2001

Relationships among long-term debt, current fund revenues and expenditures, and endowment value at public four-year colleges and universities

Michael Lee Stump

*College of William & Mary - School of Education*

Follow this and additional works at: [https://scholarworks.wm.edu/etd](https://scholarworks.wm.edu/etd)

Part of the [Education Economics Commons](https://scholarworks.wm.edu/etd), and the [Higher Education Commons](https://scholarworks.wm.edu/etd)

**Recommended Citation**


[https://dx.doi.org/doi:10.25774/w4-zyeb-z592](https://dx.doi.org/doi:10.25774/w4-zyeb-z592)

This Dissertation is brought to you for free and open access by the Theses, Dissertations, & Master Projects at W&M ScholarWorks. It has been accepted for inclusion in Dissertations, Theses, and Masters Projects by an authorized administrator of W&M ScholarWorks. For more information, please contact scholarworks@wm.edu.
RELATIONSHIPS AMONG LONG-TERM DEBT, CURRENT FUND REVENUES
AND EXPENDITURES, AND ENDOWMENT VALUE
AT PUBLIC FOUR-YEAR COLLEGES AND UNIVERSITIES

by

Michael Lee Stump

Approved October 26, 2001 by

David W. Leslie, Ed.D.
Chairperson of Dissertation Committee

Roger G. Baldwin, Ph.D.

Thomas J. Ward, Jr., Ph.D.
Dedications and Acknowledgements

This dissertation is dedicated to my Savior and Lord, Jesus Christ, who enabled me to undertake and complete this tremendous task. It is also dedicated to my wife, Ronda, and my children Michael, Rachel, and Eric whose patience and support were key to success. Finally, I would also like to dedicate this to my mother, Eris, and my brother, Steve, who have both departed this earth for a better life. My mother and brother always encouraged me to get as much education as I could and loved me more than words can express, as I love them.

I owe a great deal to Dr. Roger Baldwin, who kept me on track and told me when my ideas were wrong-headed and advised me through nine years of course selections. Many thanks to Dr. David Leslie who worked with me many hours and showed great patience with my strong-willed research ideas. Without his persistence, I would have missed a great learning opportunity through this dissertation. Also, many thanks to Dr. Thomas Ward, who spent numerous hours with me during the statistical analysis portion of my work, he too was quite patient.
# Table of Contents

Chapter I - Introduction 2
  Arbitrage ......................................................... 3
  Components of Current Fund Revenues ................. 3
  Current Fund Expenditures ................................. 4
  Higher Education Price Index ............................ 5
  Endowment Value .............................................. 5
  Statement of Problem ........................................ 6
  Statement of Purpose ........................................ 6
  Delimitations ................................................... 7
  Limitations ....................................................... 8

Chapter II - Literature Review 9
  Long-term Debt ................................................ 9
  Arbitrage ........................................................ 13
  Components of Current Fund Revenues .................. 14
  Current Fund Expenditures ................................ 25
  Higher Education Price Index ............................ 25
  Endowment Value .............................................. 27
  Charitable Contributions Law and The Legal Theory of Trusts .................. 30
  Summary ......................................................... 32

Chapter III - Procedures 34
  Dependent and Independent Variables .................. 34
  Research Objectives ......................................... 34
  Data Collection ................................................ 35
  Method ........................................................... 35
  Data Analysis .................................................. 35

Chapter IV - Results 37
  Cluster Analysis ................................................ 37
  Means and Standard Deviations .......................... 38
  Tests and Trends .............................................. 51
  Summary Tables ............................................... 53
  Summary ......................................................... 55

Chapter V - Discussion 56
  Study Limitations and Method ............................ 56
  Current Research .............................................. 56
  Study Contributions ......................................... 59
  Implication for Researchers .............................. 61
  Recommendations .......................................... 61
  Need for Further Research ................................. 62

References ....................................................... 65

Vita ................................................................. 72
List of Tables

1. Means for Current Fund Revenues and Expenditures, Long-term Debt, ... 38
   And Endowment Value for Fiscal Years 1992 Through 1997
2. Standard Deviations for Current Fund Revenues and Expenditures, ... 38
3. Cluster Means Fiscal Year 1992 .................................................. 40
4. Cluster Means Fiscal Year 1993 .................................................. 42
5. Cluster Means Fiscal Year 1994 .................................................. 44
6. Cluster Means Fiscal Year 1995 .................................................. 46
7. Cluster Means Fiscal Year 1996 .................................................. 48
8. Cluster Means Fiscal Year 1997 .................................................. 50
9. Cluster Means Fiscal Year 1992 .................................................. 54
10. Cluster Means Fiscal Year 1997 – Adjusted for HEPI ................... 54
ABSTRACT

The purpose of this study is to determine what relationships exist among current fund revenues, current fund expenditures, long-term debt, and endowment value for public four-year colleges and universities, for fiscal years 1992 through 1997. An important objective of the study is to "let the data speak for itself." The research questions focused on trends among the four variables; whether long-term debt displaced some portion of current fund revenue and whether endowment value influenced this relationship; whether institutions incurred more debt when their revenues and endowment values have been increasing; and whether revenues failed to keep pace with institutions' needs and/or the Higher Education Price Index.

Exploring the relationships among revenues, expenditures, debt, and endowment value may yield important data about the influence of these variables upon one another and may help scholars and administrators develop comprehensive models to manage institutional debt and finances. The source of data for this study was the U. S. Department of Education's National Center for Education Statistics. The data were analyzed using cluster and ratio analyses to group schools as a function of the four variables.
Current fund revenues and expenditures were approximately equal and showed modest increases after adjusting for inflation. In general, long-term debt decreased after adjusting for inflation and endowment values increased significantly. It did not appear that long-term debt was displacing any portion of current fund revenues. In general, long-term debt decreased in terms of 1992 dollars and as a percentage of endowment value. After adjusting for inflation, institutions have not incurred more debt, revenues showed modest increases, endowment values showed significant increases and grew much faster than expenditures. The data suggest that revenue sources have kept pace with institutions’ needs and inflation.

MICHAEL LEE STUMP
EDUCATIONAL POLICY, PLANNING AND LEADERSHIP PROGRAM
HIGHER EDUCATION CONCENTRATION
SCHOOL OF EDUCATION
THE COLLEGE OF WILLIAM AND MARY IN VIRGINIA
RELATIONSHIPS AMONG LONG-TERM DEBT, CURRENT FUND REVENUES AND EXPENDITURES, AND ENDOWMENT VALUE AT PUBLIC FOUR-YEAR COLLEGES AND UNIVERSITIES
RELATIONSHIPS AMONG LONG-TERM DEBT, CURRENT FUND REVENUES AND EXPENDITURES, AND ENDOWMENT VALUE AT PUBLIC FOUR-YEAR COLLEGES AND UNIVERSITIES

A Dissertation Presented to The School of Education Faculty
The College of William and Mary in Virginia

In Partial Fulfillment of the Requirements for the Degree
Doctor of Education

by

Michael Lee Stump

October 2001
Chapter I - Introduction

Long-term debt is defined as the amount of debt due more than a year from the end of the fiscal year. Shultz (2000) documented large increases in long-term debt. From 1990 to 1998, $90 billion of new higher education debt was sold. Van Der Werf (1999) noted that colleges and universities were more than $100 billion in debt. In 1998, public and private higher education issued $15.5 billion in long-term debt. This was more than double the $7.2 billion issued during 1995, 1996, and 1997 combined. Even before the recent dramatic increases in debt, scholars such as Johnstone (1993) expressed concern about the rising levels of long-term debt in higher education.

Shultz used aggregate current fund revenues as one of his independent variables. This study will determine what relationships exist among current fund revenues and expenditures, long-term debt, and endowment value using the U. S. Department of Education’s Integrated Postsecondary Education Data System [IPEDS].

The literature review will include discussions of long-term debt; arbitrage [the substitution of funds borrowed at lower interest rates for assets that might earn higher returns if left intact]; three components of current funds, tuition and fees, state appropriations and endowment income [also referred to as endowment payout]; current fund expenditures; the Higher Education Price Index [HEPI]; and endowment value.
Arbitrage

Arbitrage is defined as the substitution of funds borrowed at lower interest rates for assets that are expected to earn higher returns if left intact. Bradburd and Mann (1993) noted that many institutions borrow money to arbitrage the difference in interest between endowment return and interest on debt. The debt was typically tax-free to the purchaser (Bradburd & Mann, 1993). Winston (1992a) observed that institutions actually generate income by arbitrage and believed this was immoral and eroded public trust in higher education.

Components of Current Fund Revenues

Tuition and Fees

Tuition and fees constitute the revenue generated by institutions through charges to students on a fiscal year basis. Cooper (2000) noted that tuition increased 4.4% at public four-year colleges and universities for the academic year 2000-1 and 5.2% for private schools. This continued the 1990s trend of significant tuition and fee increases.

State Appropriations

For the academic year 2000-1, state appropriations for higher education totaled $60,568,619,000. This represented a one-year change of 7%, a two-year change of 14.4%, and a five-year average annual change of 6.4% (Chronicle of Higher Education, December 15, 2000).
Endowment Income [Payout]

The payout is defined as the amount of endowment “paid-out” each year to the institutions’ current funds, which are those funds allocated for the current fiscal year. Current funds may be restricted by donors for specific purposes or unrestricted and available for current operations at the discretion of the institutions’ management. Basch (1999) studied a sample of 669 private colleges and universities and found that the median payout rate fell from 6.59% for the 1988-89 fiscal year to 5.06% for 1995-96. Altschuler (2000) found that private schools tend to spend a greater percentage of their endowments than publics.

Current Fund Expenditures

According to the U. S. Department of Education’s National Center for Education Statistics [NCES] (USDE, 1999), trend data reveal increases in expenditures per student through the late 1980s and smaller increases thereafter through 1996. Expenditures increased 16% between 1983 and 1989 (USDE, 1999). Between 1990 and 1996, expenditures increased 7% (USDE, 2000a). These figures were adjusted for inflation using the Higher Education Price Index [HEPI]. Over the long-term, from 1960 through 1996, total expenditures for private higher education increased from $20 billion to $90 billion. These amounts are approximations adjusted to 1999 dollars using HEPI (USDE, 2000a). For public institutions, expenditures were $25 billion in 1960 and $145 billion in 1996, these amounts are also approximations adjusted to 1999 dollars using HEPI (USDE, 2000a).
Higher Education Price Index (HEPI)

McPherson, Shapiro, and Winston (1989) define the Higher Education Price Index [HEPI] as a base-weighted index of the costs of inputs colleges and universities purchase. The HEPI was established in 1972 based on data collected by the NCES (Chatman, 1999). Overall there are two broad cost components to HEPI, personnel and services, which is 79% of the index, and supplies and equipment, the remaining 21% (Chatman, 1999). Navin and Magura (1977) described inflation as a harsh reality that affects all of higher education operations and a persistent economic reality. From 1978 through 1998, HEPI increased 180% (Chatman, 1999).

Endowment Value

Endowment value is the market value of endowed assets at the end of the fiscal year. Duke University and the University of Notre Dame reported investment returns of almost 60% for the fiscal year ended June 30, 2000 (Lively & Street, 2000). Yale University, Dartmouth College, the University of Michigan, the University of Chicago, and the University of Virginia all exceeded 40% for the same period (Lively & Street, 2000). Yale’s endowment exceeded $10 billion and Harvard’s was $19.2 billion for the year ended June 30, 2000. Harvard’s endowment increased $5 billion from the previous year (Lively & Street, 2000).
**Statement of Problem**

The purpose of this study is to determine what relationships exist among current fund revenues [CFR], current fund expenditures [CFE], long-term debt [LTD], and endowment value [EV] for public four-year colleges and universities, for fiscal years 1992 through 1997. An important objective of the study is to "let the data speak for itself." The research problem can be conceptualized as Current Fund Expenditures being a function of Current Fund Revenues, Long-term Debt, and Endowment Value and can be stated by the following questions:

1. What trends exist for current fund expenditures and revenues, long-term debt, and endowment value?
2. Is long-term debt displacing one or more components of current fund revenue and does endowment value influence this relationship?
3. Why have institutions incurred more debt when their revenues and endowment values have been increasing?
4. Have revenue sources failed to keep pace with institutions' needs and/or HEPI?

**Statement of Purpose**

From a practical viewpoint, exploring the relationships among debt, revenues, expenditures and endowment value may yield important data about the influence of these variables upon one another. Understanding the relationship of long-term debt to current fund expenditures and revenues and endowment value may help higher education administrators place debt in proper
context with respect to revenues, expenditures, and endowment. Determining if long-term debt displaces current fund revenues and what influence endowment value may have upon the suggested displacement effect, may help scholars and administrators develop comprehensive models to manage institutional debt and finances.

Any discussion of debt involves an ethical dimension, which includes a series of policy decisions with implications concerning institutional values. Are there certain assets for which it is appropriate to borrow money and others for which it is not? What are the consequences of obligating the institution for 10, 20 or 30 years of debt payments? Should the decision to incur debt be simply a financial one based on cost effectiveness, that is, borrow money as long as the endowment is earning a return greater than the cost of borrowing? In any analysis, the assumption of more debt requires presumptions of future economies and market returns that are inherently risky. This research paper does not attempt to address the moral or policy aspects of debt but provides a model to perform a practical analysis of debt, which may aid administrators and policy makers with very difficult decisions concerning debt.

**Delimitations of the Study**

The study will be limited to public four-year colleges and universities. Data will be gathered from the Integrated Postsecondary Education Data System [IPEDS] developed and maintained by the United States Department of

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
Education’s National Center for Education Data Statistics [NCES]. Data for the fiscal years 1992 through 1997 will be utilized.

**Limitations of the Study**

The data are self-reported, and as such, may contain unintentional or deliberate errors. The data have not been audited.
Chapter II – Literature Review

The literature review will focus on long-term debt, arbitrage, current fund revenues [tuition and fees, state appropriations, endowment income], current fund expenditures, Higher Education Price Index [HEPI], endowment value, and charitable contribution law and legal theory of trusts.

Long-term Debt

Shultz (2000) gathered a significant amount of evidence documenting the dramatic rise in long-term debt by colleges and universities, notwithstanding the simultaneous and exceptional growth in two other principal sources of revenue: tuition and fees and endowments. Public and private higher education issued $15.5 billion in long-term debt during calendar year 1998. This was more than twice the $7.2 billion issued during the three previous years combined. From 1990 to 1998, $90 billion of new higher education debt was sold (Shultz, 2000). Colleges and universities are now an estimated $100 billion in debt (Van Der Werf, 1999). Johnstone (1993) expressed concern over rising long-term debt levels. Many institutions with endowments that exceed $1 billion choose to borrow, perhaps figuring that it is less costly to borrow money than to use assets earning substantial returns. Institutions with smaller endowments are often forced to borrow to compete with their better-funded competitors (Johnstone, 1993).

Several trends may imply a need for more debt, such as demand for increased student services and deferred maintenance. Leslie and Fretwell
(1996) noted that students may be treated as customers with increasing
expectations that require new expenditures. Students demand voice, data,
video, and computing services in their rooms, as well as cable television. In
addition, more on-campus residence halls are needed to house the growing
number of students (Van Der Werf, 1999). As an example, New York University
had $861 million in long-term debt; it sold $250 million of that to build residence
halls and subsidize faculty housing (Van Der Werf, 1999). In general, it seems
there is a trend in American higher education to incur substantial amounts of
long-term debt to build or renovate student facilities (Shultz, 2000). Finally,
Leslie and Fretwell (1996) documented the significant decay in the physical plant
due to foregone maintenance, suggesting the need for still more debt.

From the late 1980s through the mid-1990s, private four-year institutions
increased their long-term debt 19% in inflation-adjusted dollars, the figure was
10% for publics (Shultz, 2000). According to Woelful (1987), many private
colleges and universities borrow too much, which threatens their very existence.
Debt experts worry that many institutions are incurring more debt than they
should, particularly given the ever-present possibility of a decline in the value of
the stock market or a reduction in the number of students. "Colleges are
planning for the next 10 years, and then they don't know what will happen" says
Gordon C. Winston, director of the Williams Project on the Economics of Higher
Education, at Williams College (Van Der Werf, 1999, p. A38). "There is little
question that this 'there-is-no-tomorrow' attitude permeating lenders is also
Debt, Revenues, Expenditures, and Endowment Value

infecting higher education" (Van Der Werf, 1999, p. A38). The Tax Reform Act of 1996 removed the limitation that prevented private colleges and universities from accumulating more than $150 million in long-term debt (Hennigan, 1998). Private institutions placed a great deal of pressure upon Congress to remove the restriction, as opposed to simply raising the limit. There was a time when institutions had all the money in hand necessary to build before they began; this is not the case today.

Bradburd and Mann (1993) noted the impact of federal, state, and local tax policies upon long-term debt. There are federal and state laws that allow private colleges and universities to sell tax-exempt bonds, just as the public institutions do. Bond purchasers do not have to pay federal and, in many cases, state income taxes on the interest income earned from such bonds. The institutions can offer lower interest rates because of the tax-exempt status. As a result, the institutions save substantial money in interest costs. This, in effect, is a government subsidy, through the tax code, available to private colleges and universities to aid their efforts to borrow money (Winston, 1992a). Leslie and Fretwell (1996) found that private institutions receive public monies directly from the federal and state governments as well. Private institutions have another advantage. Goonen and Blechman (1999) noted that private institutions are not subject to all of the same federal and state constitutional constraints that public institutions are, and furthermore, are exempt from state and local property taxes.
Breneman (1991) noted that this exemption saves institutions considerable money.

Where public institutions are concerned, most state constitutions restrict debt financing (Briffault, 1996). This has provided some reasonable control over the ability of public higher education institutions to borrow money, although, as noted previously, there is now no such restriction for private schools (Briffault, 1996). In short, public borrowing must be approved by the state legislatures or by the public through referendum. Such legal limitations, however, can be avoided through invocation of the special fund doctrine, which addresses borrowing to finance capital construction projects that, once in operation, could generate revenue to pay the debt (Briffault, 1996). The arbitrage example, detailed earlier, would meet the requirements. This doctrine has been utilized, in name or principle, by public colleges and universities to borrow money for student services buildings such as residence halls, student centers, and recreation centers.

Another equally effective method to avoid debt ceilings involves creating legal entities called authorities (Briffault, 1996). States, cities, towns and counties use this method to fund garbage collection and road construction (Briffault, 1996). Authorities are independent of the states and as such, the debt issued by the authorities is not the responsibility of the states. Public colleges and universities may use this method as well. Specifically, states may grant institutions the right to issue debt in the institutions' name, without guaranteeing
the debt. This debt is tax-free to the bondholders but without the guarantee of the state (Briffault, 1996). These two methods have been utilized for some time and have proven quite useful for borrowing money and avoiding certain constitutional debt limits.

Ultimately, the repayment of debt depends upon the institutions' financial strength and willingness to repay. According to Moody's (Moody's on Municipals, 1991), which rates private and public debt offerings, tax exempt status has no bearing upon the analysis of debt load. Moody's (Moody's on municipals, 1991) uses four factors to rate debt: economy, debt load, financial performance, and governmental factors. The local economy should be strong and growing, there should be no restrictions concerning current fund revenue generation. Ideally, there should be significant latitude concerning revenue streams. For example, selective colleges and universities have more potential students than admissions slots. Moody's does not discuss the particulars of how it analyzes debt load other than to say that certain financial ratios are important to the analysis (Moody's on Municipals, 1991). Institutions should demonstrate careful fiscal and administrative management. Finally, local governments should be fiscally strong and demonstrate good fiduciary abilities with respect to local businesses and the institutions seeking bond ratings.

**Arbitrage**

Arbitrage is defined as the substitution of funds borrowed at lower interest rates for assets that are expected to earn higher returns if left intact. Bradburd
and Mann (1993) noted that many institutions borrow money to arbitrage the difference in interest between endowment return and interest on debt. The debt was typically tax-free to the purchaser (Bradburd & Mann, 1993).

Winston (1992a) observed that institutions actually generate income by arbitrage. For example, an institution wishes to borrow money to build a residence hall; it sells $10 million in tax-exempt bonds that pay 5% to the bondholders. The residence hall generates a 10% return per year on the borrowed amount from student room fees. The annual return is $1 million while the annual interest costs are $500,000 the first year and less each year after that. Winston (1992b) believed such arbitrage was immoral and eroded public trust in higher education.

**Current Fund Revenues**

*Tuition and Fees*

In economics, demand theory states that the quantity of a good or service is a function of price, among other things (Ehrenberg & Smith, 1997). Applying the theory to higher education would suggest that as cost increases, demand decreases. Campbell and Siegle (1967) found that tuition and fees might influence the demand for higher education. Specifically, they found that the amount of tuition and fees (price) and disposable income of families were determinants of demand for higher education in the United States. Radner and Miller (1970) found that student sensitivity to price was inversely related to family income. Funk (1972) found that the number of applications to private schools...
demonstrated a much lower response to price increases than did applications to public schools. Bowen (1977) expressed concern that tuition was rising at a rate faster than overall inflation. Leslie and Brinkman (1987) conducted a meta-analysis of such research to determine if traditional economic theory applies. They found that for every $100 increase in higher education prices, the participation rate dropped 7/10 of one percent, for all of higher education, including two-year and community colleges. McPherson, Schapiro, and Winston (1989) were concerned with students' sensitivity to price. St. John (1993) noted that during the 1980s and early 1990s, tuition increased at a rate greater than inflation but enrollment remained constant. St. John thought that increased borrowing and growing enrollment in public community colleges mitigated what should have been an overall enrollment reduction in higher education, but stated that confirming this through research would be difficult. Lissner and Taylor (1996) noted that between 1980 and 1994, tuition increased on an annual basis approximately 4% more than inflation. McPherson and Schapiro (1998) found that higher education enrollment rates have consistently risen throughout the 1990s. McPherson and Schapiro (1998) however, also found that increases in cost did lead to a decline in the number of lower-income students in higher education. They defined lower income as $20,000 or less in 1990 dollars. During 1999, tuition and fees rose 4.6% at private four-year institutions and 3.4% at publics; however, the consumer price index for the 12 months ended August 1999 rose 2.3% (Riesberg, 1999).
Leslie and Brinkman (1987) thought the estimated effect of price upon enrollment should have been more visible. The price of attendance has regularly risen for years while aggregate enrollment has increased (Leslie & Brinkman, 1987). This contradicts demand theory (Ehrenberg & Smith, 1997) which posits that as cost increases, demand decreases (Ehrenberg & Smith, 1997). Leslie and Brinkman (1987) noted that the ever-changing federal policy concerning financial aid might have actually reduced the out-of-pocket costs while the “sticker” price continued to rise. This may suggest that a larger percentage of tuition and fees were funded with federal funds or students borrowed more money or a combination of the two.

Some researchers have suggested that there are other factors at work and that demand theory (Ehrenberg & Smith, 1997) is not sufficient to explain tuition and fee prices or increases. Leslie and Brinkman (1988) found that an undergraduate degree returned 11.8% - 13.4% on investment and a graduate degree returned 8%. McMahon (1989) also thought that students received a sizeable return on investment; he found that since 1939, American higher education returned an annual average of 11% on investment, compared to 5% for housing. Leslie and Brinkman (1988) found that the rate of return on public investment in undergraduate education was between 11.6% and 12.1%. Johnstone (1993), however, contended that formulas computing return on investment minimized the importance of the foregone earnings of students who pursued higher education. Specifically, Johnstone posited that students must
forego gainful employment while pursuing higher education and that such employment would have yielded returns that should offset the higher education return on investment estimates. If such computations were included, the return on investment to the student would be less. Johnstone (1993) believed that these were real costs and impacted society as well as the individual. Leslie and Fretwell (1996) viewed the federal government as investors in higher education, suggesting some rate of return for them as well.

Breneman (2000) views tuition and fees in a very different light. He thought prices should have risen faster than they have. Demand theory (Ehrenberg & Smith, 1997) also states that increased demand leads to increased prices. The booming economy and growing stock market have not only enlarged college and university endowments, but the portfolios of parents of college-age students as well. For certain segments of the American population, college is more affordable because the costs of college have not risen nearly as much as the value of their investments. Furthermore, Breneman (2000) suggests that freezing tuition and fees undercuts a key rationale necessary for effective fund raising, reasoning that if institutions can forego tuition and fee increases, potential donors will think that the institutions have enough money. Breneman poses an interesting theory; institutions need to increase tuition and fees so they appear to need money thereby improving fund raising results. Previously, Breneman (1991) constructed a different, yet consistent, analysis concerning static tuition and fees. Findings from Breneman's 1991 work suggest against
foregoing increases for fear that institutions may hinder the ability to function effectively in the future.

Ivy League institutions, such as Penn, as well as less selective ones, reported record numbers of applications and significantly lower acceptance rates (Kleiner, 2000). For example, Penn admitted 22% of applicants for the 2000 academic year compared to 26% in 1999 (Kleiner, 2000). Harvard had an all-time-low acceptance rate of 10.9% for the 2000-1 academic year, 16% of Harvard’s applicants graduated first in their high school class (Kleiner, 2000). The University of Connecticut, a traditionally less-selective school, reported accepting 65.8% of applicants for the 1999 academic year versus 73% for 1998 (Kleiner, 2000). Kleiner noted that demographics were the primary force behind this, stating that the number of high school graduates was increasing, as was the proportion of these graduates seeking higher education.

For the period 1978 through 1985, McPherson and colleagues (1989) found that private, four-year colleges with endowments of $25,000 per student or more increased their net tuition three times faster than those with endowments of $1,000 or less per student. McPherson and Winston (1988) believed that competition has enabled the well-endowed institutions to raise prices. Rosovsky (1990) thought that there was more than sufficient money for Harvard University to eliminate tuition, but that this was not the best use for Harvard’s endowment, which was $4 billion then. Harvard’s endowment was worth $19 billion as of June 30, 2000 (Lively & Street, 2000). Bradburd and Mann (1993) offer a
different idea; wealth is best viewed as a resource that allows institutions to keep
tuition and fees below the true cost educating students.

Johnstone (1994) believed that if inflation for higher education continues
to increase at the rate it did from 1964 through 1994, most families would
eventually be forced to consider other alternatives. The California State College
system turned away thousands of students during the 1992-93 academic year
because of significant increases in tuition and fees (Lively, 1992). Johnstone
(1994) believed that partnerships between higher education and private
employers are a solution to the rapidly increasing costs of American higher
education.

State Appropriations

For the academic year 2000-1, state appropriations for higher education
totaled $60,568,619,000. This represented a one-year change of 7%, a two-year
change of 14.4%, and a five-year average annual change of 6.4% (Chronicle of
Higher Education, December 15, 2000). California had the largest percentage
increase for the two-year period ended 2000-1 at 24.4% and the largest average
annual increase for the five-year period at 11.7% (Chronicle of Higher Education,
December 15, 2000). California also appropriated just over $9 billion for 2000-1
representing almost 15% of the total appropriations for all 50 states. Virginia had
an average annual increase of 10.7% for the five-year period (Chronicle of
Higher Education, December 15, 2000). Louisiana ranked last in the two-year
period category at 2.4%. Hawaii ranked last in the five-year average category at a negative 1.1% (Chronicle of Higher Education, December 15, 2000).

Endowment Income (Payout)

Many articles have been written in the Chronicle of Higher Education concerning payout rates. One such article suggested that the minimum payout rate should be 4½% with an optimal rate of 5% (Altschuler, 2000). However, there are few scholarly publications addressing the issue. The scholars who have addressed the matter, such as Basch (1999), have expressed some concern that payout rates for private schools were too low and have declined significantly while the endowments grew at record rates. The Ford Foundation report (1969) suggested a payout rate of 5% based on a rolling three-year average of endowment market value.

Basch (1999) studied a sample of 669 private colleges and universities and found that the median payout rate fell from 6.59% for the 1988-89 fiscal year to 5.06% for 1995-96. Altschuler (2000) found that private schools tend to spend a greater percentage of their endowments than publics. Basch found that for the same period the payout increased by a median of 29.4% indicating that institutions used some portion of the capital appreciation to fund the payout.

The Ford Foundation report (1969) also noted that limiting endowment expenditures to only the income earned usually is not necessary. The Ford report stated that capital appreciation on endowed funds should be included in the payout computation.
The annualized return for common stocks traded in the United States was 10% for the years 1926 through 1988 (Ibbotson & Singquefield, 1988). The decade of the 1990s, however, saw an unusually large growth in investment returns. According to Pulley (February 18, 2000), endowments earned 11% in 1999 and 18% in 1998; 34 universities now have endowments that exceed $1 billion. Cornell University’s annual return on investment during 1995-99 averaged 16% (Altschuler, 2000).

For the 1999-2000 academic year, Cornell’s payout rate was 3.8%, which was below their minimum acceptable rate, also their target, of 4.4% (Altschuler, 2000). Basch (1999) noted that in general, the rate of endowment spending had declined during the 1990s. Larson (1997) found that the University of Pennsylvania’s payout rate was 2.8% for the 1997 academic year though the stated rate was 3.7%. The university was using a three-year rolling average of endowment value as the basis for the payout rate, not the current year value. As noted previously, the Ford Foundation report (1969) suggested using a rolling 3-year average of endowment value, but with a payout rate of 5%. Lissner and Taylor (1996) found that endowment income, which excludes capital appreciation, averaged 2.1% for all institutions for the period 1980 through 1993. Basch (1999) stated that the 669 private colleges he reviewed fell into three categories concerning payout rate policy, spend all or a specified percentage of current income, spend a specified percentage of endowment funds based on market value, or no established policy. Basch also noted that there has been
some discussion as to whether investment management fees should be included within the payout rate computation. Currently they are not (Basch, 1999). Such fees are included within the payout rate computations of non-higher education foundations (Altschuler, 2000). If such fees were included, less money would be available for payout to current funds, as some portion of the payout would be allocated to the fees.

Part of the difficulty setting and managing payout rates may stem from a concern over what portion of the endowment may be spent. Foundations may restrict their payout to interest and dividends earned; often referred to as the income method. This excludes any capital appreciation of the assets. There is no legal problem, however, using capital appreciation of endowed funds that are not restricted by donors (Ford Foundation, 1969). Including capital appreciation within the payout computation is referred to as the total return method and would generally yield more dollars for use in current funds (Ford Foundation, 1969). The total return method does assume market appreciation. In depreciating markets, the total return approach may not produce a payout if the decline in market value of the endowment exceeds the cash income earned. The income approach would likely provide some payout during a down market.

Investment strategies that result in sizeable capital appreciation typically reduce the payout amount of those institutions utilizing the income method. Generally, institutions are investing more endowment assets in stocks and less in fixed income and cash (Pulley, February 18, 2000). Therefore, there are fewer
liquid assets, that is, those that are cash or can be quickly converted to cash. Ironically, it appears that the booming stock market may have encouraged endowment managers to invest more and reduce the payout. Investment managers compensated based upon total portfolio return have incentive to invest monies in more lucrative, less liquid investment vehicles. According to Pulley, the University of Virginia began investing 25% of its endowment assets in hedge funds in 1999. These are somewhat riskier and less liquid investments that may require a commitment to invest the assets for a specified period of time. This has been a key factor in the growth of Virginia’s endowment, which was $1.8 billion as of June 30, 2000. This is a striking contrast to the criticism of 30 years ago that institutions’ investment strategies were too conservative (Ford Foundation, 1969). The Ford Foundation report suggested that the overly conservative approach was due to a strong sense of obligation and the memory of the Great Depression. The report noted that for the period from 1928 through 1948, the 30 Dow Jones Industrial stocks had an annual return of 2.5%, slightly below the federal government’s bond rate for the same period. The report also noted that for the period 1948 through 1968 the annual return for the Dow Jones was 14%.

More endowment assets are invested through trusts (Lively & Street, 2000). Because of changes in accounting principles, private foundations must report assets assigned to them, but held in trust by others. Such trusts are managed by parties external to the university and tend to be less liquid.
Most institutions have increased their endowments during the 1990's at a rate that exceeded the 4.2% annual payout average for the period 1961 through 1989 (Altschuler, 2000). Altschuler thinks that colleges and universities have been spending from new gifts and not from any of the existing assets. Altschuler's solution is to require institutions to spend a minimum of 4.5% and a maximum of 5% of their assets annually. As noted previously, the Ford Foundation report (1969) provides a different formula suggesting that a payout rate of 5% percent using a three-year moving average of endowment market value should be used.

The IPEDS Finance report used to report endowment information allows institutions to report payout information using the income or total return methods (USDE, 2000b). Basch (1999) noted that there was some ambiguity as to how institutions report endowment assets transferred to current funds.

The payout rate is a sensitive matter for many institutions. Given this sensitivity and the lack of clear guidance, computing the payout rate is a matter of choice and varies across institutions. The payout rate has become controversial with the remarkable investment returns of the 1990s (Altschuler, 2000). There may be some confusion or misconception as to what may be paid out from endowed funds (Ford Foundation, 1969). Some of this may stem from a desire to conserve endowment assets. Some endowment managers, however, are investing in less conservative ventures that obligate assets for specified periods (Lively & Street, 2000).
Current Fund Expenditures

According to the National Center for Education Statistics [NCES] (1999), trend data reveal increases in expenditures per student through the late 1980s and smaller increases thereafter through 1996. Expenditures increased 16% between 1983 and 1989 (USDE, 1999). Between 1990 and 1996, expenditures increased 7% (USDE, 2000a). These figures were adjusted for inflation using the Higher Education Price Index [HEPI]. Over the long-term, from 1960 through 1996, total expenditures for private higher education increased from $20 billion to $90 billion, these amounts are approximations adjusted to 1999 dollars using HEPI (USDE, 2000a). For public institutions, expenditures were $25 billion in 1960 and $145 billion in 1996, these amounts are also approximations adjusted to 1999 dollars using HEPI (USDE, 2000a). McPherson, Schapiro, and Winston (1989) found that government funding significantly impacts expenditures.

Higher Education Price Index [HEPI]

McPherson, Shapiro, and Winston (1989) define the Higher Education Price Index [HEPI] as a base-weighted index of the costs of inputs colleges and universities purchase. The HEPI was established in 1972 based on data collected by the NCES (Chatman, 1999). The relative costs of the goods and services have changed, but the makeup of the index has not (Chatman, 1999). HEPI is not institution specific and is intended for all of higher education. Variance in the relative weights of goods and services purchased by individual institutions cannot be measured by HEPI (Chatman, 1999). HEPI has two broad
cost components, personnel and services, which is 79% of the index, and 
supplies and equipment, the remaining 21% (Chatman, 1999). Navin and 
Magura (1977) described inflation as a harsh reality that affects all of higher 
education operations and a persistent economic reality. Navin and Magura 
(1977) also documented the need for an inflation index that is calculated based 
on goods and services purchased by higher education, the Consumer Price 
Index [CPI] was not adequate. During periods of higher inflation, it is critical for 
each college and university to document how inflation has affected them (Navin 

Navin & Magura (1977) thought that each institution should develop its 
own index based on the goods and services it purchases weighted by the 
quantities purchased (Navin & Magura, 1977). However, a single price inflator 
for each institution would preclude price and cost comparisons across higher 
education.

Between 1968 and 1976, HEPI increased by an annual average of 6.6% 
(Leslie and Rusk, 1978). From 1978 through 1998, HEPI increased 180% 
(Chatman, 1999). However, dividing the 20-year period into two 10-year periods, 
reveals that during the period 1978-88, HEPI increased 90.9% and during 1988- 
98, HEPI increased 46.8% (Chatman, 1999). The majority of inflation occurred 
during the first 10-year period with modest increases during the second. For the 
period 1990-98, HEPI increased 31.2%, or an annual average of 3.46% 
(Chatman, 1999).
Navin and Magura and Chatman documented important concerns involving the Higher Education Price Index. HEPI may misrepresent inflation as experienced by individual institutions. According to Chatman (1999), the components and ratios of HEPI have not changed since its inception, personnel and services are 79% of the index, and supplies and equipment, are 21%. Indeed, since HEPI is so widely used and accepted, the inherent misrepresentations are also accepted. To mitigate this concern, Navin and Magura (1977) suggested that each institution develop its own index, but this would preclude any comparisons among institutions and could allow institutions to develop indexes favorable to them.

**Endowment Value**

Meisinger and Dubeck (1984) describe endowment funds as those that cannot be spent, only the income generated by them may be spent. In many cases, the donor further restricts expenditure of the income to some specific purpose. Usually, the original donation is referred to as the corpus; it may also be referred to as the principal or endowment.

American colleges and universities raised an estimated $20.4 billion in private gifts during the 1998-99 academic year (Lively, 2000). Philanthropy to higher education was quite robust during the 1990’s; in fact, the amount of giving in 1999 was twice that reported in 1990-91 (Lively, 2000). Harvard University led all institutions in giving for the 1998-99 year with a total of $451.7 million (Lively, 2000). Many attribute the increased giving to the remarkable gains of the
American stock market and to institutions' utilization of World Wide Web sites, which have improved fund raising techniques (Lively, 2000). Certain changes in the Federal tax code may have exerted some influence as well. Donors and recipients benefited from reduced capital gain tax rates and a relaxation of charitable giving requirements (United States Code, 2000a). There was a mutually advantageous cycle at work: the booming economy and stock market created substantial amounts of wealth for donors, the tax code was favorable toward charitable giving, and foundations used the same robust economy that created the wealth to grow it more.

Basch (1999) found that the market value of endowments for a sample of 669 private institutions increased by a median rate of 70.8% for the period 1989 through 1995. However, the yield, also referred to as income, on endowment assets grew at a median rate of 16.8%. The yield excludes capital appreciation of equities.

Donors making large gifts dominated higher education news for 1999. For example, a $350 million gift was made to the Massachusetts Institute of Technology by an alumnus (Pulley, 2000b). From 1967 through 1992, there were only three gifts in all of higher education of $100 million or more (Pulley, 2000b). From 1993 through 1999, there were 26, including Bill Gates' $1 billion scholarship fund (Pulley, 2000b). There was a time when $100,000 was considered a large gift, today; $1 million seems to be the threshold, according to Pulley.
There is a concern, however, that certain factors may be unintentionally working against donors of lesser means. Some fear that large gifts discourage potential donors who are less wealthy. Also, soliciting smaller gifts is expensive, gifts to annual funds typically cost about 20 cents in overhead for each dollar collected (Pulley, 2000a). Johnstone (1993) also noted that the overhead was costly. Teitlebaum (1979) suggested that overhead may be understated and that including presidential and faculty travel costs within overhead computations was warranted. Furthermore, certain overhead costs, such as salaries and travel, necessary to conduct fund raising operations must come from unrestricted gifts which are generally smaller (Hay, 1985). Larger gifts are usually restricted in their use; therefore, overhead costs, such as fund-raising, cannot be extracted from them (Hay, 1985). This leaves the smaller unrestricted donations, such as annual funds, to pay for overhead. For example, if the overhead rate is 20% for a foundation’s operations, what is the effective rate for the unrestricted funds that may be used to pay for overhead expenses such as fund-raising costs? If, continuing the example, 50% of the assets are restricted, then overhead costs must be paid from the remaining 50%, making the effective rate 40% for those unrestricted monies. To help offset some of the overhead costs, fund raising for smaller gifts, those of $1000 or less, has been relegated to faculty in some schools (Pulley, 2000a). Overall, it seems that there is no danger of a reduction in the number of smaller donations, they are likely to continue for the foreseeable
Using faculty to solicit donations, however, simply shifts some of the fund raising costs to academic budgets (Pulley, 2000a).

**Charitable Contributions Law and the Legal Theory of Trusts**

The United States Code (2000a) provides tax exempt status for college and university foundations as long as the recipient meets the following requirements: “Corporations, and any community chest, fund, or foundation, organized and operated exclusively for... educational purposes... no part of the net earnings of which inures to the benefit of any private shareholder or individual, no substantial part of the activities of which is carrying on propaganda, or otherwise attempting, to influence legislation... and which does not participate in, or intervene in (including the publishing or distributing of statements), any political campaign on behalf of (or in opposition to) any candidate for public office.” The United States Code (2000b) also provides tax exempt status for public colleges and universities if the recipient is “A State, a possession of the United States, or any political subdivision of any of the foregoing, or the United States or the District of Columbia, but only if the contribution or gift is made for exclusively public purposes.”

In 1983, Virginia Attorney General Gerald L. Baliles and Senior Assistant Attorney Paul J. Forch wrote a document concerning Virginia’s public higher education institutions and their affiliated foundations. The document is useful to understand the general legal theory of trusts as well as how the theory applies to public higher education. Baliles and Forch (1983) stated: “Looking beyond their
independent corporate existence, the foundations are depositories of enormous funds charitably donated for the benefit of higher education. Their assets exist essentially because of public tax policy and publicly spirited donations (p. 1).” They went on to note that “…the foundations solicit, receive, manage and invest private gifts intended for the ultimate benefit of the institutions they support (p. 2).”

Concerning institutional control of foundation assets, Baliles and Forch (1983) stated that institutions routinely transfer their endowments and private gifts to their foundations for management and investment. Nonetheless, these institutions do not generally have control over the management or disposition of the assets once in the custody of the foundation. Baliles and Forch (1983) noted that foundations are generally not legally accountable to their institutions, accordingly, it may be advantageous for the institutions to change their policies to encourage donors to give directly to the institutions.

Concerning trust law and foundations, Baliles and Forch (1983) stated: “It is clear that when such a foundation receives or solicits funds under the institution’s name, a trust is impressed by law requiring prudent use and management of such funds (p. 10).” Addressing the possibility that foundations could use assets for purposes not intended, Baliles and Forch (1983) stated that to the extent of its articles of incorporation, there is a legal possibility that the foundations could use unrestricted gifts for other educational purposes (p. 11). The foundations’ charters are critical for control and management of its assets.
In summary, the United States code and the legal theory of trusts encourages the private support of institutions of higher education for the greater social good.

**Summary**

- Shultz, Johnstone, and others have suggested that long-term debt has increased in a remarkable way. From 1990 to 1998, $90 billion of new higher education debt was sold. Van Der Werf (1999) noted that colleges and universities were more than $100 billion in debt. In 1998 alone, public and private higher education issued $15.5 billion in long-term debt.

- Lissner and Taylor (1996) noted that between 1980 and 1994, tuition increased on an annual basis approximately 4% more than inflation. During 1999, tuition and fees rose 3.4% at public institutions (Riesberg, 1999).

- For the academic year 2000-1, state appropriations for higher education totaled $60,568,619,000. This represented a one-year change of 7%, a two-year change of 14.4%, and a five-year average annual change of 6.4% (Chronicle of Higher Education, December 15, 2000).

- Basch (1999) studied a sample of 669 private colleges and universities and found that the median payout rate fell from 6.59% for the 1988-89 fiscal year to 5.06% for 1995-96. Altschuler (2000) found that private schools tend to spend a greater percentage of their endowments than publics.

From 1978 through 1998, HEPI increased 180% (Chatman, 1999).

Duke University and the University of Notre Dame reported investment returns of almost 60% for the fiscal year ended June 30, 2000 (Lively & Street, 2000). Yale University, Dartmouth College, the University of Michigan, the University of Chicago, and the University of Virginia all exceeded 40% for the same period (Lively & Street, 2000). These are just examples of the record increases in endowment values.

Institutional debt, current fund revenues, and endowment values have increased significantly and current fund expenditures have increased modestly. Why have institutions incurred more debt when their revenues and endowment values have been increasing? Have revenue sources (including state appropriations) failed to keep pace with institutions’ needs and/or HEPI? Has long-term debt displaced, to some extent, current fund revenues that may have fallen short of operating expenditures? What effect does endowment value have upon the suggested displacement effect of long-term debt? The research model considers Current Fund Expenditures a function of Current Fund Revenues, Long-term Debt, and Endowment Value.
Chapter III - Procedures

Dependent and Independent Variables

There is one dependent variable, current fund expenditures, and three independent variables, which are current fund revenues, long-term debt, and endowment value.

Research Objectives

The purpose of this study is to determine what relationships exist among current fund revenues [CFR], current fund expenditures [CFE], long-term debt [LTD], and endowment value [EV] for public four-year colleges and universities, for fiscal years 1992 through 1997. An important objective of the study is to “let the data speak for itself.” The research problem can be conceptualized as Current Fund Expenditures as a function of Current Fund Revenues, Long-term Debt, and Endowment Value and can be stated by the following questions:

1. What trends exist for current fund expenditures and revenues, long-term debt, and endowment value?
2. Is long-term debt displacing one or more components of current fund revenue and does endowment value influence this relationship?
3. Why have institutions incurred more debt when their revenues and endowment values have been increasing?
4. Have revenue sources failed to keep pace with institutions’ needs and/or HEPI?
Data Collection

Self-reported institutional-level financial data were used. The data are from the Integrated Postsecondary Education Data System [IPEDS] developed and maintained by the United States Department of Education's National Center for Education Statistics [NCES].

An important advantage of utilizing the IPEDS data is that it includes nearly all of the public four-year institutions in the United States. The data are self-reported and have not been audited; therefore, some data may be inaccurate.

Method

Data were collected by downloading the annual IPEDS data files from the NCES website [http://nces.ed.gov/ipeds]. Responses were extracted and placed in the Statistical Package for the Social Sciences [SPSS] version 10.0 to conduct the appropriate statistical tests. The entire population of public four-year institutions was included for the fiscal years 1992 through 1997.

Data Analysis

The analysis explored the relationships among revenues, expenditures, long-term debt and endowment value and determined how these variables vary together or independently of each other. An important objective of the study was to "let the data speak for itself."
The first step involved computing the following descriptive statistics for the independent and dependent variables for each year: mean, standard deviation, and population size. These are presented in tables 1 and 2 in Chapter IV.

The second step was a hierarchical cluster analysis, using SPSS, to analyze each of the four variables, revenues, expenditures, debt, and endowment value for each school, for each year. SPSS allows the user to select a mathematical method to perform the cluster analysis. Euclidean geometry was chosen since it was the SPSS default. Euclidean geometry computes the square root of the sum of the squared differences, or distances, among the variables, for each school, for each year. A dendogram, produced for each year, revealed the number of clusters within the various levels of standard error. A higher standard error produces fewer clusters with more schools resulting in greater dissimilarities among the members of each cluster. A standard error of 5, on a scale of 25, was chosen and yielded five clusters for fiscal years 1992 through 1996 and six clusters for 1997. Means were computed for each variable for each fiscal year and then graphs were created to represent the means. Each cluster of schools was studied as a unit. Since the sixth cluster was only present for fiscal year 1997, it was excluded from the analysis. The results are documented in Chapter IV.
Chapter IV - Results

The purpose of this study is to determine what relationships exist among current fund revenues [CFR], current fund expenditures [CFE], long-term debt [LTD], and endowment value [EV] for public four-year colleges and universities, for fiscal years 1992 through 1997. An important objective of the study is to “let the data speak for itself.”

Cluster Analysis

A hierarchical cluster analysis, using SPSS, was used to analyze each of the four variables, revenues, expenditures, debt, and endowment value for each school, for each year. SPSS allows the user to select a mathematical method to perform the cluster analysis, Euclidean geometry was chosen since it was the SPSS default. Euclidean geometry computes the square root of the sum of the squared differences, or distances, among the variables, for each school, for each year. A dendogram, produced for each year, revealed the number of clusters within various levels of standard error. A higher standard error produces fewer clusters with more schools resulting in greater dissimilarities among the members of each cluster. A standard error of 5, on a scale of 25, was chosen and yielded five clusters for fiscal years 1992 through 1996 and six clusters for 1997.
Means and Standard Deviations

Table 1 presents the means for current fund revenues, current fund expenditures, long-term debt, and endowment value for fiscal years [FY] 1992 through 1997. Table 2 presents the standard deviations for the same variables and years. Tables 1 and 2 have not been adjusted for inflation.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Fund Revenues</td>
<td>$139,749,862</td>
<td>$146,765,713</td>
<td>$152,474,393</td>
<td>$160,729,170</td>
<td>$164,390,523</td>
<td>$172,422,224</td>
</tr>
<tr>
<td>Current Fund Expenditures</td>
<td>$138,723,102</td>
<td>$145,897,659</td>
<td>$151,657,839</td>
<td>$159,241,194</td>
<td>$163,042,679</td>
<td>$170,634,596</td>
</tr>
<tr>
<td>Long-term Debt</td>
<td>$36,204,601</td>
<td>$38,242,147</td>
<td>$39,706,932</td>
<td>$41,275,836</td>
<td>$41,988,904</td>
<td>$43,814,562</td>
</tr>
<tr>
<td>Endowment Value</td>
<td>$29,928,208</td>
<td>$34,818,305</td>
<td>$33,511,033</td>
<td>$39,084,096</td>
<td>$45,642,143</td>
<td>$55,082,174</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Fund Revenues</td>
<td>$224,224,759</td>
<td>$234,616,193</td>
<td>$244,772,816</td>
<td>$257,261,033</td>
<td>$265,123,845</td>
<td>$277,872,249</td>
</tr>
<tr>
<td>Long-term Debt</td>
<td>$82,705,289</td>
<td>$83,878,373</td>
<td>$85,830,759</td>
<td>$90,371,469</td>
<td>$98,007,854</td>
<td>$86,652,909</td>
</tr>
</tbody>
</table>
Tables 3 through 8 include charts depicting the cluster groups’ means for each fiscal year. For each of the charts, the series numbers presented in the legend correspond to the cluster numbers. Table 3 presents the cluster means for FY 1992. Cluster 5 contains only the University of Texas – Austin [UTA]. For clusters 1 through 4, long-term debt ranged between 18% and 32% of expenditures, while UTA’s debt was nearly 130% of expenditures. For clusters 1 through 4, endowment value was less than 33% of expenditures, while UTA’s was nearly 428%. UTA’s long-term debt exceeded revenues and expenditures, but was only 30% of its endowment value. This is a stark contrast to clusters 1 and 2 where long-term debt significantly exceeded endowment value. UTA borrowed the least money, relative to its endowment, while clusters 1 and 2 borrowed the most, exceeding endowment values by a wide margin. Cluster 3, Michigan, borrowed 67% of endowment value, cluster 4, Minnesota, Ohio State, Washington, and Wisconsin, borrowed approximately 80% of endowment value.
### Table 3 - Cluster Groups’ Means Fiscal Year 1992

<table>
<thead>
<tr>
<th>Cluster</th>
<th>CF Revenues</th>
<th>CF Expenditures</th>
<th>Long-term Debt</th>
<th>Endowment Value</th>
<th>CFR/CFE</th>
<th>LTD/CFE</th>
<th>EV/CFE</th>
<th>LTD/EV</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$732,924,510</td>
<td>$718,356,758</td>
<td>$226,165,791</td>
<td>$140,923,133</td>
<td>102.03%</td>
<td>31.48%</td>
<td>19.62%</td>
<td>160.49%</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>$114,343,978</td>
<td>$113,300,875</td>
<td>$21,792,534</td>
<td>$9,599,459</td>
<td>100.92%</td>
<td>19.23%</td>
<td>8.47%</td>
<td>227.02%</td>
<td>286</td>
</tr>
<tr>
<td>3</td>
<td>$1,956,609,792</td>
<td>$1,868,539,629</td>
<td>$411,777,213</td>
<td>$611,694,083</td>
<td>104.71%</td>
<td>22.04%</td>
<td>32.74%</td>
<td>67.32%</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>$1,288,270,084</td>
<td>$1,316,275,532</td>
<td>$241,283,187</td>
<td>$301,776,818</td>
<td>97.87%</td>
<td>18.33%</td>
<td>22.93%</td>
<td>79.95%</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>$780,332,286</td>
<td>$784,635,408</td>
<td>$1,019,613,900</td>
<td>$3,357,886,150</td>
<td>99.45%</td>
<td>129.95%</td>
<td>427.95%</td>
<td>30.36%</td>
<td>1</td>
</tr>
</tbody>
</table>

Cluster 3 school is the University of Michigan – Ann Arbor
Cluster 4 schools are Ohio State University, University of Minnesota – Twin Cities, University of Washington, and University of Wisconsin - Madison
Cluster 5 school is the University of Texas – Austin

### Cluster Groups’ Means Fiscal Year 1992

![Graph: CF Revenues, CF Expenditures, Long-term Debt, and Endowment Value across clusters.]
Table 4 presents the cluster means for FY 1993. As in FY 1992, revenues were approximately equal to expenditures and Cluster 5 contains only the University of Texas – Austin. For clusters 1 through 4, long-term debt ranged between 19% and 30% of expenditures, while UTA’s debt was almost 118% of expenditures. For clusters 1 through 4, endowment value was less than 40% of expenditures, while UTA’s was slightly more than 429%. UTA’s long-term debt exceeded revenues and expenditures, but was only 27% of its endowment value. As was the case in FY 1992, this is a stark contrast to clusters 1 and 2 where long-term debt significantly exceeded endowment value. UTA borrowed the least money, relative to its endowment, while clusters 1 and 2 borrowed the most, exceeding endowment values by a wide margin. Cluster 3, which solely consisted of Michigan, borrowed 59% of endowment value, and cluster 4, Ohio State, Minnesota, Washington, and Wisconsin, borrowed approximately 75%.
Table 4 – Cluster Groups’ Means Fiscal Year 1993

<table>
<thead>
<tr>
<th>Cluster</th>
<th>CF Revenues</th>
<th>CF Expenditures</th>
<th>Long-term Debt</th>
<th>Endowment Value</th>
<th>CFR/CFE</th>
<th>LTD/CFE</th>
<th>EV/CFE</th>
<th>LTD/EV</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$696,843,274</td>
<td>$686,175,731</td>
<td>$204,467,222</td>
<td>$129,184,462</td>
<td>101.55%</td>
<td>29.80%</td>
<td>18.83%</td>
<td>158.28%</td>
<td>28</td>
</tr>
<tr>
<td>2</td>
<td>$107,760,418</td>
<td>$106,869,349</td>
<td>$21,128,957</td>
<td>$10,711,459</td>
<td>100.83%</td>
<td>19.77%</td>
<td>10.02%</td>
<td>197.26%</td>
<td>268</td>
</tr>
<tr>
<td>3</td>
<td>$2,073,573,241</td>
<td>$2,031,412,733</td>
<td>$470,552,477</td>
<td>$797,678,748</td>
<td>102.08%</td>
<td>23.16%</td>
<td>39.27%</td>
<td>58.99%</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>$1,351,447,439</td>
<td>$1,334,551,196</td>
<td>$260,132,039</td>
<td>$347,971,390</td>
<td>101.27%</td>
<td>19.49%</td>
<td>26.07%</td>
<td>74.76%</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>$832,760,702</td>
<td>$849,761,808</td>
<td>$1,000,379,239</td>
<td>$3,646,886,562</td>
<td>98.00%</td>
<td>117.72%</td>
<td>429.14%</td>
<td>27.43%</td>
<td>1</td>
</tr>
</tbody>
</table>

Cluster 3 school is the University of Michigan – Ann Arbor
Cluster 4 schools are Ohio State University, University of Minnesota – Twin Cities, University of Washington, and University of Wisconsin - Madison
Cluster 5 school is the University of Texas – Austin

Cluster Groups’ Means Fiscal Year 1993

![Graph of CF Revenues, CF Expenditures, Long-term Debt, and Endowment Value]
Table 5 presents the cluster means for FY 1994. Revenues were approximately equal to expenditures, as was the case for FYs 1992 and 1993. As in FYs 1992 and 1993, Cluster 5 contains only the University of Texas – Austin. For clusters 1 through 4, long-term debt ranged between 20% and 28% of expenditures, while UTA's debt was more than 119% of expenditures. For clusters 1 through 4, endowment value was less than 46% of expenditures, while UTA's was approximately 420%. UTA’s long-term debt exceeded revenues and expenditures, but was only 28% of its endowment value. As in FYs 1992 and 1993, long-term debt significantly exceeded endowment value for clusters 1 and 2. UTA borrowed the least money, relative to its endowment, while clusters 1 and 2 borrowed the most, exceeding endowment values by a significant margin. Cluster 3, containing only Michigan, borrowed 45% of endowment value, and cluster 4, Ohio State, Minnesota, Washington, and Wisconsin, borrowed approximately 83%.
Table 5 — Cluster Groups’ Means Fiscal Year 1994

<table>
<thead>
<tr>
<th>Cluster</th>
<th>CF Revenues</th>
<th>CF Expenditures</th>
<th>Long-term Debt</th>
<th>Endowment Value</th>
<th>CFR/CFE</th>
<th>LTD/CFE</th>
<th>EV/CFE</th>
<th>LTD/EV</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$740,466,459</td>
<td>$729,403,755</td>
<td>$205,985,282</td>
<td>$139,186,411</td>
<td>101.52%</td>
<td>28.24%</td>
<td>19.08%</td>
<td>147.99%</td>
<td>27</td>
</tr>
<tr>
<td>2</td>
<td>$111,007,467</td>
<td>$111,162,926</td>
<td>$22,255,200</td>
<td>$10,546,430</td>
<td>99.86%</td>
<td>20.02%</td>
<td>9.49%</td>
<td>211.02%</td>
<td>294</td>
</tr>
<tr>
<td>3</td>
<td>$2,159,618,415</td>
<td>$2,181,871,442</td>
<td>$456,784,023</td>
<td>$1,009,840,080</td>
<td>98.98%</td>
<td>20.94%</td>
<td>46.28%</td>
<td>45.23%</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>$1,421,878,666</td>
<td>$1,395,160,477</td>
<td>$290,477,719</td>
<td>$351,053,159</td>
<td>101.92%</td>
<td>20.82%</td>
<td>25.16%</td>
<td>82.74%</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>$883,467,470</td>
<td>$863,870,920</td>
<td>$1,031,081,153</td>
<td>$3,626,535,761</td>
<td>102.27%</td>
<td>119.36%</td>
<td>419.80%</td>
<td>28.43%</td>
<td>1</td>
</tr>
</tbody>
</table>

Cluster 3 school is the University of Michigan — Ann Arbor
Cluster 4 schools are Ohio State University, University of Minnesota — Twin Cities, University of Washington, and University of Wisconsin - Madison
Cluster 5 school is the University of Texas — Austin
Table 6 presents the cluster means for FY 1995. For the fourth consecutive year, revenues were approximately equal to expenditures. As in FYs 1992, 1993 and 1994, Cluster 5 contains only the University of Texas – Austin. For clusters 1 through 4, long-term debt ranged between 19% and 31% of expenditures, while UTA's debt was more than 127% of expenditures. For clusters 1 through 4, endowment value was less than 58% of expenditures, while UTA's was approximately 464%. UTA's long-term debt exceeded revenues and expenditures, but was just 27% of its endowment value. As in the three prior fiscal years, long-term debt significantly exceeded endowment value for clusters 1 and 2. UTA borrowed the least money, relative to its endowment, while clusters 1 and 2 borrowed the most, exceeding endowment values by a wide margin. Cluster 3, containing only Michigan, borrowed 45% of endowment value, and cluster 4, Ohio State, Minnesota, Washington, and Wisconsin, borrowed approximately 73%.
Table 6 – Cluster Groups’ Means Fiscal Year 1995

<table>
<thead>
<tr>
<th>Cluster</th>
<th>CF Revenues</th>
<th>CF Expenditures</th>
<th>Long-term Debt</th>
<th>Endowment Value</th>
<th>CFR/CFE</th>
<th>LTD/CFE</th>
<th>EV/CFE</th>
<th>LTD/EV</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$851,439,013</td>
<td>$841,394,364</td>
<td>$261,723,642</td>
<td>$237,667,693</td>
<td>101.19%</td>
<td>31.11%</td>
<td>28.25%</td>
<td>110.12%</td>
<td>17</td>
</tr>
<tr>
<td>2</td>
<td>$134,694,440</td>
<td>$133,361,749</td>
<td>$26,240,246</td>
<td>$15,340,293</td>
<td>101.00%</td>
<td>19.68%</td>
<td>11.50%</td>
<td>171.05%</td>
<td>320</td>
</tr>
<tr>
<td>3</td>
<td>$2,249,867,252</td>
<td>$2,303,795,271</td>
<td>$596,800,305</td>
<td>$1,331,726,045</td>
<td>97.66%</td>
<td>25.91%</td>
<td>57.81%</td>
<td>44.81%</td>
<td>443</td>
</tr>
<tr>
<td>4</td>
<td>$1,488,346,677</td>
<td>$1,475,504,317</td>
<td>$288,932,237</td>
<td>$394,867,000</td>
<td>101.55%</td>
<td>19.58%</td>
<td>26.76%</td>
<td>73.17%</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>$875,697,520</td>
<td>$876,497,407</td>
<td>$1,116,720,368</td>
<td>$4,068,602,008</td>
<td>99.91%</td>
<td>127.41%</td>
<td>464.21%</td>
<td>27.45%</td>
<td>1</td>
</tr>
</tbody>
</table>

Cluster 3 school is the University of Michigan – Ann Arbor
Cluster 4 schools are Ohio State University, University of Minnesota – Twin Cities, University of Washington, and University of Wisconsin - Madison
Cluster 5 school is the University of Texas – Austin

Cluster Groups’ Means Fiscal Year 1995

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
Table 7 presents the cluster means for FY 1996. Again, revenues were approximately equal to expenditures. As in FYs 1992 through 1995, Cluster 5 contains only the University of Texas – Austin. For clusters 1 through 4, long-term debt ranged between 18% and 27% of expenditures, while UTA’s debt was more than 121% of expenditures. For clusters 1 through 4, endowment value was no more than 70% of expenditures, while UTA’s was approximately 466%. UTA’s long-term debt exceeded revenues and expenditures, but was only 26% of its endowment value. As in the four prior fiscal years, this is a stark contrast to clusters 1 and 2 where long-term debt significantly exceeded endowment value. UTA borrowed the least money, relative to its endowment, while clusters 1 and 2 borrowed the most, actually exceeding endowment values by a wide margin. Cluster 3, containing only Michigan, borrowed 39% of endowment value, and cluster 4, Ohio State, Minnesota, Washington, and Wisconsin, borrowed approximately 60%.
Table 7 – Cluster Groups’ Means Fiscal Year 1996

<table>
<thead>
<tr>
<th>Cluster</th>
<th>CF Revenues</th>
<th>CF Expenditures</th>
<th>Long-term Debt</th>
<th>Endowment Value</th>
<th>CFR/CFE</th>
<th>LTD/CFE</th>
<th>EV/CFE</th>
<th>LTD/EV</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$848,890,884</td>
<td>$844,350,292</td>
<td>$219,565,375</td>
<td>$253,577,380</td>
<td>100.54%</td>
<td>26.00%</td>
<td>30.03%</td>
<td>86.59%</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>$130,548,273</td>
<td>$129,590,554</td>
<td>$26,919,166</td>
<td>$17,685,051</td>
<td>100.74%</td>
<td>20.77%</td>
<td>13.55%</td>
<td>152.21%</td>
<td>320</td>
</tr>
<tr>
<td>3</td>
<td>$2,338,618,271</td>
<td>$2,330,875,327</td>
<td>$639,163,735</td>
<td>$1,639,284,518</td>
<td>99.95%</td>
<td>27.32%</td>
<td>70.06%</td>
<td>38.99%</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>$1,539,582,564</td>
<td>$1,504,928,201</td>
<td>$281,958,645</td>
<td>$467,386,189</td>
<td>102.30%</td>
<td>18.74%</td>
<td>31.06%</td>
<td>60.33%</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>$940,555,784</td>
<td>$934,576,356</td>
<td>$1,130,855,000</td>
<td>$4,359,737,797</td>
<td>106.64%</td>
<td>121.00%</td>
<td>466.49%</td>
<td>25.94%</td>
<td>1</td>
</tr>
</tbody>
</table>

Cluster 3 school is the University of Michigan – Ann Arbor
Cluster 4 schools are Ohio State University, University of Minnesota – Twin Cities, University of Washington, and University of Wisconsin - Madison
Cluster 5 school is the University of Texas – Austin

Cluster Groups’ Means Fiscal Year 1996
Table 8 presents the cluster means for FY 1997. All revenues were approximately equal to expenditures and cluster 5 contains only the University of Texas – Austin for the sixth consecutive year. A sixth cluster, including only the University of Virginia [UVa], was added, which was previously in cluster 1. For clusters 1 through 4 and 6, long-term debt ranged between 16% and 27% of expenditures, while UTA’s debt was more than 109% of expenditures. For clusters 1 through 4, endowment value was less than 80% of expenditures, while UTA’s was approximately 535% and UVa’s was approximately 114%. UTA’s and UVa’s long-term debt exceeded revenues and expenditures, but was only 20% of its endowment value. As in all prior fiscal years under study, this is a stark contrast to clusters 1 and 2 where long-term debt significantly exceeded endowment value. UTA and UVa borrowed the least money, relative to endowment, while clusters 1 and 2 borrowed the most, exceeding endowment values by a wide margin. Cluster 3, containing only Michigan, borrowed 32% of endowment value, and cluster 4, Ohio State, Minnesota, and Washington, borrowed approximately 37%. Wisconsin was not in cluster 4 for FY 1997, but was in cluster 1.
### Table 8 – Cluster Groups’ Means Fiscal Year 1997

<table>
<thead>
<tr>
<th>Cluster</th>
<th>CF Revenues</th>
<th>CF Expenditures</th>
<th>Long-term Debt</th>
<th>Endowment Value</th>
<th>CFR/CFE</th>
<th>LTD/CFE</th>
<th>EV/CFE</th>
<th>LTD/EV</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$579,820,328</td>
<td>$871,005,778</td>
<td>$231,807,176</td>
<td>$277,127,576</td>
<td>101.01%</td>
<td>26.61%</td>
<td>31.82%</td>
<td>83.65%</td>
<td>21</td>
</tr>
<tr>
<td>2</td>
<td>$137,023,648</td>
<td>$136,500,678</td>
<td>$29,600,239</td>
<td>$19,636,065</td>
<td>100.72%</td>
<td>21.76%</td>
<td>14.43%</td>
<td>150.74%</td>
<td>321</td>
</tr>
<tr>
<td>3</td>
<td>$2,533,013,373</td>
<td>$2,516,726,576</td>
<td>$635,906,705</td>
<td>$2,014,489,754</td>
<td>100.65%</td>
<td>25.27%</td>
<td>80.04%</td>
<td>31.57%</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>$1,599,339,562</td>
<td>$1,537,274,276</td>
<td>$248,125,909</td>
<td>$672,206,442</td>
<td>102.09%</td>
<td>16.14%</td>
<td>43.73%</td>
<td>36.91%</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>$971,580,971</td>
<td>$984,178,962</td>
<td>$1,073,505,000</td>
<td>$5,266,253,478</td>
<td>98.72%</td>
<td>109.08%</td>
<td>535.09%</td>
<td>20.38%</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>$1,034,026,874</td>
<td>$1,048,158,495</td>
<td>$246,721,436</td>
<td>$1,194,110,224</td>
<td>98.65%</td>
<td>23.54%</td>
<td>113.92%</td>
<td>20.66%</td>
<td>1</td>
</tr>
</tbody>
</table>

Cluster 3 school is the University of Michigan – Ann Arbor
Cluster 4 schools are Ohio State University, University of Minnesota – Twin Cities, and University of Washington
Cluster 5 school is the University of Texas – Austin
Cluster 6 school is the University of Virginia

**Cluster Groups’ Means Fiscal Year 1997**

![Graph showing CF Revenues, CF Expenditures, Long-term Debt, and Endowment Value]
Tests and Trends

The purpose of this study is to determine what relationships exist among revenues, expenditures, long-term debt, and endowment value by "letting the data speak for itself." Generally, the data revealed the following. The analysis produced five clusters of schools for each of the years 1992 through 1996 and six clusters for 1997. The number of schools ranged from a low of 294 in 1992 to a high of 348 in 1997. The number of schools in cluster 1 ranged from a low of 17 to a high of 28 for the six years studied. The number of schools in cluster 2 ranged from a low of 268 to a high of 321. The cluster analysis isolated the University of Michigan – Ann Arbor [cluster 3] for each year. Cluster 4 consisted of the University of Minnesota – Twin Cities, Ohio State University, University of Washington, and University of Wisconsin – Madison for fiscal years 1992 through 1996. For 1997, the cluster analysis removed the University of Wisconsin – Madison from cluster 4 and placed it in cluster 1 and isolated the University of Virginia [UVa] from cluster 1 and created cluster 6. The cluster analysis also isolated the University of Texas – Austin [UTA] for each of the six years [cluster 5]. The analysis will focus on clusters 1 through 5 since these were present for each of the six years studied, cluster 6 was present in 1997 only.

The research problem conceptualizes Current Fund Expenditures as a function of Current Fund Revenues, Long-term Debt, and Endowment Value and is stated by the following questions:
1. What trends exist for current fund expenditures and revenues, long-term debt, and endowment value?

UTA's [cluster 5] long-term debt exceeded expenditures. For the other clusters, debt never exceeded 32% of expenditures and was typically 25%. UTA's endowment value was also between 420% and 535% of expenditures for each of the six years. For 1997, the University of Virginia [cluster 6] is a distant second in this regard with an endowment value 13% greater than expenditures. Endowment value was significantly less than expenditures for each of the remaining clusters for each year. See table 11.

Current fund revenues and expenditures are approximately equal for fiscal years 1992 through 1997. Revenues and expenses showed modest increases after adjusting for inflation. Long-term debt decreased for clusters 1, 4, and 5 between 11.14% and 13.49%, after adjusting for inflation. Debt increased 14.64% for cluster 2 and 30.34% for cluster 3. Endowment values increased significantly for all five clusters. Increases ranged from 32.37% to 177.95%. See table 12.

2. Is long-term debt displacing one or more components of current fund revenue and does endowment value influence this relationship?

The data suggest not. Long-term debt decreased in terms of 1992 dollars for three of the five clusters. The ratio of debt and expenditures revealed little change, except for cluster 5, the University of Texas –
Austin, in which debt decreased from 130% of expenditures to 109%.

Debt decreased as a percentage of endowment value for all clusters; the change ranged from 10% to 77%. See table 11.

3. Why have institutions incurred more debt when their revenues and endowment values have been increasing?

   Debt has been decreasing relative to revenues, expenditures and endowment value. Endowment value increased as a percentage of expenditures for all clusters; 6% for cluster 2, 12% for cluster 1, 21% for cluster 4, 47% for cluster 3, and 107% for cluster 5. This indicates that endowment value grew faster than expenditures for all clusters, after accounting for inflation, with significant increases for clusters 1, 3, and 5. See table 11.

4. Have revenue sources failed to keep pace with institutions’ needs and/or HEPI?

   The data suggest not. Revenues increased from 1.14% to 9.26% for the period, after adjusting for inflation. See table 12.

### Summary Tables

Table 9 includes the cluster means for fiscal year 1992 data, table 10 includes the 1997 data adjusted to 1992 dollars using HEPI, and table 11 is the difference of the two years, also adjusted using HEPI. Table 10 includes cluster 6, the University of Virginia, which was within cluster 1 for fiscal year 1992; therefore, the trend analysis does not include cluster 6. Table 12 documents the
percentage of change in each variable, adjusted for HEPI using 1992 dollars, for fiscal years 1992 through 1997.

Table 9 – Cluster Groups’ Means Fiscal Year 1992

<table>
<thead>
<tr>
<th>Cluster</th>
<th>CF Revenues</th>
<th>CF Expenditures</th>
<th>Long-term Debt</th>
<th>Endowment Value</th>
<th>CFR/CFE</th>
<th>LTD/CFE</th>
<th>EV/CFE</th>
<th>LTD/EV</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$732,924,516</td>
<td>$718,395,758</td>
<td>$226,165,791</td>
<td>$140,923,133</td>
<td>102.03%</td>
<td>31.48%</td>
<td>19.62%</td>
<td>160.49%</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>$114,343,978</td>
<td>$113,300,875</td>
<td>$21,792,534</td>
<td>$9,599,459</td>
<td>100.92%</td>
<td>19.23%</td>
<td>8.47%</td>
<td>227.02%</td>
<td>268</td>
</tr>
<tr>
<td>3</td>
<td>$1,956,609,792</td>
<td>$1,886,539,629</td>
<td>$411,777,213</td>
<td>$611,694,083</td>
<td>104.71%</td>
<td>22.04%</td>
<td>32.74%</td>
<td>67.32%</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>$1,288,270,084</td>
<td>$1,316,275,532</td>
<td>$241,283,187</td>
<td>$301,776,818</td>
<td>97.87%</td>
<td>18.33%</td>
<td>22.93%</td>
<td>79.95%</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>$780,332,286</td>
<td>$784,635,408</td>
<td>$1,019,513,900</td>
<td>$3,357,886,150</td>
<td>99.46%</td>
<td>129.95%</td>
<td>427.95%</td>
<td>30.36%</td>
<td>1</td>
</tr>
</tbody>
</table>

Cluster 3 school is the University of Michigan–Ann Arbor
Cluster 4 schools are Minnesota–Twin Cities, Ohio State University, University of Washington, and University of Wisconsin–Madison
Cluster 5 school is the University of Texas–Austin

Table 10 – Cluster Groups’ Means Fiscal Year 1997 – Adjusted for HEPI

<table>
<thead>
<tr>
<th>Cluster</th>
<th>CF Revenues</th>
<th>CF Expenditures</th>
<th>Long-term Debt</th>
<th>Endowment Value</th>
<th>CFR/CFE</th>
<th>LTD/CFE</th>
<th>EV/CFE</th>
<th>LTD/EV</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$742,568,357</td>
<td>$735,128,877</td>
<td>$195,645,257</td>
<td>$233,895,674</td>
<td>101.01%</td>
<td>26.51%</td>
<td>31.82%</td>
<td>83.65%</td>
<td>21</td>
</tr>
<tr>
<td>2</td>
<td>$115,647,959</td>
<td>$114,826,772</td>
<td>$24,862,602</td>
<td>$16,572,839</td>
<td>100.72%</td>
<td>21.76%</td>
<td>14.43%</td>
<td>150.74%</td>
<td>321</td>
</tr>
<tr>
<td>3</td>
<td>$2,137,863,287</td>
<td>$2,124,117,230</td>
<td>$536,705,259</td>
<td>$1,700,229,352</td>
<td>100.65%</td>
<td>25.27%</td>
<td>80.04%</td>
<td>31.57%</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>$1,324,522,590</td>
<td>$1,297,459,489</td>
<td>$209,418,267</td>
<td>$567,342,237</td>
<td>102.09%</td>
<td>22.93%</td>
<td>47.31%</td>
<td>36.91%</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>$820,014,340</td>
<td>$830,647,044</td>
<td>$906,038,220</td>
<td>$4,444,717,935</td>
<td>99.72%</td>
<td>109.08%</td>
<td>535.09%</td>
<td>20.38%</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>$872,718,682</td>
<td>$884,645,770</td>
<td>$208,232,892</td>
<td>$1,007,829,029</td>
<td>98.65%</td>
<td>23.54%</td>
<td>113.92%</td>
<td>20.66%</td>
<td>348</td>
</tr>
</tbody>
</table>

Cluster 3 school is the University of Michigan–Ann Arbor
Cluster 4 schools are Ohio State University, the University of Minnesota–Twin Cities, and University of Washington
Cluster 5 school is the University of Texas–Austin
Cluster 6 school is the University of Virginia

Table 11 – Cluster Groups’ Means Fiscal Year 1997 – 1992 Difference – Adjusted for HEPI

<table>
<thead>
<tr>
<th>Cluster</th>
<th>CF Revenues</th>
<th>CF Expenditures</th>
<th>Long-term Debt</th>
<th>Endowment Value</th>
<th>CFR/CFE</th>
<th>LTD/CFE</th>
<th>EV/CFE</th>
<th>LTD/EV</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$9,643,841</td>
<td>$16,772,119</td>
<td>-$30,520,534</td>
<td>$92,972,541</td>
<td>-1.02%</td>
<td>-4.87%</td>
<td>12.20%</td>
<td>-76.84%</td>
<td>17</td>
</tr>
<tr>
<td>2</td>
<td>$1,303,981</td>
<td>$1,325,957</td>
<td>$3,190,058</td>
<td>$6,973,380</td>
<td>-0.21%</td>
<td>2.52%</td>
<td>5.96%</td>
<td>-76.27%</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>$181,253,495</td>
<td>$255,577,601</td>
<td>$124,928,046</td>
<td>$1,088,535,269</td>
<td>-4.07%</td>
<td>3.23%</td>
<td>47.31%</td>
<td>-35.75%</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>$36,252,506</td>
<td>-$8,816,043</td>
<td>-$31,864,920</td>
<td>$265,585,419</td>
<td>4.21%</td>
<td>-2.19%</td>
<td>20.80%</td>
<td>-43.04%</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>$39,682,054</td>
<td>$46,011,836</td>
<td>-$113,575,680</td>
<td>$1,086,831,785</td>
<td>-0.73%</td>
<td>-20.87%</td>
<td>107.14%</td>
<td>-9.98%</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 12 – Cluster Groups’ Means FY 1997 - 1992 Trends – HEPI Adjusted

<table>
<thead>
<tr>
<th>Cluster</th>
<th>CF Revenues</th>
<th>CF Expenditures</th>
<th>Long-term Debt</th>
<th>Endowment Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.32%</td>
<td>2.33%</td>
<td>-13.49%</td>
<td>65.97%</td>
</tr>
<tr>
<td>2</td>
<td>1.14%</td>
<td>1.35%</td>
<td>14.64%</td>
<td>72.64%</td>
</tr>
<tr>
<td>3</td>
<td>9.26%</td>
<td>13.68%</td>
<td>30.34%</td>
<td>177.95%</td>
</tr>
<tr>
<td>4</td>
<td>2.81%</td>
<td>-1.43%</td>
<td>-13.21%</td>
<td>88.00%</td>
</tr>
<tr>
<td>5</td>
<td>5.09%</td>
<td>5.86%</td>
<td>-11.14%</td>
<td>32.37%</td>
</tr>
</tbody>
</table>
Summary

The literature suggests that current fund revenues, long-term debt, and endowment values have increased significantly and current fund expenditures have increased modestly. This study found that for four-year public institutions, for the period 1992 through 1997, after adjusting for HEPI:

1. Revenues and expenditures increased modestly.
2. Debt decreased for three of the five clusters.
3. Debt, as a function of expenditures, has remained constant.
4. Debt, as a function of endowment value, has decreased significantly.
5. Endowment value has increased significantly.
6. Endowment, as a function of expenditures, has increased significantly.

The literature did not address debt relative to revenues, expenditures, and endowment value. The literature did address current debt levels related to previous debt levels. It was not clear, with the exception of Shultz’s study, whether the debt studies considered HEPI. Once revenues, expenditures, endowment values, and HEPI are considered, public, four-year school debt levels are less of a concern for the period 1992 through 1997, contrary to what the literature suggests.
Chapter V – Discussion

Study Limitations and Method

This study utilized data from the Integrated Postsecondary Education Data System [IPEDS] from the United States Department of Education’s National Center for Education Statistics [NCES] for fiscal years 1992 through 1997. The data are self-reported and have not been audited, and as such, may contain unintentional or deliberate errors. A hierarchical cluster analysis, using SPSS, was used to analyze each of the four variables, revenues, expenditures, debt, and endowment value for each school, for each year. The analysis produced five clusters of schools for fiscal years 1992 through 1996 and six clusters for fiscal year 1997. Each cluster of schools was studied as a unit. The five clusters present for each of the fiscal years 1992 through 1997 were included in the analysis. The sixth cluster was only present for fiscal year 1997 and therefore, was excluded from the analysis. As noted in Chapter II, analyses that include a general deflator may misrepresent the actual inflation experienced by individual institutions.

Current Research

Current Fund Revenues

Cooper (2000) noted that tuition increased 4.4% at public four-year colleges and universities for the academic year 2000-1, which continued the 1990s trend of significant tuition and fee increases. For the academic year 2000-1, state appropriations for higher education exceeded $60 billion representing a
one-year change of 7%, a two-year change of 14.4%, and a five-year average annual change of 6.4% (Chronicle of Higher Education, December 15, 2000). Altschuler (2000) found that public schools spend a smaller percentage of their endowments than private schools do.

Current Fund Expenditures


Long-term Debt

Shultz (2000) documented large increases in long-term debt. From 1990 to 1998, $90 billion of new higher education debt was sold. Van Der Werf (1999) noted that colleges and universities were more than $100 billion in debt. Johnstone (1993) expressed concern about the rising levels of debt in higher education and found that many institutions with endowments in excess of $1 billion choose to borrow, figuring it is less costly to borrow than to spend endowment assets. Furthermore, institutions with smaller endowments are often forced to borrow to compete with their better-funded competitors (Johnstone, 1993).
According to Shultz (2000), there is a trend in American higher education to incur substantial amounts of long-term debt to build or renovate student facilities. Leslie and Fretwell (1996) also documented the significant decay in the physical plant due to foregone maintenance, suggesting the need for still more debt. Experts are concerned that many institutions incur more debt than they should. "Colleges are planning for the next 10 years, and then they don't know what will happen" says Gordon C. Winston, Director of the Williams Project on the Economics of Higher Education, at Williams College (Van Der Werf, 1999, p. A38). "There is little question that this there-is-no-tomorrow attitude permeating lenders is also infecting higher education" (Van Der Werf, 1999, p. A38).

Briffault (1996) found that most state constitutions restrict the debt of their public institutions. Public borrowing must be approved by the state legislatures or by public referendum. Such legal limitations can be avoided through use of the special fund doctrine, which permits borrowing to finance capital projects, that once in operation, produce revenue to pay the debt (Briffault, 1996). Debt limits may also be avoided by creating legal entities called authorities (Briffault, 1996). States, cities, towns and counties use this method to fund garbage collection and road construction (Briffault, 1996). Authorities are independent of the states and their debt is not the states' responsibility. States can grant higher education institutions the right to issue debt through authorities (Briffault, 1996).
Endowment Value

Duke University and the University of Notre Dame reported investment returns of almost 60% for the fiscal year ended June 30, 2000 (Lively & Street, 2000). Yale University, Dartmouth College, the University of Michigan, the University of Chicago, and the University of Virginia all exceeded 40% for the same period (Lively & Street, 2000). Yale’s endowment exceeded $10 billion and Harvard’s was $19.2 billion for the year ended June 30, 2000. American colleges and universities raised an estimated $20.4 billion in private gifts during the 1998-99 academic year (Lively, 2000). Harvard University led all institutions in gifts for the 1998-99 year with a total of $451.7 million (Lively, 2000). Donors making large gifts dominated higher education news for 1999. For example, a $350 million gift was made to the Massachusetts Institute of Technology by an alumnus (Pulley, 2000b). From 1967 through 1992, there were only three gifts in all of higher education of $100 million or more (Pulley, 2000b). From 1993 through 1999, there were 26, including Bill Gates’ $1 billion scholarship fund (Pulley, 2000).

Study Contributions

The literature suggests that current fund revenues, long-term debt, and endowment values have increased significantly and current fund expenditures have increased modestly. The literature did not address debt relative to revenues, expenditures, and endowment value but in relation to previous debt levels. It was not clear, with the exception of Shultz’s study, whether the debt
studies factored in HEPI. Once revenues, expenditures, endowment values, and HEPI are considered, public, four-year school debt levels for the period 1992 through 1997, are less of a concern, contrary to what the literature suggests.

The research questions and answers follow.

1. What trends exist for current fund revenues and expenditures, long-term debt, and endowment value?
   
   Current fund revenues and expenditures are approximately equal and showed modest increases after adjusting for inflation. Long-term debt decreased for three of the five clusters after adjusting for inflation and endowment values increased significantly.

2. Is long-term debt displacing one or more components of current fund revenue and does endowment value influence this relationship?
   
   It does not appear that long-term debt is displacing any portion of current fund revenues. Generally, long-term debt decreased in terms of 1992 dollars and as a percentage of endowment value.

3. Why have institutions incurred more debt when their revenues and endowment values have been increasing?
   
   After adjusting for inflation, institutions have not incurred more debt, revenues showed modest increases, and endowments showed significant increases and grew faster than expenditures.
4. Have revenue sources failed to keep pace with institutions' needs and/or HEPI?

The data suggest that revenue sources have kept pace with institutions’ needs and HEPI.

Implications for Researchers

This study suggests that a researcher's view of long-term debt may be influenced by the context within which it is studied. The current literature seems to analyze current levels of debt with respect to previous years, without considering revenues, expenditures, endowment value, or inflation. Future studies should be conducted with this in mind. This research paper did not address the moral or policy aspects of debt but attempted to provide a model for practical analysis to aid policy makers and administrators. Debt involves a series of decisions with implications concerning institutional values.

Recommendations

- Administrators should analyze debt relative to revenues, expenditures, endowment value and the Higher Education Price Index, with the understanding that HEPI is not a perfect deflator.
- Lawmakers should also analyze debt in this manner before setting or changing debt ceilings, or creating authorities, which are distinct legal entities created by public bodies to perform specific functions. This is discussed in more detail in the next section.
Need for Further Research

- For the period studied, the American stock market performed well. However, it seems that a significant decline in market values might directly impact endowment values and indirectly impact revenues and expenditures. One fact is certain; debt is a constant without respect to the stock market or the economy. It is reasonable to suspect that the trend and ratio analysis performed in this study might yield different results if conducted during an extended period of significant economic downturn.

- A new study involving public, four-year institutions beginning with fiscal year 1998 should be conducted once the data are available. Data from the years following are affected by numerous changes in accounting standards that impact higher education, precluding direct comparisons to data from prior years.

- A study utilizing cluster and ratio analyses should be conducted for private, four-year institutions to compare and contrast with this study and help determine the viability of such analyses in higher education finance studies. Furthermore, it is reasonable to think that private institutions may be more attracted to debt during periods of low interest rates and given the removal of the $150 million debt ceiling through the Tax Reform Act of 1996 (Hennigan, 1998).

- The classification and accounting for public higher education debt should be studied to determine the extent to which authorities are used to issue and
incur debt. Authorities are legal entities created by legislative bodies to perform certain functions, such as public transportation, collecting garbage, or, in the case of higher education, providing housing to students. Authorities collect revenues, expend monies, and incur debt. They are distinct legal, public entities that issue separate financial statements. Financial reports of authorities created to administer functions at public colleges are reduced to footnotes within the financial statements of the colleges - detailed financial information is not presented. The use of authorities may be a method for public colleges and universities to avoid recording debt within their financial statements.

The cluster and ratio analyses performed in this study appear to be a unique approach for analyzing revenues, expenditures, debt, and endowment value. These analyses provide a very different model with which to study higher education finance. In this study, cluster and ratio analyses were used to determine mathematical relationships among the variables, which, in turn, documented relationships among the institutions based on these variables. Cluster and ratio analyses are objective in nature, and let the data speak for itself, they can reveal relationships that were not suspected or disprove those that were. More research should be conducted using this model to determine its long-term worth to the scholarly study of higher education finance. Finally, further research should be conducted using cluster and ratio analyses to determine if the results expressed here are consistent with others. Once this
is done, more can be said about the appropriateness of cluster and ratio analyses for such studies and generalizing the findings beyond the schools studied.
References


United States Code, Internal Revenue Code, Title 26, Subtitle A, Chapter 1, Subchapter F, Part I, Section 501c(3) Exemption from tax, certain organizations and trusts (2000).


Vita

Michael Lee Stump

Birth Date: October 6, 1963
Birth Place: Hampton, Virginia

Education:

1994-1998 The College of William and Mary in Virginia
Williamsburg, Virginia
Educational Specialist

1991-1993 The College of William and Mary in Virginia
Williamsburg, Virginia
Master of Education

1981-1985 Christopher Newport College
Newport News, Virginia
Bachelor of Science, Information Science
Second Major in Accounting