	Superior	WI	Midwest	Master's
240189	University of Wisconsin-Whitewater	Whitewater	WI	Midwest	Master's
237215	Bluefield State College	Bluefield	WV	Southeast	Baccalaureate
237330	Concord University	Athens	WV	Southeast	Baccalaureate

Unit ID	Institution	City	State	Geographic Region	Simplified Carnegie Classification
237385	Glenville State College	Glenville	WV	Southeast	Baccalaureate
237525	Marshall University	Huntington	WV	Southeast	Master's
237792	Shepherd University	Shepherdstown	WV	Southeast	Baccalaureate
237932	West Liberty University	West Liberty	WV	Southeast	Baccalaureate
237899	West Virginia State University	Institute	WV	Southeast	Baccalaureate
237686	West Virginia University at Parkersburg	Parkersburg	WV	Southeast	Baccalaureate
240727	University of Wyoming	Laramie	WY	West	Doctoral/Research

Institutions excluded from the Research Questions Four and Five in order by state and then alphabetized by institution

Unit ID	Institution	City	State	Region	Carnegie Classification	Reason
122409	San Diego State University	San Diego	CA	West	Doctoral/Research	Not reporting independently
441186	San Diego State University-Imperial Valley Campus	Calexico	CA	West	Baccalaureate	Not reporting independently
110635	University of California-Berkeley	Berkeley	CA	West	Doctoral/Research	Not reporting independently
110644	University of California-Davis	Davis	CA	West	Doctoral/Research	Not reporting independently
110653	University of California-Irvine	Irvine	CA	West	Doctoral/Research	Not reporting independently
110662	University of California-Los Angeles	Los Angeles	CA	West	Doctoral/Research	Not reporting independently
110671	University of California-Riverside	Riverside	CA	West	Doctoral/Research	Not reporting independently
110680	University of California-San Diego	La Jolla	CA	West	Doctoral/Research	Not reporting independently
110705	University of California-Santa Barbara	Santa Barbara	CA	West	Doctoral/Research	Not reporting independently
110714	University of California-Santa Cruz	Santa Cruz	CA	West	Doctoral/Research	Not reporting independently
128780	Charter Oak State College	New Britain	CT	Northeast	Baccalaureate	No long-term debt
129215	Eastern Connecticut State University	Willimantic	CT	Northeast	Master's	No long-term debt
130493	Southern Connecticut State University	New Haven	CT	Northeast	Master's	No long-term debt
129020	University of Connecticut	Storrs	CT	Northeast	Doctoral/Research	Not reporting independently
130776	Western Connecticut State University	Danbury	CT	Northeast	Master's	No long-term debt
131399	University of the District of Columbia	Washington	DC	Northeast	Master's	Not reporting independently
130943	University of Delaware	Newark	DE	Northeast	Doctoral/Research	Not GASB Reporting
139463	Dalton State College	Dalton	GA	Southeast	Baccalaureate	No long-term debt
139719	Fort Valley State University	Fort Valley	GA	Southeast	Master's	No long-term debt
140322	Macon State College	Macon	GA	Southeast	Baccalaureate	No long-term debt
140669	North Georgia College & State University	Dahlonega	GA	Southeast	Master's	No long-term debt
140960	Savannah State University	Savannah	GA	Southeast	Master's	No long-term debt
152266	Purdue University-North Central Campus	Westville	IN	Midwest	Baccalaureate	No long-term debt
159416	Louisiana State University-Shreveport	Shreveport	LA	Southeast	Master's	No long-term debt
160621	Southern University and A & M College	Baton Rouge	LA	Southeast	Master's	Not reporting independently
168430	Worcester State University	Worcester	MA	Northeast	Master's	Outlier
174075	University of Minnesota-Crookston	Crookston	MN	Midwest	Baccalaureate	No long-term debt
174233	University of Minnesota-Duluth	Duluth	MN	Midwest	Master's	No long-term debt
174251	University of Minnesota-Morris	Morris	MN	Midwest	Baccalaureate	No long-term debt

Unit ID	Institution	City	State	Region	Carnegie Classification	Reason
174066	University of Minnesota-Twin Cities	Minneapolis	MN	Midwest	Doctoral/Research	Not reporting independently
180179	Montana State University-Billings	Billings	MT	West	Master's	Not reporting independently
180416	Montana Tech of the University of Montana	Butte	MT	West	Baccalaureate	Not reporting independently
183257	Granite State College	Concord	NH	Northeast	Baccalaureate	No long-term debt
183071	University of New Hampshire at Manchester	Manchester	NH	Northeast	Baccalaureate	No long-term debt
186371	Rutgers University-Camden	Camden	NJ	Northeast	Master's	Not reporting independently
186380	Rutgers University-New Brunswick	New Brunswick	NJ	Northeast	Doctoral/Research	Not reporting independently
186399	Rutgers University-Newark	Newark	NJ	Northeast	Doctoral/Research	Not reporting independently
187967	New Mexico Institute of Mining and Technology	Socorro	NM	West	Master's	No long-term debt
187985	University of New Mexico-Main Campus	Albuquerque	NM	West	Doctoral/Research	Not reporting independently
441900	Nevada State College	Henderson	NV	West	Baccalaureate	No long-term debt
201441	Bowling Green State University-Main Campus	Bowling Green	OH	Midwest	Doctoral/Research	Not reporting independently
203447	Kent State University at Ashtabula	Ashtabula	OH	Midwest	Baccalaureate	Not reporting independently
203526	Kent State University at Geauga	Burton	OH	Midwest	Baccalaureate	Not reporting independently
203517	Kent State University at Kent	Kent	OH	Midwest	Doctoral/Research	Not reporting independently
203465	Kent State University at Stark	Canton	OH	Midwest	Baccalaureate	Not reporting independently
203474	Kent State University at Trumbull	Warren	OH	Midwest	Baccalaureate	Not reporting independently
204024	Miami University-Oxford	Oxford	OH	Midwest	Doctoral/Research	Not reporting independently
204820	Ohio University-Chillicothe Campus	Chillicothe	OH	Midwest	Baccalaureate	Not reporting independently
204802	Ohio University-Eastern Campus	Saint Clairsville	OH	Midwest	Baccalaureate	Not reporting independently
204848	Ohio University-Lancaster Campus	Lancaster	OH	Midwest	Baccalaureate	Not reporting independently
204857	Ohio University-Main Campus	Athens	OH	Midwest	Doctoral/Research	Not reporting independently
204839	Ohio University-Southern Campus	Ironton	OH	Midwest	Baccalaureate	Not reporting independently
204866	Ohio University-Zanesville Campus	Zanesville	OH	Midwest	Baccalaureate	Not reporting independently
200800	University of Akron Main Campus	Akron	OH	Midwest	Doctoral/Research	Not reporting independently
201885	University of Cincinnati-Main Campus	Cincinnati	OH	Midwest	Doctoral/Research	Not reporting independently
206604	Wright State University-Main Campus	Dayton	OH	Midwest	Doctoral/Research	Not reporting independently
209542	Oregon State University	Corvallis	OR	West	Doctoral/Research	Not reporting independently

Unit ID	Institution	City	State	Region	Carnegie Classification	Reason
213598	Lincoln University of Pennsylvania	Lincoln University	PA	Northeast	Master's	Not GASB Reporting
366252	Pennsylvania College of Technology	Williamsport	PA	Northeast	Baccalaureate	Not GASB Reporting
214731	Pennsylvania State University-Brandywine	Media	PA	Northeast	Baccalaureate	Not reporting independently
214777	Pennsylvania State University-Main Campus	University Park	PA	Northeast	Doctoral/Research	Not GASB Reporting
214801	Pennsylvania State University-Penn State Abington	Abington	PA	Northeast	Baccalaureate	Not reporting independently
214689	Pennsylvania State University-Penn State Altoona	Altoona	PA	Northeast	Baccalaureate	Not reporting independently
214698	Pennsylvania State University-Penn State Beaver	Monaca	PA	Northeast	Baccalaureate	Not reporting independently
214704	Pennsylvania State University-Penn State Berks	Reading	PA	Northeast	Baccalaureate	Not reporting independently
214740	Pennsylvania State University-Penn State Dubois	Dubois	PA	Northeast	Baccalaureate	Not reporting independently
214591	Pennsylvania State University-Penn State Erie-Behrend College	Erie	PA	Northeast	Baccalaureate	Not reporting independently
214759	Pennsylvania State University-Penn State Fayette- Eberly Campus	Uniontown	PA	Northeast	Baccalaureate	Not reporting independently
214607	Pennsylvania State University-Penn State Great Valley	Malvern	PA	Northeast	Master's	Not reporting independently
214786	Pennsylvania State University-Penn State Greater Allegheny	McKeesport	PA	Northeast	Baccalaureate	Not reporting independently
214713	Pennsylvania State University-Penn State Harrisburg	Middletown	PA	Northeast	Master's	Not reporting independently
214768	Pennsylvania State University-Penn State Hazleton	Hazleton	PA	Northeast	Baccalaureate	Not reporting independently
214670	Pennsylvania State University-Penn State Lehigh Valley	Center Valley	PA	Northeast	Baccalaureate	Not reporting independently
214795	Pennsylvania State University-Penn State Mont Alto	Mont Alto	PA	Northeast	Baccalaureate	Not reporting independently
214625	Pennsylvania State University-Penn State New Kensington	Upper Burrell	PA	Northeast	Baccalaureate	Not reporting independently
214810	Pennsylvania State University-Penn State Schuylkill	Schuylkill Haven	PA	Northeast	Baccalaureate	Not reporting independently
214634	Pennsylvania State University-Penn State Shenango	Sharon	PA	Northeast	Baccalaureate	Not reporting independently
214643	Pennsylvania State University-Penn State Wilkes-Barre	Lehman	PA	Northeast	Baccalaureate	Not reporting independently
214652	Pennsylvania State University-Penn State Worthington Scranton	Dunmore	PA	Northeast	Baccalaureate	Not reporting independently
214829	Pennsylvania State University-Penn State York	York	PA	Northeast	Baccalaureate	Not reporting independently
216339	Temple University	Philadelphia	PA	Northeast	Doctoral/Research	Not GASB Reporting
215266	University of Pittsburgh-Bradford	Bradford	PA	Northeast	Baccalaureate	Not GASB Reporting
215275	University of Pittsburgh-Greensburg	Greensburg	PA	Northeast	Baccalaureate	Not GASB Reporting
215284	University of Pittsburgh-Johnstown	Johnstown	PA	Northeast	Baccalaureate	Not GASB Reporting

Unit ID	Institution	City	State	Region	Carnegie Classification	Reason
215293	University of Pittsburgh-Pittsburgh Campus	Pittsburgh	PA	Northeast	Doctoral/Research	Not GASB Reporting
226091	Lamar University	Beaumont	TX	West	Master's	No long-term debt
227881	Sam Houston State University	Huntsville	TX	West	Master's	No long-term debt
228501	Sul Ross State University	Alpine	TX	West	Master's	No long-term debt
228529	Tarleton State University	Stephenville	TX	West	Master's	No long-term debt
226152	Texas A & M International University	Laredo	TX	West	Master's	No long-term debt
228723	Texas A & M University	College Station	TX	West	Doctoral/Research	No long-term debt
228714	Texas A & M University at Galveston	Galveston	TX	West	Baccalaureate	No long-term debt
224554	Texas A & M University-Commerce	Commerce	TX	West	Doctoral/Research	No long-term debt
224147	Texas A & M University-Corpus Christi	Corpus Christi	TX	West	Master's	No long-term debt
228705	Texas A & M University-Kingsville	Kingsville	TX	West	Doctoral/Research	No long-term debt
224545	Texas A & M University-Texarkana	Texarkana	TX	West	Master's	No long-term debt
228769	The University of Texas at Arlington	Arlington	TX	West	Doctoral/Research	No long-term debt
227377	The University of Texas at Brownsville	Brownsville	TX	West	Master's	No long-term debt
228787	The University of Texas at Dallas	Richardson	TX	West	Doctoral/Research	No long-term debt
228796	The University of Texas at El Paso	El Paso	TX	West	Doctoral/Research	No long-term debt
229027	The University of Texas at San Antonio	San Antonio	TX	West	Master's	No long-term debt
228802	The University of Texas at Tyler	Tyler	TX	West	Master's	No long-term debt
227368	The University of Texas-Pan American	Edinburg	TX	West	Master's	No long-term debt
229814	West Texas A & M University	Canyon	TX	West	Master's	No long-term debt
230728	Utah State University	Logan	UT	West	Doctoral/Research	Not reporting independently
442833	Utah State University-Regional Campuses and Distance Education	Logan	UT	West	Baccalaureate	Not reporting independently
230834	Castleton State College	Castleton	VT	Northeast	Master's	Not reporting independently
230913	Johnson State College	Johnson	VT	Northeast	Master's	Not reporting independently
230931	Lyndon State College	Lyndonville	VT	Northeast	Baccalaureate	Not reporting independently
231165	Vermont Technical College	Randolph Center	VT	Northeast	Baccalaureate	Not reporting independently
377555	University of Washington-Bothell Campus	Bothell	WA	West	Master's	Not reporting independently
236948	University of Washington-Seattle Campus	Seattle	WA	West	Doctoral/Research	Not reporting independently
377564	University of Washington-Tacoma Campus	Tacoma	WA	West	Master's	Not reporting independently
237367	Fairmont State University	Fairmont	WV	Southeast	Baccalaureate	Not reporting independently
238032	West Virginia University	Morgantown	WV	Southeast	Doctoral/Research	Not reporting independently

Unit ID	Institution	City	State	Region	Carnegie Classification	Reason
237950	West Virginia University Institute of Technology	Montgomery	WV	Southeast	Baccalaureate	Not reporting independently

APPENDIX E

Data Dictionary (Variables of Interest)

Variable-Long Name	SPSS Code	Variable Type	Data Source	Description
Dependent Variables				
Long-term debt	LTDEBT	Continuous	IPEDS Finance survey 2005-2009-Public institutions-GASB 34/35	Amount is equal to the sum of current and noncurrent long-term debt
Leverage	LEVRGE	Continuous	IPEDS Finance survey 2005-2009-Public institutions-GASB 34/35	Leverage is computed as total liabilities divided by total assets.
Independent Variables				
Total assets	Not applicable	Continuous	IPEDS Finance survey 2009-Public institutions-GASB 34/35	Total assets as reported by IPEDS; Used to calculate asset independent variable ratios
Plant, property, and equipment	PPE or PPER	Continuous	IPEDS Finance survey 2009-Public institutions-GASB 34/35	Total plant, property and equipment ending balance less accumulated depreciation ending balance or the total plant, property and equipment ending balance less accumulated depreciation ending balance divided by total assets
Endowment assets	ENDOW or ENDOWR	Continuous	IPEDS Finance survey 2009-Public institutions-GASB 34/35	Value of endowment assets at the end of the fiscal year or the endowment asset valued divided by total assets

Data Dictionary (Variables of Interest)

Variable-Long Name	SPSS Code	Variable Type	Data Source	Description
Total revenues	Not applicable	Continuous		Sum of tuition and fees, state appropriations, federal and local appropriations, sales and services of auxiliary enterprises, sales and services of hospital operations, gifts, and independent operations; Used as the denominator in calculating the revenue ratio independent variables
Tuition and fees	TUIFEE or TUIFEER	Continuous	IPEDS Finance survey 2009-Public institutions-GASB 34/35	Tuition and fees (net of discounts and scholarship allowances) or tuition and fee revenue divided by total revenues
State appropriations	STATE or STATER	Continuous	IPEDS Finance survey 2009-Public institutions-GASB 34/35	State appropriations or state appropriations divided by total revenues. Grants and contracts revenue are excluded.
Federal and local appropriations	FEDLOC or FEDLOCR	Continuous	IPEDS Finance survey 2009-Public institutions-GASB 34/35	Sum of federal and local appropriations or the sum of federal and location appropriations divided by total revenues. Grants and contracts revenue are excluded.
Grants and contracts	GRTCON or GRTCONR	Continuous	IPEDS Finance survey 2009-Public institutions-GASB 34/35	Sum of operating and nonoperating federal, state, and local grants and contracts revenue or the sum of grants and contracts divided by total revenues. Federal nonoperating grants and contracts include Pell grants but not Federal Direct Student Loan program funds. Capital appropriations are excluded from this amount.
Sales and services of auxiliary enterprises	AUXLRY or AUXLRYR	Continuous	IPEDS Finance survey 2009-Public institutions-GASB 34/35	Sales and services of auxiliary enterprises, net of discounts and scholarship allowances or sales and services of auxiliary enterprises, net divided by total revenues

Data Dictionary (Variables of Interest)

Variable-Long Name	SPSS Code	Variable Type	Data Source	Description
Sales and services of hospital operations	HOSPTL or HOSPTLR	Continuous	IPEDS Finance survey 2009-Public institutions-GASB 34/35	Sales and services of hospital operations, net of contractual allowances, are revenues associated with hospitals and clinics operated by an institution, excluding student health clinics. An alternative computation would be sales and services of hospital operations, net, divided by total revenues.
Presence of a hospital	HOSPTL2	Dichotomous	IPEDS Finance survey 2009-Public institutions-GASB 34/35	A dichotomous variable as to whether an institution has hospital operations revenue also will be considered. Variable will be coded 0 if institution has no sales and services of hospital operations and 1 if it does
Gifts	GIFTS or GIFTSR	Continuous	IPEDS Finance survey 2009-Public institutions-GASB 34/35	Gifts, including contributions from organizations affiliated with institutions. Alternative calculation would be gifts divided by total revenues
Independent Operations	INDOP or INDOPR	Continuous	IPEDS Finance survey 2009-Public institutions-GASB 34/35	Independent operations or independent operations divided by total revenues
Revenue diversification index	REVDI	Continuous	IPEDS Finance survey 2009-Public institutions-GASB 34/35	A detailed illustration is shown in Appendix D.
Age of facilities	AGEFAC	Continuous	IPEDS Finance survey 2009-Public institutions-GASB 34/35	Accumulated depreciation ending balance divided by depreciation expense - total expense.

Data Dictionary (Variables of Interest)

Variable-Long Name	SPSS Code	Variable Type	Data Source	Description
Enrollment	ENROLL	Continuous	IPEDS: Frequently used enrollment 2008-2009-12-month full-time equivalent (FTE) enrollment	Based on IPEDS online glossary, the number of FTE students is derived from the credit and/or contact hours reported in the 12-month enrollment survey and an institution's calendar system (quarter, semester, trimester) as reported in the Institutional Characteristics section. For institutions that use the quarter system, one undergraduate and one graduate student FTE is based on 45 and 36 credit hours, respectively. For a semester or trimester system, one undergraduate and one graduate FTE is based on 30 and 24 credit hours. For institutions with continuous enrollment programs, FTE is calculated by taking the number of contact hours attempted and dividing by 900 contact hours. The total 12-month FTE is calculated by adding the undergraduate and the graduate FTE.

Data Dictionary (Variables of Interest)

Variable-Long Name	SPSS Code	Variable Type	Data Source	Description
Geographic region	REGION	Categorical	IPEDS: Institutional characteristics - Directory information, response status and frequently used variables	Institutions are grouped by state in the geographic regions as follows: 1 -Northeast includes IPEDS regions of New England with the states of CT, ME, MA, NH, RI, VT; and Mid East with the state of DE, DC, MD, NJ, NY, PA; 2 - West includes IPEDS regions of Southwest with the states of AZ, NM, OK, TX; Rocky Mountains with the states of CO, ID, MT, UT, WY; and Far West with the states of AK, CA, HI, NV, OR, WA 3 - Midwest includes IPEDS regions of Great Lakes with the states of IL, IN, MI, OH, WI; and Plains with the states of IA, KS, MN, MO, NE, ND, SD; 4 - Southeast IPEDS regions includes the states of AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, WV;
Carnegie classification 2005 basic	CLASS	Categorical	IPEDS: Institutional characteristics - Directory information, response status and frequently used variables	Carnegie Classification 2005: Basic is an update of the original 1973 classification developed by the Carnegie Commission on Higher Education. The Basic classification categorizes institutions according to types of degrees offered and research activity.

Data Dictionary (Variables of Interest)

Variable-Long Name	SPSS Code	Variable Type	Data Source	Description
Institutional Identifiers				
Institution identification number (ID)	UNITID	Nominal	IPEDS: Institutional characteristics - Directory information, response status and frequently used variables	Institution ID as assigned by IPEDS
Institution name	INSTIT	Nominal	IPEDS: Institutional characteristics - Directory information, response status and frequently used variables	Institution Name
City location of institution	CITY	Nominal	IPEDS: Institutional characteristics - Directory information, response status and frequently used variables	City location of Institution
State abbreviation	STATE	Categorical	IPEDS: Institutional characteristics - Directory information, response status and frequently used variables	U.S. Postal Service state abbreviation

APPENDIX F

Illustration of the computation of the Revenue Diversification Index (RDI) using revenue sources of four-year public colleges and universities following the methodology demonstrated by Suyderhoud (1994).

1. Calculate the relative share of each of the major revenue sources of four-year public colleges and universities for fiscal year 2009. These nine revenue sources are tuition and fees, state appropriations, federal and local appropriations, auxiliary services, hospital operations, gifts, independent operations and other revenues. For illustrative purposes, the average of each relative share of revenues for all four-year public colleges and universities as calculated in Table 1 in Chapter II is shown.

   a. Tuition and fees = .2041
   b. State Appropriations = .2387
   c. Federal and Other Appropriations = .0114
   d. Grants and contracts = .2207
   e. Auxiliary enterprises = .0910
   f. Hospital operations = .1282
   g. Gifts = .0265
   h. Independent operations = .0049
   i. Other revenues = .0746

2. Square each revenue share and then sum the squared revenue share amounts. This result is the Hirschman-Herfindahl Index (HHI), which is a calculation of revenue concentration.

   $$HHI = (.2041)^2 + (.2387)^2 + (.0114)^2 + (.2207)^2 + (.0910)^2 + (.1282)^2 + (.0265)^2 + (.0049)^2 + (.0746)^2 = .1785$$

   Maximum diversification is computed based on if each revenue share was an equal proportion of total revenues. Because there are nine revenue sources, the proportionate share would be computed as 100%/9 or .1111:

   $$HHI \text{ for maximum diversification} = (.1111)^2 + (.1111)^2 + (.1111)^2 + (.1111)^2 + (.1111)^2 + (.1111)^2 + (.1111)^2 + (.1111)^2 + (.1111)^2 = .1111$$

289

Less diversification would occur if an entity were 100% dependent on one revenue source whereby the HHI would be shown as:

$$\text{HHI} = (1.00)^2 + (0)^2 + (0)^2 + (0)^2 + (0)^2 + (0)^2 + (0)^2 + (0)^2 + (0)^2 = 1.00$$

3. Diversification is the opposite of revenue concentration. Therefore, the HHI concentration value is deducted from 1.00 to calculate revenue diversification as:

$$1.00 - .1785 = .8215$$

Maximum diversification would be equal to:

$$1.00 - .1111 = .8889$$

Minimum diversification would be computed as:

$$1.00 - 1.00 = 0$$

4. The revenue diversification index is calculated by taking the revenue diversification measure from Step 3 divided by the maximum diversification number in Step 3 as follows:

$$\text{RDI} = .8215/.8889 = .9242$$

A revenue diversification index of 1.00 indicates maximum diversification. As such, four-year public colleges and universities based on the average relative shares of revenues are fairly diversified.

APPENDIX G

THE UNIVERSITY OF
ALABAMA
R E S E A R C H

February 29, 2012

Dana S. Keith
Financial Affairs
Box 870142

Re: Financial Factors and Institutional Charateristics that Relate to
     Long-Term Debt of U.S. Four Year Public Colleges and
     Universities"

Ms. Keith:

This letter comes as a response to your communication received
February 28, 2012. According to the Office for Human Research
Protection (OHRP) under policy 45 CFR 46.101 <u>the proposed work is
not human subjects research.</u>

Because the work is not considered human subjects research, it does
not require IRB approval and is therefore excluded from review by the
IRB.

If you have any questions or if I can be of further assistance please do
not hesitate to contact me.

Sincerely,

Carpantato T. Myles, MSM, CIM
Director of Research Compliance & Research Compliance Officer
Office of Research Compliance
The University of Alabama

APPENDIX H

Median and Standard Deviation of Long-term Debt in Dollars by Classification, Region, and Fiscal year

Carnegie Classification	Region	2005 Mdn	2005 SD	2006 Mdn	2006 SD	2007 Mdn	2007 SD	2008 Mdn	2008 SD	2009 Mdn	2009 SD
Baccalaureate	Northeast	$4,304,845	$20,094,459	$4,663,000	$22,532,852	$5,311,176	$23,827,510	$4,883,634	$28,736,505	$4,518,000	$28,062,440
	West	$7,750,238	$94,088,842	$12,789,060	$112,093,080	$12,054,682	$114,400,852	$12,434,332	$112,135,454	$34,060,622	$118,594,782
	Midwest	$13,189,524	$10,575,623	$15,911,207	$10,511,330	$14,601,849	$11,616,029	$13,768,445	$11,972,458	$14,534,027	$13,889,471
	Southeast	$14,491,185	$31,471,443	$28,405,288	$31,585,276	$29,426,447	$37,489,797	$30,923,189	$45,753,501	$33,732,365	$56,425,218
Total Baccalaureate *Mdn* and *SD*		$10,932,390	$58,550,666	$13,736,059	$69,239,425	$14,572,717	$71,564,945	$15,869,529	$72,389,887	$27,600,741	$79,623,310
Master's	Northeast	$51,181,385	$139,117,694	$64,312,485	$139,832,651	$64,867,297	$145,764,079	$66,520,016	$163,953,249	$70,070,000	$157,374,283
	West	$44,676,614	$80,251,607	$49,275,119	$97,528,221	$48,405,077	$105,314,030	$73,759,361	$121,640,293	$89,615,136	$137,257,404
	Midwest	$32,704,548	$135,114,781	$34,750,900	$162,980,319	$36,566,000	$170,880,934	$45,053,451	$168,122,198	$50,519,043	$204,692,889
	Southeast	$33,291,762	$88,514,175	$41,982,459	$94,054,229	$54,411,827	$99,231,210	$63,244,043	$129,921,710	$78,676,531	$157,620,857
Total Master's *Mdn* and *SD*		$38,274,038	$115,500,483	$47,123,725	$128,114,165	$48,405,077	$134,318,970	$61,652,776	$148,035,434	$68,911,192	$166,246,225
Doctoral/Research	Northeast	$73,050,476	$123,153,612	$82,294,954	$116,554,074	$82,745,650	$110,475,825	$94,848,968	$142,387,096	$97,317,506	$139,954,714
	West	$70,927,326	$191,563,410	$83,228,683	$198,380,799	$81,058,613	$212,442,870	$115,713,634	$219,244,568	$113,205,166	$255,395,063
	Midwest	$89,129,008	$206,459,169	$116,189,074	$219,512,000	$112,405,924	$249,227,615	$122,038,150	$287,407,161	$129,750,605	$309,634,890
	Southeast	$72,082,073	$136,945,827	$82,788,855	$178,986,933	$119,074,009	$181,913,013	$122,070,286	$225,135,003	$129,201,464	$222,428,768
Total Doctoral/Research *Mdn* and *SD*		$77,801,664	$170,427,022	$92,359,427	$188,756,776	$106,500,372	$203,361,914	$112,788,002	$234,660,294	$115,772,790	$249,433,073
	Northeast	$47,432,913	$128,890,015	$51,525,456	$128,766,295	$55,758,165	$132,322,355	$62,202,682	$151,722,783	$65,152,761	$147,233,787
	West	$44,676,614	$129,767,732	$51,905,568	$141,417,608	$52,331,002	$150,568,207	$65,382,659	$159,304,054	$79,066,699	$180,684,473
	Midwest	$35,386,661	$166,365,805	$38,487,442	$185,853,142	$45,774,107	$204,549,245	$54,917,423	$223,564,665	$56,261,838	$248,956,675
	Southeast	$41,614,944	$108,550,117	$48,306,095	$132,688,701	$55,457,410	$136,790,992	$66,554,532	$170,806,727	$81,775,786	$180,359,632
Total Region *Mdn* and *SD*		$40,400,316	$134,038,753	$48,306,095	$148,811,802	$52,581,167	$158,535,758	$62,536,297	$179,108,249	$69,941,350	$193,740,317

Descriptive Statistics, Mean Long-term Debt (log$_{10}$), by Year, Classification, and Region

			2005		2006		2007		2008		2009	
Class	Region	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Baccalaureate	Northeast	13	6.7727	.5326	6.7710	.5549	6.8242	.5478	6.8877	.5183	6.8754	.5454
	West	23	7.0662	.8057	7.1261	.9163	7.1938	.8531	7.3285	.7159	7.4911	.6966
	Midwest	13	7.0624	.3319	7.1037	.3365	7.1027	.3501	7.1018	.3662	7.1223	.3881
	Southeast	22	7.0225	.7683	7.1742	.7550	7.2755	.7788	7.2545	.9535	7.4111	.7660
Baccalaureate Total *n* and *M*		71	6.9982	.6786	7.0719	.7269	7.1348	.7132	7.1834	.7272	7.2861	.6785
Master's	Northeast	59	7.6600	.6065	7.7124	.5732	7.7076	.6898	7.7059	.8129	7.8274	.5549
	West	45	7.6383	.5154	7.7004	.5162	7.7488	.5018	7.8546	.4700	7.9239	.4698
	Midwest	55	7.4872	.5691	7.5490	.5653	7.6214	.5235	7.7012	.4578	7.7415	.4753
	Southeast	56	7.4059	.7791	7.3780	.8599	7.5846	.7518	7.5966	.8211	7.7128	.7347
Master's Total *n* and *M*		215	7.5451	.6352	7.5810	.6583	7.6621	.6319	7.7073	.6771	7.7958	.5752
Doctoral/Research	Northeast	18	7.8232	.5274	7.8721	.4840	7.9053	.4321	7.9492	.4363	7.9659	.4182
	West	29	7.8392	.5448	7.9162	.5364	7.9226	.5587	7.9624	.5789	7.9903	.5701
	Midwest	37	7.9126	.6347	7.9604	.6400	8.0095	.6439	8.0523	.6508	8.0696	.6734
	Southeast	45	7.8347	.5163	7.8910	.5164	7.9508	.5215	8.0047	.5368	8.0446	.5334
Doctoral/Research Total *n* and *M*		129	7.8565	.5551	7.9139	.5495	7.9549	.5520	8.0011	.5641	8.0286	.5667
	Northeast	90	7.5645	.6650	7.6084	.6512	7.6196	.7073	7.6364	.7798	7.7176	.6311
	West	97	7.5627	.6648	7.6287	.6974	7.6691	.6706	7.7621	.6145	7.8411	.5886
	Midwest	105	7.5845	.6307	7.6388	.6306	7.6940	.6180	7.7507	.5976	7.7805	.6135
	Southeast	123	7.4942	.7469	7.5292	.7805	7.6633	.7196	7.6847	.7994	7.7802	.7067
Regions Grand n and *M*		415	7.5483	.6806	7.5974	.6967	7.6629	.6790	7.7090	.7062	7.7809	.6398

APPENDIX J

Descriptive Statistics, Mean Leverage (log$_{10}$), by Year, Classification, and Region

Carnegie Classification	Region	n	2005 M	2005 SD	2006 M	2006 SD	2007 M	2007 SD	2008 M	2008 SD	2009 M	2009 SD
Baccalaureate	Northeast	13	0.1329	0.0523	0.1266	0.0579	0.1263	0.0568	0.1322	0.0646	0.1325	0.0705
	West	23	0.1120	0.0510	0.1188	0.0559	0.1165	0.0551	0.1208	0.0499	0.1324	0.0485
	Midwest	13	0.1251	0.0577	0.1267	0.0505	0.1246	0.0474	0.1228	0.0441	0.1198	0.0451
	Southeast	22	0.1070	0.0279	0.1186	0.0353	0.1217	0.0415	0.1240	0.0460	0.1332	0.0479
Baccalaureate Total n and M		71	0.1167	0.0468	0.1216	0.0488	0.1214	0.0492	0.1242	0.0499	0.1304	0.0515
Master's	Northeast	59	0.2085	0.0689	0.2080	0.0662	0.2030	0.0668	0.2060	0.0693	0.2095	0.0738
	West	45	0.1384	0.0494	0.1424	0.0499	0.1434	0.0484	0.1506	0.0514	0.1639	0.0500
	Midwest	55	0.1203	0.0425	0.1230	0.0423	0.1267	0.0410	0.1306	0.0381	0.1328	0.0390
	Southeast	56	0.1146	0.0427	0.1162	0.0430	0.1277	0.0441	0.1318	0.0425	0.1387	0.0452
Master's Total n and M		215	0.1468	0.0650	0.1486	0.0637	0.1514	0.0606	0.1558	0.0607	0.1619	0.0623
Doctoral/Research	Northeast	18	0.1985	0.0625	0.1989	0.0629	0.1937	0.0632	0.2003	0.0690	0.2026	0.0721
	West	29	0.1308	0.0467	0.1379	0.0485	0.1355	0.0483	0.1357	0.0484	0.1360	0.0474
	Midwest	37	0.1174	0.0332	0.1193	0.0332	0.1212	0.0327	0.1275	0.0330	0.1296	0.0339
	Southeast	45	0.1094	0.0316	0.1128	0.0292	0.1116	0.0302	0.1171	0.0354	0.1214	0.0370
Doctoral/Research Total n and M		129	0.1289	0.0500	0.1324	0.0495	0.1312	0.0487	0.1359	0.0511	0.1384	0.0518
	Northeast	90	0.1956	0.0700	0.1944	0.0697	0.1901	0.0694	0.1942	0.0726	0.1970	0.0770
	West	97	0.1298	0.0496	0.1355	0.0513	0.1347	0.0506	0.1391	0.0511	0.1481	0.0506
	Midwest	105	0.1199	0.0413	0.1222	0.0401	0.1245	0.0389	0.1285	0.0369	0.1301	0.0379
	Southeast	123	0.1113	0.0364	0.1154	0.0369	0.1207	0.0394	0.1250	0.0409	0.1314	0.0433
Region Total n and M		415	0.1361	0.0589	0.1389	0.0581	0.1400	0.0565	0.1442	0.0574	0.1492	0.0589

APPENDIX K

Descriptive Statistics with Transformation (log$_{10}$) for the Dependent and Independent Variables Based on Best Subsets Model

Variables	M	SD
Dependent variable		
Long-term debt (log$_{10}$)	7.7604	.6571
Independent variables		
Property, plant, and equipment, net (log$_{10}$)	8.4413	.4827
Age of facilities	13.2994	3.8300

Note: $n = 448$