AN INVESTIGATION OF THE DIFFERENCES IN BOND DISCLOSURES MADE BY PUBLIC AND PRIVATE COLLEGES

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CHAPTER I

INTRODUCTION

> . . . except where there is a specific statement of a different intent by the committee, its opinions and recommendations are directed primarily to business enterprises organized for profit (31, p. 2).

The above quotation summarizes the past viewpoint of a majority of accountants toward nonprofit institutions. Until recently, except for an occasional journal article, the reporting problems of nonprofit institutions have been virtually ignored by the accounting profession. For example, only 2 of more than 300 articles that appeared in the Journal of Accounting Research from 1963, the year of its inception, to 1979 have dealt with reporting for nonprofit organizations. The Accounting Review has contained only 11 articles on reporting for nonprofit organizations between January 1959 and October 1979. More evidence of the neglect of nonprofit reporting issues may be found by a perlustration of the Accountants' Index. Only 36 articles have been published on reporting for nonprofit organizations since 1959. In contrast, during the first half of 1978, 53 articles were published with financial statement disclosure for business organizations as their topic. According to Weinstein (105), there were two reasons for this neglect: (1) the nonprofit sector was not considered large enough to warrant attention, and (2) there were no large financial abuses associated with these organizations.

In recent years this view of nonprofit reporting has changed. While there was only one American Accounting Association committee report on nonprofit accounting between 1916, when the Association was created, and 1968, there have been four during the decade from 1969 to 1979. During this same time, the American Institute of Certified Public Accountants issued four audit guides and a statement of position which jointly covers reporting for all nonprofit organizations. Of the 10 articles on nonprofit accounting in The Accounting Review, 4 have appeared from 1977-1979, and in 1977 the empirical supplement to The Journal of Accounting Research was devoted totally to not-for-profit accounting issues. Most significantly, on June 15, 1978, the Financial Accounting Standards Board (FASB) issued a discussion memorandum entitled Conceptual Framework for Financial Accounting and Reporting: Objectives of Financial Reporting by Non-Business Organizations.

The FASB is currently investigating whether governmental organizations should have a different conceptual framework from other non-business organizations. A recapitulation of the arguments for a separate conceptual framework is given below:

1. There is currently a difference in the disclosure practices followed by governmental organizations and those followed by nongovernmental organizations.

2. Because accounting for nonbusiness organizations was "regulation free" until recently, organizations provided users with the information they demanded.

3. Since users demanded different information from governmental organizations than from nongovernmental organizations, there must be a basic difference in the two types of organizations.

4. Since there is a basic difference in the two types of organizations, to have only one framework for all non-business organizations would result in misleading financial reports (4).

A major part of the argument rests on differences in the disclosures made by governmental and nongovernmental organizations. But other than demonstrating that account and fund titles differ between different kinds of nonbusiness organizations, to date there is a lack of research as to the extent of any disclosure differences. The purpose of this research is to focus on this void. In particular, it addresses the following questions:

1. Do potential bondholders demand more information from public nonprofit organizations than from private nonprofit institutions?
2. Do trustees or managers of public nonprofit institutions disclose more information from private nonprofit institutions?

Colleges and Universities

"Among the most influential types of nonprofit institutions are colleges and universities" (48, p. 231). According to the American Association of Fund-Raising Counsel, Inc. (77), Americans give more money directly to educational institutions than to any other type of nonprofit, nonreligious organizations; one out of every four nonreligious nonprofit dollars goes to an educational institution; and postsecondary education receives over one half of every dollar given to educational institutions (77). The postsecondary education sector has grown considerably--from total current income of $715 million in 1940 to over $50 billion in 1977 (20, 29, 64, 65, 66, 106). States increased their appropriations to postsecondary education by nearly 300 percent from 1961 to 1971. Today higher education consumes about one out of every seven dollars spent by states.

In recent years, educational institutions have demonstrated a definite need for accounting standards. In 1971, a study conducted by Cheit for the Carnegie Commission on Higher Education concluded that almost 20 percent of the colleges and universities in the United States were in financial difficulty[1] (26). Studies conducted by Jellema (65) in 1971 and 1973 found a considerable number of private colleges[2] operating at a deficit, with the number increasing. Jellema also found that one third of the institutions sampled were in danger of closing. A study by Jenny and Wynn (66) found that the number of institutions operating at a deficit tripled from 1961 to 1970. An update of Cheit's study by Carnegie Council on Policy Studies in Higher Education (20) and by Bowen and Minter (15) found that one out of every five private colleges still was in danger of closing and nearly one half was headed for financial distress. By the end of 1978, twice as many colleges closed their doors as there were new ones opening. A Carnegie study predicted that 300 institutions may go out of business through the 1980s (90).

The publicity of the financial distress of universities and the financial crisis of New York City and other major cities has led to outcries for more and better disclosure. Because of the significant

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[1]Financial difficulty was defined by Cheit (26) as those colleges and universities whose financial condition forced them to cut services which they regarded as an important part of the institution program, mission, or quality. As an example, Cheit gives St. Louis University, which had to drop both its Schools of Dentistry and Engineering for financial reasons.

[2]In this study, the terms "college", "university", and "institution" are used interchangeably.

amount of funds invested in colleges and the current demand for better disclosure, the accounting profession can no longer afford to ignore the accounting needs of these institutions.

The Current Situation

The marked difference between the financial strength of public and private colleges was shown by Cheit (26) in his 1971 study for the Carnegie Commission. Although private colleges composed about 50 percent of the universities sampled, they composed 32 percent of the institutions in financial difficulty. As Cheit state, "By and large, the private institutions are in more difficult financial condition than the public ones." This conclusion is not new. During the Great Depression, Wiley (106) found that public institutions ran a smaller deficit than private ones. The Commission on the Financing of Higher Education (29) found that public colleges were financially sounder than private institutions and better able to handle indebtedness. According to Cheit's empirical study, 30 percent of the private colleges were in financial difficulty, contrasted with only 7 percent of the public institutions. In updating Cheit's results, the National Commission on the Financing of Post-secondary Education (82) finds that private colleges ran larger deficits relative to similar-size public ones. The empirical work of the Carnegie Council on Policy Studies in Higher Education (20) demonstrated that the more pretigious private institutions faced similar financial distress. As Cheit's study indicates earlier, even the "Stanfords" were in financial trouble. The results of other studies by Bowen and Minter (15, 16), Jellema (64, 65), Columbia Research Associates (27), Jenny and Wynn (66), Atwell (5), Wynn (108), and the Carnegie Foundation for

the Advancement of Teaching (21), all find that public colleges are financially sounder than private ones. Probably the strongest indication of this difference in financial strength comes from the National Center for Education Statistics, which showed that the 130 universities closing from 1968 to 1978 were all private. Clark Kerr (26), Chairman of the Carnegie Commission on Higher Education, summarized well the current situation when he said:

> . . . The indications of a particular high incidence of financial difficulty among private institutions, along with the acceleration of the decline in the proportion of enrollment in private institutions in the last few years suggest that survival of many of our private institutions of higher education is in jeopardy (p. xi).

Reasons for Differences

Why is there such a profound financial difference between public and private colleges? Cheit attempted to answer this question in his 1971 study in which he found the financial trouble in colleges resulted in the six common characteristics:

(1) deficit financing

(2) reduction or freezes on faculty positions

(3) cutbacks in educational programs

(4) reduction in administrative positions

(5) reduction in research budgets

(6) increase in student-faculty ratios.

The Carnegie Council on Policy Studies in Higher Education (20) analyzed these colleges in financial trouble to find why the above characteristics exist. The following discussion is adapted from their report.

After World War II, universities experienced a boom period. With the support of GI bills, more students attended college than ever before. The population boom during the 1950's enhanced the long-range outlook for these institutions. In the late sixties, however, inflation caused college costs to increase. Public colleges were able to absorb this cost increase through added appropriations from their controlling entities. Private colleges, however, found it necessary to support increased spending by increasing tuition. In 1940, the annual tuition at the average private college was only $180 more than the tuition at the average public college. By 1979, this dollar tuition gap had increased to $1,996 (77). Because of this large tuition gap, students found the price of public colleges to be a relative bargain, and more and more students began to attend them. While half of all students attended public colleges in 1950, by 1974 almost 80 percent of the college students did so. As this trend continued, private institutions found themselves unable to keep up with rising costs. With private colleges depending on tuition for 70 percent of their annual budgets, administrators found it necessary to put cost freezes on faculty and administrative positions, close academic programs, and reduce research money.

The risk differences between public and private colleges appear to arise because of the appropriations public institutions receive from their controlling organizations. Public colleges can tap the same resources as private institutions as well as the resources of their controlling organizations. A study by Hodgkinson (55) provides further support that the difference in risk between public and private colleges can be traced to their controlling organizations. He studied the effect

of a change in control (from private to public) on a university's financial condition and found that the additional governmental appropriation generally pulled the universities out of financial difficulty. As a particular example, Hodgkinson cites the experience of the University of Buffalo, which "merged" with the State of New York education system in the early 1960s. In the year of the merger, the university's budget increased by 67 percent because of state appropriations. By 1969, the university's budget had increased by over 600 percent. From this evidence, it appears that an important factor in explaining the risk of a college is whether it is publicly or privately controlled.

Risk and Information

How might the suggested differences in uncertainty between an investment in a private college and an investment in a public college affect accounting disclosure? By using a particular Bayesian example, Green (45) has shown that as risk increases, the amount of information demanded tends to increase. (Green's example and results are given in Appendix A.) Kihlstrom (71, 72) has also demonstrated analytically through Bayesian analysis and Blackwell's equivalent comparison of experiments that risk and demand for information are positively correlated. His results are summarized as follows: Assume two investments, One and Two. The investor is completely certain about the outcome of Investment One. The investor, however, is not certain about the outcome of Investment Two. For Investment Two, the investor is willing to pay for information since it has some positive value; therefore, as uncertainty increases so does the amount of information demanded.

More analytical evidence of the relationship between risk and information demanded was provided by Aigner and Sprenkle (1). Using a model for banking and loan behavior, Aigner and Sprenkle demonstrated that as risk increases, so does the amount of information demanded.

Early empirical tests of the above relationship were conducted by Irwin and Smith (61). The authors used a model of "expanded judgment" from psychology to predict a positive relationship between risk and the amount of information demanded. They tested their hypothesis under a game theory situation and the results supported the suggested hypothesis. Irwin and Smith repeated their earlier experiment (62) under varying values and costs of information, and the results still showed that as risk increased, the demand for information increased. Several researchers have subsequently tested Irwin and Smith's hypothesis--Lanzetta and Kanraeff (74), Green (45), Long and Ziller (75), and Sepstrup (94). All of the studies empirically supported the same hypothesis.

In a business environment, Sheth (96) found the greater risk consumers associate with the purchase of a product, the more information they attempt to collect before buying. Holland (56) studied managers' behavior within a particular company and found that the more uncertainty in a decision, the greater amount of information a manager collects to lower that uncertainty. Kefalas and Schoderbeck (69) explored the differences in managerial information demands between a stable and a relatively unstable environment. They found that managers in the more unstable farm environment spend more time acquiring information than managers in the relatively more stable machinery environment. Finally, Blaudin and Brown (12) studied managers in the electronics and the wood products industries and found that the greater uncertainty managers

perceive in their environment, the more information they will collect from all sources available.

From the above literature, it appears that risk and the amount of information demanded are positively related. As already suggested, it appears that private colleges are relatively more risky than public colleges; therefore, it seems that college investors will on the average require more information from private colleges than from public ones.

Identification of External Users

Before differences in information demanded by public financial statement users and private users can be addressed, it is first necessary to identify college financial statement users. The FASB has identified the following groups as being users of financial statements: owners, lenders, suppliers, potential investors and creditors, employees, management, directors, customers, financial analysts and advisors, brokers, underwriters, stock exchanges, lawyers, economists, taxing authorities, regulatory authorities, legislators, financial press and reporting agencies, labor unions, trade associations, business researchers, teachers and students, and the public (42). Anthony (4) identified governing bodies, investors and creditors, resource providers, oversight bodies, and constituents as being the major users of nonbusiness financial statements. Skousen, Smith, and Woodfield (SSW) (99) sent questionnaires to members of National Association of College and University Business Officers (NACUBO) asking them to identify groups of external users. Their perceived major external users were: board of trustees, university administrators, banks and financial institutions, federal government agencies, state government agencies, foundations,

other universities, donors, faculty accreditation offices, state budget councils, and students.

Upon further examination of their user groups, SSW eliminated and combined some of them. Boards of trustees and university administrators were viewed as internal users who did not have to rely solely on financial statements as their principal source of information about the institution; faculty members were eliminated for the same reason. Donors and foundations were combined because they had similar needs. Students and other universities were eliminated because their information needs did not differ from the other groups. SSW left eight groups of major users--banks and financial institutions, federal government agencies, state government agencies, foundations, accreditation officers, state budget officers, alumni, and state coordinating councils. Of the remaining groups, more NACUBO members sent financial statements to banks and financial institutions than to any other group.

Anthony (4) also attempted to rank his major-user groups in the order of importance of financial statements to their needs. Anthony conceded the fact that governing bodies may not strictly be thought of as external groups, since they have the power to prescribe what financial information they see. Again, if governing bodies are eliminated, investors and creditors become the major users of the financial statements of a nonbusiness entity. From their large list of users, FASB concluded that the most prominent external users, are investors and creditors. The above analysis leads to the conclusion that investors and creditors appear to be the principal users of the financial statements of colleges and universities, as well as for other business and nonbusiness organizations. For educational

institutions, the term "investors" means creditors, but in business organizations both debt and equity holders are considered investors. Because in a nonbusiness setting, the group "investors and creditors" become creditors only, this study emphasizes the needs of creditors.

As suggested earlier, the average public college appears to be financially stronger than the average private college, and this risk difference can be expected to affect the information demands made on a college by its financial statement users. As shown above, the principal users of college financial statements are investors and creditors. But the FASB (42) has indicated that the major group of investors is securityholders which means bondholders in a nonprofit setting because there are no equityholders.

The original research question can be rewritten more formally in terms of the following hypotheses:

H_{A1}: On the average, the level of information demanded from private colleges differs from the level of information demanded from public colleges.

H_{A2}: On the average, the level of information disclosed to potential bondholders by private colleges will be greater than the level of information disclosed to potential bondholders by public colleges,

and the null hypothesis can be stated as follows:

H_{01}: There is no difference between the level of information demanded for private colleges and the level of information for public colleges.

H_{02}: There is no difference between the level of information disclosed to potential bondholders by public colleges and the level of information disclosed to potential bondholders by private colleges.

Measure of Disclosure

There have been a number of studies dealing with the level of disclosure in financial statements. One of the earliest was Cerf (23), who developed an index for overall disclosure by specifying and weighting items of information in a financial statement. He then tested the relationship of his disclosure score and three different company characteristics--listing status, company size, and number of stockholders.

Copeland and Fredericks (32) developed a measure of disclosure similar to Cerf's by surveying the accounting literature and developing six criteria useful in evaluating adequacy of new stock issues. Their numeric measure of the extent of disclosure equaled the unweighted number of items of information in a financial statement divided by the total possible number of unweighted items of information that could have been disclosed. Buzby (18) criticized the measure developed by Copeland and Fredericks as lacking the ability to be a summary measure of disclosure because without weights, the items cannot be combined into a meaningful summary measure. Because this research requires a summary measure of disclosure, this approach will not be used.

Another measure of the amount of information disclosed in financial statements is called entropy.

$$H = p_1 \ln \frac{1}{p} + p_2 \ln \frac{1}{p_2} + \ldots + p_n \ln \frac{1}{p_n}$$

$$= \sum_{i=1}^{n} p_i \log \frac{1}{p_i}$$

where p_i is the expected probability that an event i will take place. Babich (6) has shown that when Shannon's measure is applied to accounting

statements, it becomes a measure of decomposition, not information content.[3] Because this research proposed to measure levels of information and not decomposition, Shannon's measure is not appropriate for this research. After reviewing the above measure of disclosure, Cerf's disclosure score appeared best suited to the present study.

Development of Weights

The first step in the development of a disclosure was to gather a list of items of information deemed important by a particular class of users. The researcher selected potential college bondholders and their information needs with respect to disclosure in college bond prospectuses.

The accounting and finance literature was surveyed to develop a list of items important to potential university bondholders. Items were included in the list if, based on the literature survey, they were seriously proposed as needing disclosure or were currently disclosed by educational institutions. The list is given in Table IX (page 40).

Samples

A sample of bank investment officers and municipal bond brokers was selected from the Oklahoma Bank and Telephone Directories. The respondents were asked to weight each item in the list developed as described above (see Table IX, page 40, for list) on a scale of 0-4; 0

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[3]When applied to accounting reports, p_i is not the expected probability that event i will occur. p_i, instead, is the proportion of an item's monetary magnitude to total assets or sales. Entropy in this case measures decomposition, the extent to which an aggregated figure can be decomposed.

(unimportant); 1 (slightly important); 2 (moderately important); 3 (very important); or 4 (essential). Two sets of rankings were obtained: (1) assuming that a college is issuing a general obligation bond, and (2) assuming the college is issuing a revenue bond. Two rankings were obtained so that a set of weights could be developed for the major types of bonds a college issues. The Municipal Finance Officers Association indicated during a hearing before the Senate Committee on Banking, Housing and Urban Affairs (101) that potential bond buyers need a different amount of information, depending on the type of bond issued; therefore, respondents were asked to assign weights for both types of bonds. The means and standard deviations of the responses were used to develop two sets of rankings.

A sample was drawn from the population of all colleges and universities within the south central area of the United States that had current outstanding bonds issued after January 1, 1967. The sample was drawn from the Education Directory--Colleges and Universities (107). Letters were mailed to the selected colleges and universities, requesting a copy of their most recent bond prospectus. Follow-up telephone calls were made to those universities not initially responding.

Disclosure Score

The overall extent of disclosure in the bond prospectuses was measured using the disclosure sets developed earlier. The disclosure score for each public and private college is:

$$D_i = \frac{\text{Sum of Disclosure Score for College } i}{\text{Total Possible Score for College } i} \times 100.$$

Analysis of covariance was used to determine significant differences in the disclosure score between public and private colleges using the scores developed from both of the disclosure sets computed separately.

Contributions

There is currently a lack of research on any disclosure differences between governmental and nongovernmental organizations; representatives from both groups have provided arguments as to why there should be a difference in both the nature of these organizations and the information they disclose. This research provides evidence of disclosure differences between a particular type of governmental and nongovernmental organization.

It has already been suggested that private colleges are riskier than public colleges and that this difference could result in greater disclosure by private colleges than public colleges. Because of the relative lack of regulation in college and university accounting (4, 40, 89, 99), bond disclosures of colleges and universities are made in a relatively "free" market. Confirming the hypothesis that private colleges disclose more information than public colleges provides evidence that the market perceives a difference between public and private colleges.

Limitations

No research effort is without limitations. One major limitation of this research is in its development of a disclosure model. The weights in this research were developed from a questionnaire. This means the weights developed are an approximate measure of information and not an

actual one. An actual measure could be developed by observing individuals accepting or rejecting alternative investments in bonds, then using discriminant analyses to develop the weights. The alternative methodology requires a sample of college bond prospectuses which were both accepted and rejected. While it is possible to obtain copies of prospectuses accepted by investors, the ability to obtain prospectuses that have been rejected is limited because of the fact that investors generally retain copies of prospectuses announcing opportunities they invest in but dispose of those prospectuses accouncing projects in which they decide not to invest.

Another limitation of this research stems from the restricted geographical area covered by the sampling frames used in this study. Conclusions drawn from this study are limited by the fact that not all potential bondholders were included in the sample frame; therefore, the disclosure index derived for this study may not be representative of all bondholders. The lack of a comprehensive list of all potential bondholders (financial institutions and private individuals) and the prohibitive cost to develop such a list require the use of a subpopulation sampling frame.

Since this research does not consider colleges outside of the south central area of the United States, the predictability of this research beyond the college area sampled is limited. If public and private colleges outside of this area are financially different (stronger or weaker) from those in the south central area, the result of this study would only partially apply. If the colleges in this area are financially stronger, then this research is biased against the hypothesis tested. Evidence from Cheit (26) and the Chronicle of Higher

Education (10, 84) suggests that colleges in the area chosen are financially stronger than those in other areas.

It appears that while alternative methodologies are available, their practical limitations preclude their use in this particular type of research; therefore, while recognizing the limitation of disclosure score, researchers in this field (7, 18, 19, 80, 98, 100) have determined that this measure is currently best suited for this type of research.

Overview of Remaining Chapters

Chapter I reviewed the current financial situation of colleges and universities and showed that the information theory predicts that current financial distress among private colleges would lead potential bondholders to demand more information from private colleges than from public colleges. Chapter II reviews the literature concerning the needs of college financial statement users, and Chapter III discusses the methodology used in this study. Chapter IV presents results of the experiment, and Chapter V summarizes the study and offers related conclusions.

CHAPTER II

CURRENT INFORMATION NEEDS OF COLLEGE FINANCIAL STATEMENT USERS

As stated in Chapter I, many universities appear to be headed for financial distress, and the projected decline in college enrollment will only make this situation worse. As college bankruptcies increase, potential bondholders will seek more information before lending money. This research tested the effect of perceived risk differences on public and private colleges' disclosure by deriving a disclosure set and comparing public colleges' disclosure scores with those of private colleges. A necessary step before the development of the disclosure model is the identification of items potential college bondholders have found useful; therefore, this chapter reviews the literature on their current information needs.

Potential bondholders will loan money to a college if they feel the investment will return their cash, along with enough additional compensation to make the investment worthwhile. If the net present value of the investment's future cash inflow is positive, potential bondholders may consider the investment worthwhile; therefore, college investors need information helpful in assessing the present value of net future cash flows of their investments and their related uncertainty. A college's financial stability, transferability of resources, and compliance with loan agreements provide just such information (99).

Financial Stability

There are two components of financial stability--liquidity and solvency. Liquidity is the ability of an organization to meet its current obligations as they come due, while solvency is the ability of an organization to meet its long-term debts as they come due. To assess a university's liquidity, Anthony (4) suggested that a statement of changes in fund balances would be useful. Such a statement provides potential bondholders with information on the flow of resources to, through, and from the college. An example of a typical college statement of changes in fund balances is provided in Table I. Notice that the statement presents a group of assets (called a fund) as the basic entity. A statement of changes in financial position is provided for each fund. This fund-by-fund accounting enables a potential investor to determine what money a college received during a year, how it was spent, and how it was transferred between funds within the college. For example, from Table I, it is evident that the university transferred $175,000 from the current fund to the plant fund, which was used to retire $50,000 of a long-term debit and $125,000 of interest due on long-term indebtedness.

Gross (47) has attacked the above fund-by-fund statement of changes in fund balances. He stated that investors are interested in the financial liquidity of the university as a whole. Investors are, therefore, interested in the overall flow of resources into and out of the university. Gross claimed that the current fund-by-fund statement of changes in fund balances is not understandable and is very difficult to read. Gross contended that universities should present a consolidated financial flow statement. He felt such a statement would be more

TABLE I

STATEMENT OF CHANGES IN FUND BALANCES

	Current Funds				Annuity	Plant Funds			
	Unrestricted	Restricted	Loan Funds	Endowment and Similar Funds	and Life Income Funds	Unexpended	Renewal and Replacements	Retirement of Indebtedness	Investment In Plant
Revenues and other additions:									
Educational and general revenues	$5,068,000								
Auxiliary enterprises revenues	1,910,000								
Gifts and bequests - restricted		$175,000		$1,850,000	$ 50,000	$ 190,000			
Grants and contracts - restricted		300,000	$200,000						
Investment income - restricted		443,000		10,000	5,000	75,000	$ 5,000	$ 5,000	
Realized and unrealized gains on investments - unrestricted				(100,000)					
Realized and unrealized gains on investments - restricted				(415,000)					
Interest on loans receivable			20,000						
Expended for plant facilities									$ 1,925,000
Retirement of indebtedness									50,000
Total revenues and other additions	6,978,000	918,000	220,000	1,345,000	55,000	265,000	5,000	5,000	1,975,000
Expenditures and other deductions:									
Educational and general expenditures	5,158,000	961,000							
Auxiliary enterprises expenditures	1,347,000								
Loan cancellations and write-offs			15,000						
Expended for plant facilities						1,825,000	100,000		
Retirement of indebtedness								50,000	
Interest on indebtedness								125,000	
Disposal of plant facilities									100,000
Total expenditures and other deductions	6,505,000	961,000	15,000			1,825,000	100,000	175,000	100,000
Transfers among funds - additions/(deductions):									
Mandatory:									
Principal and interest	(175,000)							175,000	
Renewals and replacements	(200,000)						200,000		
Unrestricted gifts allocated	(500,000)		50,000	400,000		50,000			
Total transfers	(875,000)	-	50,000	400,000	-	50,000	200,000	175,000	-
Net increase/(decrease) for the year	(402,000)	(43,000)	255,000	1,745,000	55,000	(1,510,000)	105,000	5,000	1,875,000
Fund balance at beginning of year	1,140,000	574,000	500,000	13,685,000	145,000	2,810,000	195,000	90,000	36,335,000
Fund balance at end of year	$ 738,000	$531,000	$755,000	$15,430,000	$200,000	$1,300,000	$ 300,000	$ 95,000	$38,210,000

readable, understandable, and would present a better picture of a college's overall operations. An example of Gross' suggested statement is shown in Table II. Notice that Gross' consolidated statement fails to provide information about the amount of money received by a particular fund. It does, however, give its readers an overall view of the resources received and spent by the college as a whole.

From their survey of potential college creditors, Skousen, Smith, and Woodfield (SSW) found that potential bondholders attempted to determine the financial liquidity of a college by computing current and quick ratios and by assessing potential cash flows. While the statement of changes in fund balances is useful in helping potential investors estimate prospective cash flows, it does not give the information necessary to compute ratios. To compute ratios, a balance sheet is needed. As is the case with the statement of changes in fund balances, the typical college balance sheet is presented on a fund-by-fund basis. SSW found, however, that users wanted aggregated balance sheets also. Some users even had attempted to construct aggregated statements themselves. According to SSW, potential bondholders, by their nature, are interested in the broad view of a college. Potential investors did not, however, want aggregated statements to replace fund-by-fund statements. They preferred fund-by-fund data with total columns presenting the aggregated data. Anthony (4) and Henke (53) have both given reasons why college investors desire both types of information. Anthony noted that fund-by-fund data are necessary because of legal restrictions placed on the college's resources; therefore, potential creditors need fund-by-fund data to test the college's compliance with those restrictions. Even if specific revenues are pledged to pay bondholders, the faith and credit

TABLE II

STATEMENT OF REVENUE AND OTHER ADDITIONS, EXPENSES, AND CHANGES IN FUND BALANCE

	1975			1974
	Unrestricted	Restricted	Total	Total
Revenue and other additions:				
Tuition and fees	$ 2,964,000		$ 2,964,000	$ 2,550,000
Governmental appropriations	700,000		700,000	600,000
Governmental grants and contracts	20,000	$ 500,000	520,000	410,000
Private gifts, grants, and contracts, other than endowment	650,000	415,000	1,065,000	680,000
Endowment gifts	734,000	563,000	1,297,000	995,000
Realized and unrealized appreciation (depreciation) of investments	(100,000)	(415,000)	(515,000)	385,000
Auxiliary enterprises	1,910,000		1,910,000	1,650,000
Total revenue and other additions	6,878,000	2,913,000	9,791,000	7,870,000
Expenses:				
Instruction	3,491,000	489,000	3,980,000	3,625,000
Research	149,000	400,000	549,000	910,000
Public service	140,000	25,000	165,000	125,000
Student services	91,000		91,000	65,000
Scholarships	150,000	50,000	200,000	190,000
Auxiliary enterprises	1,347,000		1,347,000	1,441,000
Operation and maintenance of plant	220,000		220,000	200,000
General and administrative	691,000		691,000	649,000
Fund raising	226,000	12,000	238,000	180,000
Total expenses	6,505,000	976,000	7,481,000	7,385,000

TABLE II (Continued)

	1975			1974
	Unrestricted	Restricted	Total	Total
Excess of revenue and other additions over expenses:				
Unrestricted (available for current operations)	$ 373,000		$ 373,000	$ (215,000)
Restricted (increases in endowment and other restricted funds)		$ 1,937,000	1,937,000	700,000
Fund balances, beginning of year	43,232,000	12,017,000	55,249,000	54,764,000
Interfund transfers	322,000	(322,000)		
Fund balances, end of year	$43,927,000	$13,632,000	$57,559,000	$55,249,000

of the entire college are also pledged. Potential creditors are interested in the particular revenues pledged for their loan, but they also are interested in the college as a whole, since if the college is financially weak, their pledged revenues and their related fund are affected. For example, if stadium revenues are pledged to pay bondholders, bondholders are still interested in the college's overall financial picture, since the stadium revenues would be greatly affected if the university closed its doors or were forced for financial reasons to drop its football program. Henke also pointed out that data of a particular fund, taken in isolation, are almost meaningless. To get an overall view of the liquidity of the college, aggregated statements must be prepared. An example of the typical fund-by-fund balance sheet is presented in Table III. An example of an aggregated balance sheet is presented in Table IV.

SSW suggested that universities need to present supplementary schedules of their long-term debts, their debt service requirements, and their maturity dates in order to aid potential bondholders in determining the universities' solvency. This information aids investors in determining the future cash requirements of universities and, therefore, their net present values.

Several writers have explored the usefulness of ratios in assessing long-term financial solvency. SSW found that users in their survey used times interest earned[1] and total long-term debt to property, plant, and equipment. Notice that the data needed to compute the above ratios

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[1]Times interest earned is computed by dividing income before interest and taxes by interest expense. More will be said later about how a net income figure is computed for a nonprofit organization.

TABLE III

FUND-BY-FUND BALANCE SHEET

	Current Funds	Loan Funds	Plant Fund
Assets			
Cash - restricted	$ 1,361	$1,230	$ 14,269
Cash - unrestricted	2,001		
Accounts receivable	190,568	1,371	
Inventories	4,572		
Prepaid expenses	1,199		
Total current assets	199,701	2,601	14,269
Land			210,288
Buildings			836,446
Equipment			125,404
Furniture			47,917
Vehicles			34,246
			1,254,301
Less: accumulated depreciation			181,066
Total fixed assets			1,073,235
Total assets	199,701	2,601	1,087,504
Liabilities and Fund Balances			
Accounts payable	15,867		
Employees' taxes withheld	3,233		
Dormitory deposits	2,550		
Total current liabilities	21,650		
Long-term notes payable			553,200
Bonds payable			162,350
Total liabilities	21,650		715,550
Fund balances	178,051	2,601	371,954
	$199,701	$2,601	$1,087,504

TABLE IV

AGGREGATED BALANCE SHEET

Assets	Total
Cash - restricted	$ 16,860
Cash - unrestricted	2,001
Accounts receivable	191,939
Inventories	4,572
Prepaid expenses	1,199
Total current assets	216,571
Land	210,288
Buildings	836,446
Equipment	125,404
Furniture	47,917
Vehicles	34,246
	1,254,301
Less accumulated depreciation	181,066
Total fixed assets	1,073,235
Total assets	1,289,806
Liabilities and Fund Balances	
Accounts payable	15,867
Employees' taxes withheld	3,233
Dormitory deposits	2,550
Total current liabilities	21,650
Long-term notes payable	553,200
Bonds payable	162,350
Total liabilities	737,200
Fund balances	552,606
	$1,289,806

can best be obtained from aggregated statements as presented in Tables II and IV.

Schipper (92) constructed a list of universities that had failed between 1967 and 1974, along with financial and enrollment data for the universities five years prior to their failure. She also constructed a list of universities that remained financially strong, together with their supporting financial and enrollment data for the same time period. Schipper found that ratios containing the following items were significantly different between the two groups and, therefore, would provide useful information to potential bondholders:

Library expenditures - The universities that failed spent considerably less money for their library than did universities that remained financially strong. The percentage of library expenditures to total current fund expenditures and the amount of library expenditures per student was larger for those colleges that failed than those that did not. This result appears to be due to the declining enrollment of distressed colleges. Notice that bondholders can find the information needed to compute the above ratios in fund-by-fund statements.

Plant - The colleges not in financial distress had larger debt to plant ratios than did financially distressed colleges. Schipper speculated this was true because investors are hesitant to lend money to financially troubled universities..

Maintenance - There was a significant difference in the maintenance expenditures as a portion of current fund expenditures. Again, a fund-by-fund statement can be used by bondholders to compute the above ratio.

Endowment - The endowment per student was larger for the nonfinancially troubled universities than for the financially troubled ones.

The additions to the endowment was larger for financially strong universities than for those colleges that eventually failed.

Student aid - Nondistressed colleges had a larger percentage of current funds restricted for student aid than did financially distressed ones. Financially stronger colleges also spent more of their unrestricted funds for student aid.

Staff and faculty wage bills - Nondistressed colleges paid larger wages than did financially weaker colleges. The wage bill was, however, a smaller percentage of total current fund expenditures for financially strong colleges than for those in financial trouble.

Tuition per student - The enrollment of the colleges that failed was considerably smaller than that of the colleges that did not fail. The tuition, however, was not found to be significantly different between the two groups.

The data needed to compute Schipper's ratios can be found in the typical university fund-by-fund financial statements. Notice also that aggregated financial statements cannot provide potential bondholders with the needed data to compute Schipper's ratios, but a combination of both aggregated and fund-by-fund statements would. This type of statement is presented in Table V.

As noted above, SSW found that users computed the times interest earned ratio to determine financial solvency. Users attempted to determine a figure analogous to the net income number reported for business organizations. They took the differences in the current fund's revenues and expenditures and used this excess as the numerator in computing times interest earned as if this number were equivalent to a net income figure for nonbusiness organizations. Table VI illustrates the type of current

TABLE V

COMBINED FINANCIAL STATEMENTS

	Balance Sheet			
	Current Funds	Loan Funds	Plant Fund	Total
Assets				
Cash - restricted	$ 1,361	$1,230	$ 14,269	$ 16,860
Cash - unrestricted	2,001			2,001
Accounts receivable	190,568	1,371		191,939
Inventories	4,572			4,572
Prepaid expenses	1,199			1,199
Total current assets	199,701	2,601	14,269	216,571
Land			210,288	210,288
Buildings			836,446	836,446
Equipment			125,404	125,404
Furniture			47,917	47,917
Vehicles			34,246	34.246
			1,254,301	1,254,301
Less accumulated depreciation			181,066	181,066
Total fixed assets			1,073,235	1,073,235
Total assets	199,701	2,601	1,087,504	1,289,806
Liabilities and Fund Balances				
Accounts payable	15,867			15,867
Employees' taxes withheld	3,233			3,233
Dormitory deposits	2,550			2,550
Total current liabilities	21,650			21,650
Long-term notes payable			553,200	553,200
Bonds payable			162,350	162,350
Total liabilities	21,650		715,550	737,200
Fund balances	178,051	2,601	371,954	552,606
	$199,701	$2,601	$1,087,504	$1,289,806

TABLE V (Continued)

	Statement of Changes in Fund Balances			
	Current Funds	Loan Funds	Plant Fund	Total
Revenue and Other Additions				
Educational and general revenues	$331,437	$	$	$331,437
Auxiliary enterprises	58,153			58,153
Other sources	67,256	75	18,262	85,593
Total revenue and other additions	456,846	75	18,262	475,183
Expenditures and Other Additions				
Education and general expenses	499,398	349	252	499,999
Retirement of indebtedness			4,862	4,862
Interest on indebtedness			55,736	55,736
Depreciation			44,407	44,407
Total expenditures and other deductions	499,398	349	105,257	605,004
Excess (deficit) revenues and additions over expenditures and other deductions	(42,552)	(274)	(86,995)	(129,821)
Fund balance, beginning of year	220,603	2,875	458,949	682,427
Fund balance, end of period	$178,051	$2,601	$371,954	$552,606

fund revenues and expenditures statement that many colleges present and from which the bondholders in SSW's survey computed their "net income" figures. Gross (47) has pointed out that many colleges report this statement along with the statement of changes in fund balances and the balance sheet. This gives the impression that it is equivalent to the income statement of business organizations, especially to those unfamiliar with college accounting. Whether or not Gross is correct that college financial statement users are mistaking the current fund revenue and expenditure statement for an income statement, it is true that the investors in the SSW survey did use this statement to construct a "net income" number.

TABLE VI

STATEMENT OF CURRENT FUND REVENUES AND EXPENDITURES

Revenue and Other Additions	Current Funds
Educational and General Revenues	$331,437
Auxiliary Enterprises	58,153
Other Sources	67,256
Total Revenues and Other Additions	$456,846
Expenditures and Other Deductions	
Educational and General Expense	499,398
Excess (Deficit) Revenues and Other Additions over Expenditures and Other Deductions	(42,552)
Fund Balance, Beginning of Year	220,603
Fund Balance, End of Period	$178,051

Because of this strong desire of investors to have a summary number by which to measure the performance of educational institutions, Anthony (4) has suggested that nonbusiness organizations provide a report on their operations reporting operating inflows and expenses of a non-business organization as well as a "bottom line" number labeled operating excess or deficit. Anthony distinguished between operating inflows and capital inflows in that operating inflows are those relating to the operations of the current period, while all other inflows are considered to be capital inflows. Although Anthony stated that the distinction between capital inflows and operating inflows is not the same for a nonprofit organization as the distinction between income and capital transactions for business organizations, the division is believed to be equal in importance. Anthony argued that inflows for current operations are different from inflows for capital additions, debt amortizations, and other similar activity. He argued that the combination of this type of inflows into a single statement would be misleading. For example, during one year a college may conduct normal operations, campaign for additions to its endowment funds, and borrow funds to construct a building. Since the nature of all three activities is distinct and separate, combining them into one statement ignores the basic nature of these activities and leads to misleading financial statements. He argued that if operating inflows are not distinguished from capital inflows, users will not receive the information they need about current operations. Anthony pointed out the possibility that the combining of operating and capital transactions into a single statement became a concern to New York City's potential investors and helped lead to its financial crisis. He referred to the belief that the continuation of

this practice was one of the reasons New York City was not able to regain the confidence of the market. Anthony argued that plant and equipment depreciate and must at some time be replaced; therefore, investors need capital inflows separated from operating inflows so that they can determine if the past level of capital inflows has been sufficient to maintain the quality of the physical plant.

Anthony's operating statement contained operating expenses as distinguished from operating expenditures. Operating expenses are monetary measures of the amount of goods and services used for current period operations. Expenditures measure the amounts of goods and services acquired during a period. Anthony stated that expenditures are reported in financial flow statements while expenses are reported in operating statements. Anthony argued that timing is the major difference between expenditures and expenses and gave the following example: the payment of an exmployee's wages is both an expense and an expenditure during the current period; however, the prepayment of three years of insurance is an expense during the current period only to the extent of the amount used up during current operations, while the entire balance is a current period expenditure. Notice that expense refers to goods and services used during the current period while expenditures include goods and services which will be used in future periods; therefore, expenditures include some items that are capital in nature.

Henke (53) presented an argument for the inclusion of depreciation charges as part of the expenses for current operations. He summarized his argument as follows:

From our evaluation of the depreciation arguments, we can make the following observations:

1. The capitalization of the cost of fixed assets is necessary if nonprofit organizations are to have appropriately determined costs and an objective operating statement. Capitalization logically requires subsequent amortization for those items having limited life.

2. External financial reports (from the viewpoint of operational stewardship) should disclose information about the consumption of fixed assets as well as the application of appropriate resources. Depreciation accounting is the best technique currently available for doing this.

3. Where depreciation is to be funded and included as an element of fees to be charged, it is especially important that these charges be tied in to the formal accounting records.

4. The use of an operating statement reflecting revenues and expenses does not preclude a simultaneous preparation of the essential statement showing the sources and applications of net appropriable resources.

5. Appropriately determined functional costs can provide a sounder basis for budgets and operating plans. This can best be accomplished if depreciation is recorded.

6. It can be important to disclose the extent to which capital has been maintained or has eroded. Depreciation accounting is the best device currently known for disclosing this information.

7. The capitalization of fixed assets and their subsequent depreciation could help to ensure more adequate and complete fixed asset records.

8. It is entirely possible that disclosure of accumulated depreciation not recovered in normal revenues and therefore creating an operating deficit could be a supporting factor in soliciting funds for the replacement of fixed assets (4, pp. 143-144).

Anthony pointed out that the operating statement is important in estimating solvency. An organization cannot continuously operate at a deficit and continue to exist. Investors are especially concerned about the continued operation of colleges in which they are interested. As already shown, SSW found investors trying to compute a "net income"

figure, even though none was given, in order to aid in determining the college's ability to survive. It would appear that college investors desire an operating statement as Anthony hay proposed. An example of Anthony's operation statement is given in Table VII. Table VIII shows how Anthony would change the statement of changes in fund balances if his operating statement was provided.

TABLE VII

OPERATING STATEMENT

Revenues	$400
Endowment Earnings	80
Grants for Operations	60
Total Operating Inflows	540
Expenses	510
Operating Expenses	30

Transferability of Resources

Some of the money received by a university is restricted for special uses, while other money has no restrictions. Of those restricted resources of a university, some have been restricted by outside parties (donors, grantors, bondholders, etc.), while others have been restricted by management. The governing boards of the colleges have the latitude to transfer the latter resources between funds.

TABLE VIII

FINANCIAL FLOW STATEMENT

Sources		
Operating Excess		$ 30
Noncash Expenses		20
Total from Operations		50
Endowment Income (Net)		10
Endowment Gifts		140
Additional Borrowing		63
Grants for Plant		70
Total Sources		$333
Uses		
Additions to Inventory	$ 55	
Additions to Investments	135	
Additional Plant	126	
Total Uses		$316
Increase in Cash		$ 17

The survey by SSW found that potential creditors attempted to determine the latitude college governing boards had in transferring resources between funds. Investors wished to determine what money a college had available to repay loans and to make interest payments. Resources restricted by outside parties are not always available for the payment of loans or their related interest. Even creditors that have specific revenues pledged to repay their loans wish to know the ability of the college to transfer funds, since if their pledged revenues are not sufficient to meet the loan requirements, the university could use other resources to meet the loan. Potential bondholders also want to know about the restrictions placed on the university by outside

parties. Sometimes resources restricted by outside parties are available for the repayment of loans. If this is so, SSW suggested that users can better estimate the colleges' ability to meet debt requirements if information on the restrictions of resources by outside parties is disclosed. To provide the needed information, SSW suggested that the balance sheets of colleges disclose resources restricted by outside parties separate from resources not restricted by outside parties. Because the college's future ability to meet debt requirements depends on what restrictions are placed on current inflows, SSW suggested that the statement of current funds revenues and expenditures should make the distinction between current inflows restricted by outside parties and those not restricted. A review of Tables I and III indicates that universities currently report restricted resources separately from unrestricted funds. Anthony and Gross both suggested that their statements make this distinction.

University Compliance

University creditors in the SSW survey were particularly interested in how a college planned to spend the money received from a loan and if the money was spent in the way intended. As Henke (52) stated, the current fund-by-fund statement of changes in fund balances, statement of current fund revenues and expenditures, and balance sheet were developed especially to provide this type of information. As a university receives funds restricted for special purposes, a self-balancing set of accounts is established for each type of restricted resource. This self-balancing set of accounts, known as a fund, provides a stewardship type of accounting of what assets are in a fund at the beginning of a period,

what assets are added to the fund during the period, what assets are used during the period, and what the balance of the fund is at the end of the period; therefore, college investors continue to desire fund-by-fund accounting data, but this does not preclude the use of total columns along with the fund-by-fund disclosure (4, 47, 48, 53, 54, 99).

Other Needs

Research by the Municipal Finance Officers Association (MFOA) (101) provides some additional evidence of the needs of college investors. The MFOA suggested that creditors need information on the feasibility of any proposed project for which the loan proceeds are to be used. The feasibility report is to include a description of the proposed project, its projected revenues and expenses, community need for the project, any special agreements with potential customers which the project will serve, and the project's estimated life. MFOA (101) also suggested that potential creditors need to know the university's default history if it has been necessary in the past 25 years to refund securities to prevent a default of interest or principal. MFOA (101) suggested that in this case universities disclose the amount involved and the circumstances surrounding the refunding. MFOA (51) observed that universities' management disclose other information that they feel potential bondholders need, such as names of board of regents or trustees, the security lenders have in case of default, description of all major buildings on the campus, and the university's history. Assuming that the writers in the literature are correct about the foregoing needs of potential college investors, Table IX is representative of the information university investors would like to have when trying to decide whether or not to

buy a college's bonds. This list in Table IX was used to develop a questionnaire which could be mailed to college bond experts for the construction of a disclosure set. The disclosure set was used to measure the extent of disclosure made by public and private colleges. The resulting disclosure scores were compared to determine which type of college disclosed the most information to potential bondholders. How the list in Table IX was converted to the disclosure set used to test the hypotheses in this research is discussed in Chapter III.

TABLE IX

INFORMATION NEEDS OF UNIVERSITY INVESTORS AND CREDITORS

1.	Fund-by-fund statement of changes in fund balances
2.	Consolidated statement of changes in fund balances
3.	Fund-by-fund balance sheet
4.	Aggregated balance sheet
5.	Total long-term debt
6.	Long-term debt service requirements and maturity dates
7.	Property, plant, and equipment (or plant)
8.	Current fund expenditures by function
9.	Enrollment trends
10.	Total endowment and endowment trends
11.	Tuition trends
12.	Statement of current fund revenues and expenditures
13.	Excess revenues over expenditures (or operating excess)
14.	Operating revenues and expenses
15.	Operating statement
16.	Depreciation on property, plant, and equipment
17.	Planned use of bond proceeds
18.	Description of proposed project
19.	Projected revenues and expense of proposed project
20.	Special agreements with potential customers of proposed project
21.	University's default history
22.	Name of board of trustees
23.	Lender's security in case of default
24.	Description of major buildings on campus
25.	University's history

Summary

This chapter reviewed the literature in order to identify some of the major needs of college investors during the current college financial distress. A list of information items was derived from the literature perlustration. The literature indicated that to determine a college's financial stability, investors need a statement of changes in fund balances on a fund-by-fund basis with total columns aggregating the fund-by-fund data, a fund-by-fund balance sheet with total columns presenting aggregated data, an operating statement, supplementary schedules showing a college's long-term debt service requirements, disclosure of enrollment trends, staff and faculty salaries, plant expenditures, current assets and liabilities, maintenance expenditures, endowment changes, student aid expenditures, library expenditures, and depreciation charges. To determine a college board's ability to transfer resources, the literature suggested that college financial statements separate restricted funds from unrestricted funds. To measure a university's compliance with loan agreements, fund-by-fund statements are needed. Literature from the MFOA indicated that disclosure of other data--feasibility reports, names of board of trustees or regents, university's default history, major buildings on campus, and the university's history--might be useful to certain users.

Chapter I revealed that over the past 10 years all of the colleges that closed their doors for financial reasons were private, and provided strong evidence that public colleges are, on the average, financially stronger than private colleges. In addition, Chapter I showed that as uncertainty increases information demanded also increases and that this

situation could result in college investors' demanding more information from private universities than from public ones. This chapter reviewed what information writers in the accounting and finance literature feel college investors need for decision making. The methodology for weighting the importance of the items identified as useful to college investors is discussed in Chapter III. Chapter III also discusses the methodology used in this study to determine if college investors demand more information from private colleges than from public colleges.

CHAPTER III

METHODOLOGY

Chapter I discussed the current financial distress of private colleges while Chapter II identified college bondholders' information needs. Chapter III describes the methodology used in testing the effect financial distress has on bondholders' demands for information. In particular, this chapter introduces a model for the measurement of information levels--disclosure score. A detailed presentation is made of how a disclosure score is developed and used to measure information amounts.

This chapter also describes this experiment's sample frame development, sample selection procedures, sample size adequacy test, and sample mean differences test. This research effort employed a scaling procedure used in psychology that is infrequently encountered in the accounting literature; therefore, a thorough discussion of its theoretical background and practical application is presented for the benefit of readers who might be unfamiliar with scaling procedures. For the same reason, a thorough discussion of reliability, validity, and pretesting of questionnaires is provided.

Background on Disclosure Measurement

Cerf (23) was the first to test empirically the association between an entity's characteristics and its level of disclosure by specifying the

items that might appear in an annual report and the weights associated with those items. He then applied his disclosure index to annual reports of companies and related the resulting scores to their New York Stock Exchange listing status, total assets, and number of shareholders.

Singhvi and Desai (97) updated Cerf's (23) study in 1971. They used a regression model to test the association between asset size, listing status, number of stockholders, earnings margin, rate of return, and CPA firm size to the disclosure score.

Buzby (18) made some improvements in Singhvi and Desai's methodology and used Kendall's rank correlation coefficient known as tau to measure the degree of association between the extent of disclosure and asset size. Buzby used the results from questionnaires sent to security analysts to develop the weights assigned to each item instead of assigning them himself as was done by Singhvi and Desai (97). Buzby also computed a measure of relative disclosure by dividing a company's score by the maximum obtainable score to obtain a percentage quality measure of a company's disclosure.

Stanga (100) used Cerf's (23) methodology, as modified by Buzby, to measure the difference in information content between industries, while Barrett used the score to measure differences in level of information disclosure between corporations in varying countries. To date, the disclosure score methodology has not been applied to nonprofit organizations' disclosures. The application of this methodology to the nonprofit area is one of the contributions of this research.

Development of Disclosure Index

The development of Cerf's disclosure index is a two-step process. First, it is necessary to identify a set of items that is useful to financial report users. Second, a weight must be assigned to each item according to its level of importance. Cerf, Singhvi and Deasi, and Buzby all identified a list of items by reveiwing of the accounting and finance literature and interviewing financial statement users. In Table IX, college investors' information needs are tentatively identified from a search of the accounting and finance literature and a review of college bond prospectuses.

Cerf assigned weights of importance to the items by reviewing the literature and interviewing security analysts. Buzby mailed questionnaires to financial analysts asking them to assign the weights to each of the information items. Because of the theoretical superiority of having users specify their weights of importance versus someone else specifying weights for them, this research employed Buzby's questionnaire approach.

Questionnaire Design

Three questions--What kind of information is sought? what type of questions should be asked? and how should the questions be worded?--must be answered in the designing of a questionnaire (36).

Dillman (36) gives four classes of information: what people say they want (attitudes), what people think is true (beliefs), what people do (behavior), and what people are (attributes). Attitude research describes how people feel about something; belief questions determine

what people think is true or false; behavior questions determine what people believe they do. Attribute questions attempt to gather personal and demographic information about people. This research is attitudinal because it attempts to determine the weights college investors would assign to various information items.

All questionnaire forms can be derived from two basic types of questions--open-ended and closed-ended. Open-ended questions are used when people's responses cannot be predetermined, which necessitates giving the respondents a chance to answer freely. These questions are often used for exploratory studies where the researcher wishes to determine possible question answers, which later will be used to develop closed-ended questions. The major disadvantage of open-ended questions is the demand they place on respondents. Respondents must recall, organize, and express information. Because of the lack of answer comparability these questions make statistical analysis of answers almost impossible (76).

Closed-ended questions are used when respondents are to make ordered choices along a single dimension attribute (76). Closed-ended questions are used when the researcher knows the attribute to be measured and the dimension respondents should use in giving answers. These questions, and their answers are readily subject to statistical analysis (36). Because of the availability of earlier efforts to develop a questionnaire that assigned weights to information items, this research had available a well defined attribute to be measured (information level) and a definit dimension to use (importance of items). Because of this availability of earlier research, this study employs closed-ended questions.

Questionnaires should be worded so that different respondents interpret the same question in a similar manner, and so that the questions measure what they were intended to measure (36). Experts in the college bond field reviewed the list of items in Table IX and made suggestions for combinations and for rewording the items. The final questionnaire developed is given in Appendix B. After the "final" questionnaire had been developed, it was pretested to determine if it had been worded properly.

Reliability of Questionnaire

Reliability is the degree to which an instrument yields consistent scores when the same variable is measured a number of times, and is concerned with the accuracy with which a score represents the attribute being measured (95). The assumption is that if an instrument gives consistent scores over several administrations, it is accurate in the measurement of a paricular phenomenon.

Rationale for the Measurement of Reliability

Any particular score from the administration of a measurement instrument can be assumed to be composed of two components[1]--the true score and an error component. Mathematically these components can be written as:

$$X_{observed} = X_{true} + X_{error}.$$

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[1]This discussion has been adapted from Guilford (50), Kerlinger (70), and Peter (88).

The true score is considered a perfect measure of a phenomenon, and can be achieved under perfect measuring conditions with a perfect measuring instrument. Since, in practice, the instrument is rarely perfect and ideal conditions are seldom met, the observed measurement usually contains the error component. The error component is a positive or negative value dependent on a particular administration of an instrument to a particular individual. Because the random error component is as likely to be positive as negative, its mean value equals zero; therefore the assumption can be made that over several administrations of the same instrument, the mean of the observed scores equals the true score, or,

$$\bar{X} \text{ observed} = \bar{X} \text{ true} + \bar{X} \text{ error}$$

$$\text{but, } \bar{X} \text{ error} = 0$$

$$\bar{X} \text{ observed} = \bar{X} \text{ true}$$

where

$\bar{X}$ observed = the mean of the observed scores from several administrations of the same instrument,

$\bar{X}$ true = the mean of the true scores, and

$\bar{X}$ error = the mean of the error component of the observed score over several administrations of the same instrument.

Because the mean of the observed scores contains two components, the variance of the observed scores also contains two components--a true component and an error component. This can be written an

$$V \text{ observed} = V \text{ true} + V \text{ error.}$$

The true variance is a measure of the variation due to the phenomena being measured. The error variance is all due to random error caused by applying the instrument under nonperfect conditions or by imperfections in the measuring instrument. If the instrument were perfect and were

always administered under ideal conditions, then the observed score would always equal the true score and the true variance would always equal the observed variance; therefore, the reliability of the instrument can be tested by the following ratio:

$$\text{reliability coefficient} = \frac{\text{V true}}{\text{V observed}} .$$

The true variance can never really be known in practice, but because

$$\text{V true} = \text{V observed} - \text{V error}$$ then

$$\text{reliability coefficient} = 1 - \frac{\text{V error}}{\text{V observed}}$$

$$\text{or } \frac{\text{V observed} - \text{V error}}{\text{V observed}} .$$

It is obvious from the above formula that the maximum possible value of the reliability coefficient is one, and its minimum possible value is zero. As a guideline by which to measure the reliability of a scale, Nunnally (86) has suggested that for initial research it is usually a waste of effort to increase reliability much beyond 70 percent and 80 percent for basic research.[2] However, Nunnally (86) does say that for an applied situation,[3] a 90 percent reliability is a minimum and a 95 percent reliability is the desirable standard because of the extremely large costs associated with misclassifications due to measurement errors in the scale. Because this is a basic research effort, the 80 percent reliability standard was used as a guideline of the sufficiency of the weights developed from the questionnaire.

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[2]Basic research is defined as research concerned with different treatment means for different experimental treatments.

[3]An example of an application of a scale is the SAT test, which is used partly to determine if certain individuals will be allowed to enter college.

Inter- and Intrajudge Reliability

Recall that if an instrument gives consistent scores over several administrations, it is assumed to be accurate in measuring some phenomenon. There are two possible ways to test the consistency of an instrument used in this research: (1) the stability of answers over time (intrajudge), and (2) the stability of answers across respondents (interjudge). Intrajudge reliability can be statistically tested by giving a group of individuals the same questionnaire twice and by computing the correlation coefficient of each individual between the two administrations of the questionnaire. The resulting correlation coefficients are considered to be a range of the intrajudge reliability of the questionnaire. However, there are three major disadvantages to this approach (called test-retest) of measuring reliability (86).

One disadvantage is the fact that people have the ability to remember. Individuals may recall the answers given on the first administration of the questionnaire and repeat the answers on the second. As a consequence, the length of time between the administrations of the questionnaire could affect the results. The shorter the length of time between questionnaire administration, the greater will be the correlation coefficient because of the respondent's recall abilities. To overcome this disadvantage, Peter (88) suggested that generally there should be at least two weeks between administrations of the questionnaire.

A second disadvantage relates to phenomena that change over time. If the phenomenon the questionnaire is measuring changes between administrations of the questionnaire, it is almost impossible to distinguish between unreliability and change in the phenomenon. Of

course, when measuring a phenomenon that does not change or changes slowly, this disadvantage is not applicable. Fortunately, the items of information Cerf (23) found useful in his 1961 study were still found useful by security analysts in Singhvi and Desai's (97) 1971 study. This implies that information items change very little over time, making the second disadvantage of the test-retest reliability not applicable to this research.

A third disadvantage of the test-retest reliability approach is that correlation is often due to the association between similar questions on the questionnaire, and to the fact that the items are correlated with themselves. The two sets of correlations cannot be separated making it impossible to determine from the test-retest approach whether individuals answer similar questions the same way. But since a disclosure set is not constructed to ask similar questions in different ways, this disadvantage does not seem applicable to this type of research. While it could be argued that the weights individuals assigned to a particular item might have been different had it been worded another way, this research made every effort to use the clearest language possible in describing each questionnaire item so that respondents would know exactly what information item was being rated. Researchers who ask the same question in a different way usually suspect that some respondents will falsify answers. Similar questions are used to detect such misrepresentations. It was felt that if respondents understood what information item they were being asked to evaluate, they would answer as accurately as possible; therefore, the third disadvantage of the test-retest reliability approach is not applicable to this research (86). Peter (88) has suggested that while the test-retest

method does provide useful information about the stability of the answers extracted by a questionnaire over time, it should never be the sole measure of reliability. It should be supplemented with some other test of reliability--sucy as internal consistency.

This research tested the internal consistency of the answers received from the five[4] respondents by using Ebel's interrater reliability measure. Ebel's reliability method defines reliability as

$$\frac{\text{Variance for questionnaire items - variance for error}}{\text{Variance for questionnaire items}} .$$

Note the similarity between Ebel's formula and the theoretical formula for reliability. For this research, Ebel's formula was used to measure the degree to which different respondents weighted the information items in the same manner. For example, if both persons, A and B, were assigning a weight between zero and four to items X and Y, the Ebel interrater reliability formula measures the extent that both A and B rated the items the same. If all the raters assigned the same weights to each information item, then the error due to differences in respondents would disappear making Ebel's reliability measure one. Of course, the more the raters agree as to what weight should be assigned to each information item, the closer the interjudge reliability measure of Ebel's will be to one.

As noted earlier, Nunnally has stated that an acceptable level of reliability is 80 percent for basic research. This was the criterion

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[4]Only five individuals were used for this pretest because Guilford (50) has shown that while reliability is increased by adding two or three judges, the law of diminishing returns sets in quickly and not much is gained after adding the fifth individual.

used in this research effort to determine if the questionnaire and the scale developed from it were reliable.

Definition of Validity

Validity is the extent to which a questionnaire measures what it was designed to measure. The questionnaire used in this research was designed to assist in testing the following hypotheses:

$H:_{A1}$ There is no difference between the level of information potential bondholders demand from a private college and the level of information potential bondholders demand from a public college.

$H:_{A2}$ There is no difference between the level of information disclosed to potential bondholders by public colleges and the level of information disclosed to potential bondholders by private colleges.

Because the weights from the questionnaire were used to evaluate differences in bondholders' information demand from public and private colleges, three forms of the questionnaire cover letter were developed. Versions I and II identified the type of college the respondent was to assume the information would be used to evaluate. Version I identified the college as being public and Version II identified the college as being private. Version III did not identify the college. The three forms of the cover letter are reproduced in Appendix B. The list of items combined with one of the three cover letters was designed to measure the weight of importance a particular item of information has in the decisionmaking processes of college investors. The testing of the validity of this disclosure set is deferred until a discussion is presented of how the measure was developed.

Development of a Pool of Municipal Bond Buyers and Brokers

A sample frame was developed from which to draw a sample of experts in the college bond markets using Moody's 1979 Ratings of Municipal Bonds. The name of every company which was a member of a syndicate that purchased bonds from an Oklahoma university was placed on the list. Proceedings of the boards of regents of Oklahoma colleges was reviewed to identify companies that had made a bid on an Oklahoma university's bonds. All companies not identified earlier were added to the list. Finally, the Oklahoma City and Tulsa telephone directories were surveyed. Every company adversiting as having expertise in municipal bonds was added to the list. The resulting list appears in Appendix C.

Sampling of Bond Buyers and Brokers

Requests were made by telephone to every company on the list of bond buyers and brokers to talk with their experts in college and university bonds. Along with the request for their participation in this study a promise of anonymity was given to the individuals contacted. Eighty-four individuals were contacted, all of whom agreed to participate in this study. The college bond experts in the sample frame were randomly assigned to three groups. Group one received a copy of the questionnaire with version 1 of the instructions; group two received a copy of the questionnaire with version 2 of the instructions; and group three received the questionnaire with version 3 of the instructions.

Nonresponse Bias

When the questionnaires were returned, a test was made for nonresponse bias in order to determine if the sample obtained was representative of the bond buyers and brokers surveyed. Oppenheim (87) stated that there is evidence that subjects responding late in a survey can be used to represent nonrespondents. He also suggested that any nonresponse bias can be estimated by comparing early respondents with late respondents. Buzby tested for nonresponse bias when constructing his disclosure index by comparing the mean response scores on each item for early respondents and for late respondents. The significance of the difference in the means was assessed by using a t score. In this research, nonresponse bias was tested as suggested by Oppenheim and carried out by Buzby (18, 87). The first five responses received from each group were compared with the last five responses received from each group. The mean response on each item of the questionnaire was computed for the early respondents and the late respondents for each of the three groups. A t score was used to test for any significant differences between early respondents and late respondents. The results are presented in Chapter IV.

Scaling Procedures

After collecting the respondents' ratings, it was then necessary to construct a scale for each of the three groups. This section discusses the theory and the assumptions underlying the method used to construct reliable disclosure scales.

Background

Scaling methodologies are traditionally divided into three categories--subject-centered, stimulus-centered, or response-centered--depending on what objects are to be scaled. Under the subject-centered approach, the emphasis is placed on differences between individuals. Under the stimulus-centered approach, subjects are assumed to be homogeneous and the stimuli are the objects of interest. Under the response-approach both subjects and stimuli are of interest (41, 46, 50). Since this study is not concerned with scaling the raters, nothing more will be said about the response and subject-centered approaches.

Under the stimulus-centered approach, if judges are asked to place items into ordered-categories, then the method of successive intervals (also called method of successive categories) is the appropriate scaling method (41, 86). The law of categorical judgment underlies this procedure. Individuals are assumed to have a psychological continuum for a particular attribute (levels of information in this study) which objects might possess. Individuals are also assumed to have a discriminal process which places an object (items on the questionnaire in this study) on their psychological continuum. When individuals are presented with the same object a number of times, they will assign the object different values on their psychological continuums because of fluctuations within the individuals and the environment. Over a number of trials, there will be a modal value on the individuals' psychological continuums and some dispersion about this modal value. The distribution of the fluctuations about the modal value are assumed to be normal, implying that it can be represented by its mean and standard deviation.

The mean of a normal distribution is, of course, the best estimate of the object's scale value. Because it is not possible to observe the mean values directly (if it were, then the scaling procedure would not have been necessary), their values must be inferred from the raters' responses (41, 50, 86).

Figure 1 illustrates how a scale value can be inferred from judges' responses. By assuming a normal distribution about the modal value of the items, the proportion of judges below each category limit allows the computation of the Z distance from the modal value by looking up the standard deviate (normal distribution z score) corresponding to the proportions. For example, the distance of L_a from the modal value is Z_a; for limit L_b, Z_b, etc. Since the Z values for all of the limits have been determined from a common zero point, the distance between the limits can be determined by subtraction of the limit's Z values. This gives the width of each category J_1, J_2, J_3, J_4, and J_5. By setting the lower limit of category J_2 equal to zero and using the cumulative width of a category as a number from zero, an interval scale has been developed which can be used to assign values to each item. A scale value for each item can be determined by the formula

$$S_i = 1 + \frac{(.50 - P_b)}{(P_w)} \bar{w}_i$$

where S_i = the scale value of item i,

1 = the lower limit of the category on which the medium of the item's judgments fall,

P_b = the cumulative proportion of judgments falling below the category in which the medium of the item falls,

P_w = the proportion within the category in which the medium of the item falls, and

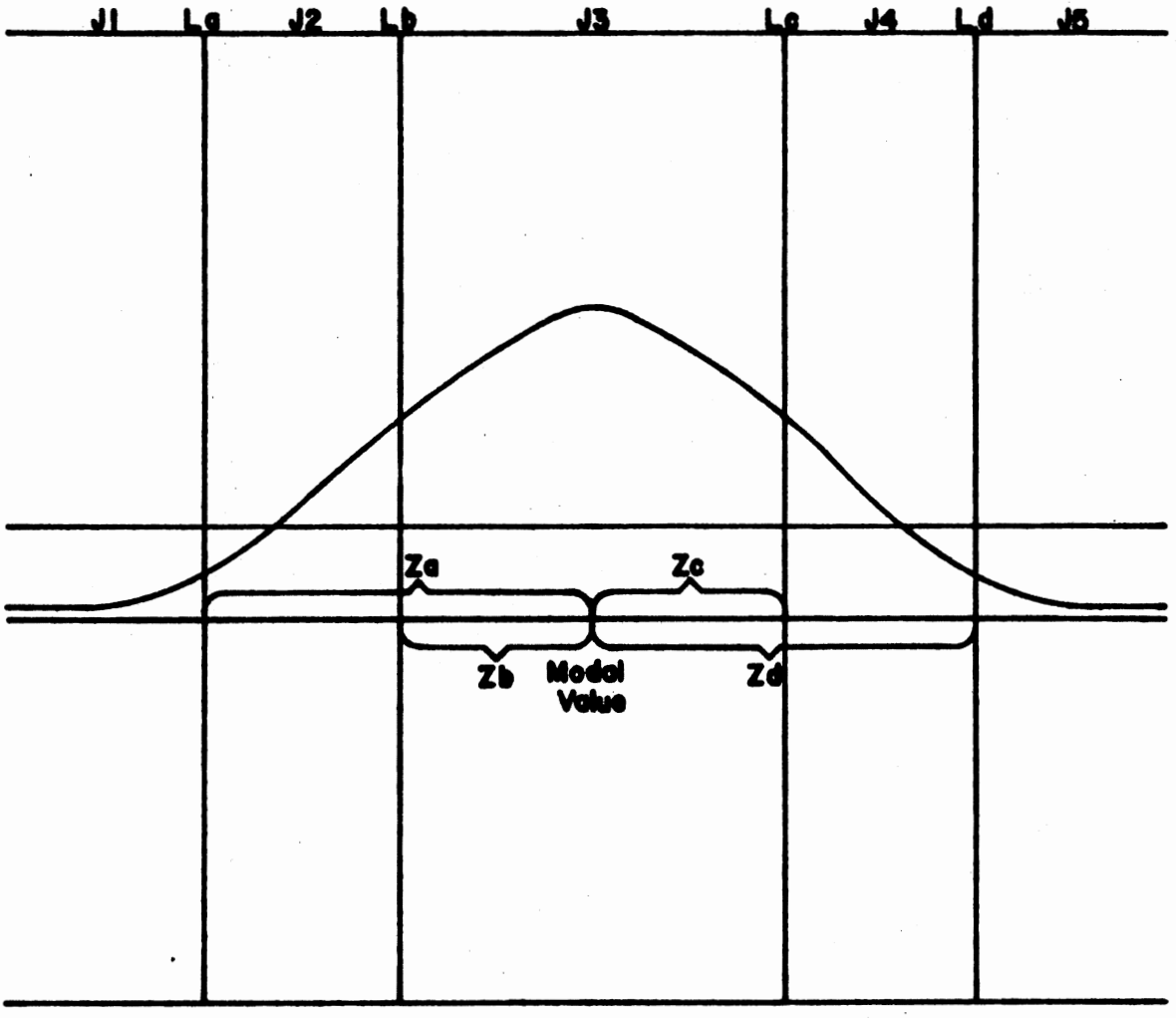

Figure 1. Development of a Scale Value from Judges' Responses

$\bar{w}_i$ = the width of the category in which the medium of the item falls (41, 50).

Note that the scaling procedure makes no assumptions about the equality of variances. Differences in variances are controlled by standardizing the Z scores from which the scale is derived. This is done by dividing the Z scores by the standard deviation of the item from which the Z was computed. The results are that the standard deviations of all items are equated (except for some random fluctuations).

The major assumption of the method of successive categories scaling procedure is that the distribution around the modal value of an item is normal. This assumption was tested by using a chi square. The results of this test are given in Chapter IV.

The foregoing is a theoretical presentation of the scaling procedure used in this research. While this theoretical discussion is useful for illustrating how interval scales are developed, practical problems may develop occasionally because the zero point is placed at the upper limit of category J_1 and the scale must end at the lower limit of category J_5. This happens because the lower limit of J_1 is $-\infty$ and the upper limit of J_5 is $+\infty$, making it impossible to scale values in the lowermost and uppermost categories using the formula on page 57. A procedure which can scale values in the lower- and uppermost categories is given below.

Practical Scaling Procedure

Since the equation for the unit normal distribution[5] is

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[5]The unit normal distribution has a mean of zero and standard deviation of 1. Only normal distributions with an equation of

$$Y = \frac{1}{\sigma\sqrt{2\pi}} e^{\frac{-(x-u)^2}{2\sigma^2}}$$

can be converted to unit normal distribution by subtracting the distribution's mean and dividing by its standard deviation (54).

$$f(X) - Y = \frac{1}{\sqrt{2\pi}} e^{-\frac{x}{2}}$$

the probability of a judgment occurring in any particular category is

$$F(X) = \int_a^b \frac{1}{\sqrt{2\pi}} e^{-\frac{x}{2}} dx ,$$

when the mean is computed for a particular category. The above function is converted to a density function for that category. This is done by dividing the function by itself; therefore, the density function for the category J as shown in Figure 2 is

$$g(x) = \frac{\int_a^b \frac{1}{\sqrt{2\pi}} e^{-\frac{x^2}{2}} dx}{F(x)}$$

$$E(x) = \frac{\int_x^b \frac{1}{\sqrt{2\pi}} e^{-\frac{x^2}{2}} dx}{F(x)} = \frac{f(a) - f(b)}{F(x)} .$$

Using the preceding formula the mean for any category can be computed by subtracting the ordinate value of the unit's normal distribution as its upper limit, f(b), by the ordinate value of the lower limit, f(a), and dividing by the proportion of judgments that fall in the category. The ordinate values are determined by lowering the proportion of judgments falling below the category's lower limit and the proportion of judgments falling below the category's upper limit; therefore, the category mean can be computed by knowing in which categories raters decided to place a particular item. Notice also that because the endpoints of a normal distribution are zero at + ∞ and - ∞, every category has a value.

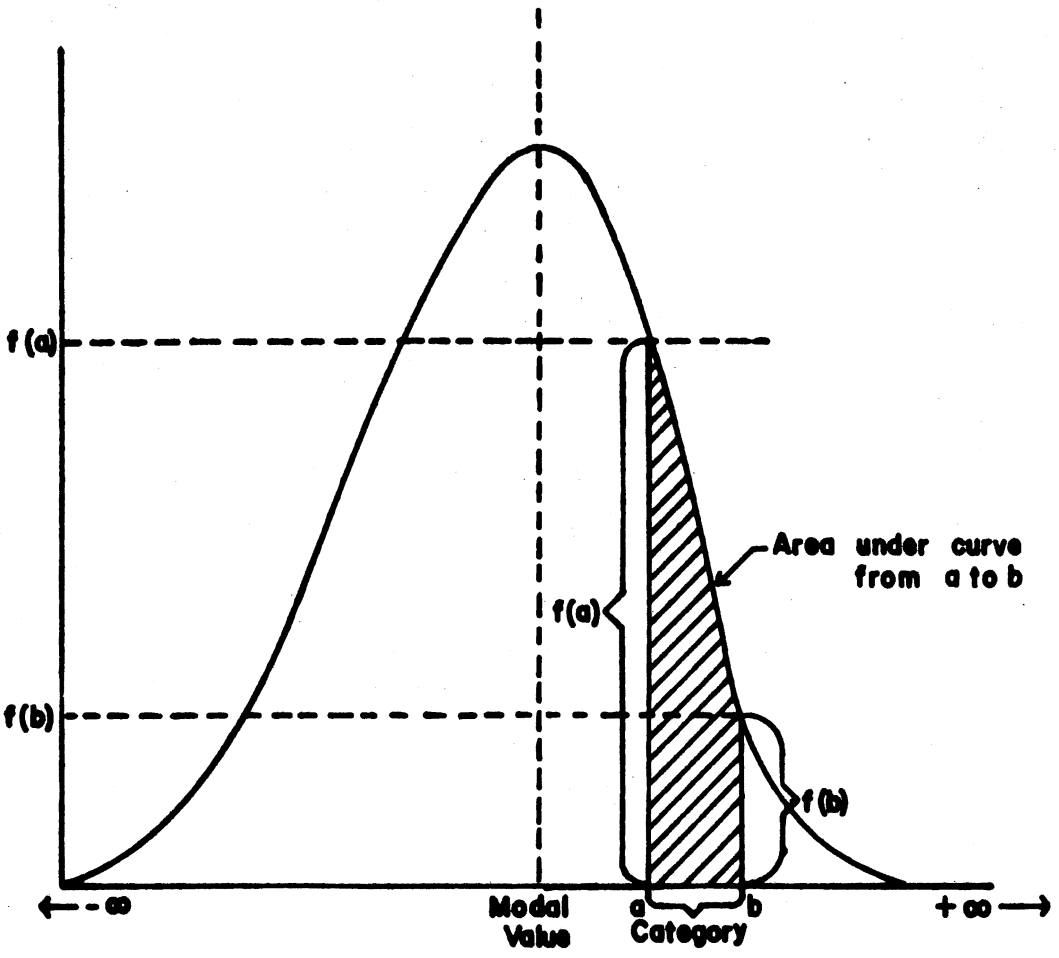

Figure 2. Development of Practical Scaling Procedure

The scale value for every item can be found by the following formula:

$$S_i = P_i \bar{C}_i$$

where:

S_i = scale value for item i,

P_i = proportion of judgments in category j,

$\bar{C}_j$ = the mean of category j,

and its standard deviation, σ_i, is computed by

$$\sigma_i = \sqrt{\Sigma P_j \bar{C}_j^2 - (\Sigma P_j Z_j)^2}$$

An example of the application of this procedure is given in Appendix D (50, 54).

The above practical procedure was used to scale (1) the raters' judgments and (2) each of the 19 items on the questionnaire in Appendix B, for each of the versions of the questionnaire.

Test of the Internal Consistency of the Scales

Once the interval scale has been derived, it can then be used to estimate the original proportions. To illustrate the estimate of the original proportions, assume that Figure 3 represents the values developed from the above scaling procedure. Since the judges' responses are assumed to fall about the scale value in a normal distribution, the item scale value is the mean of the normal distribution and the distance from the category limits, and the item scale value represents a z score. The distance of the category's upper (or lower) limit can be found by deducting the item scale value from the category's upper limit. The

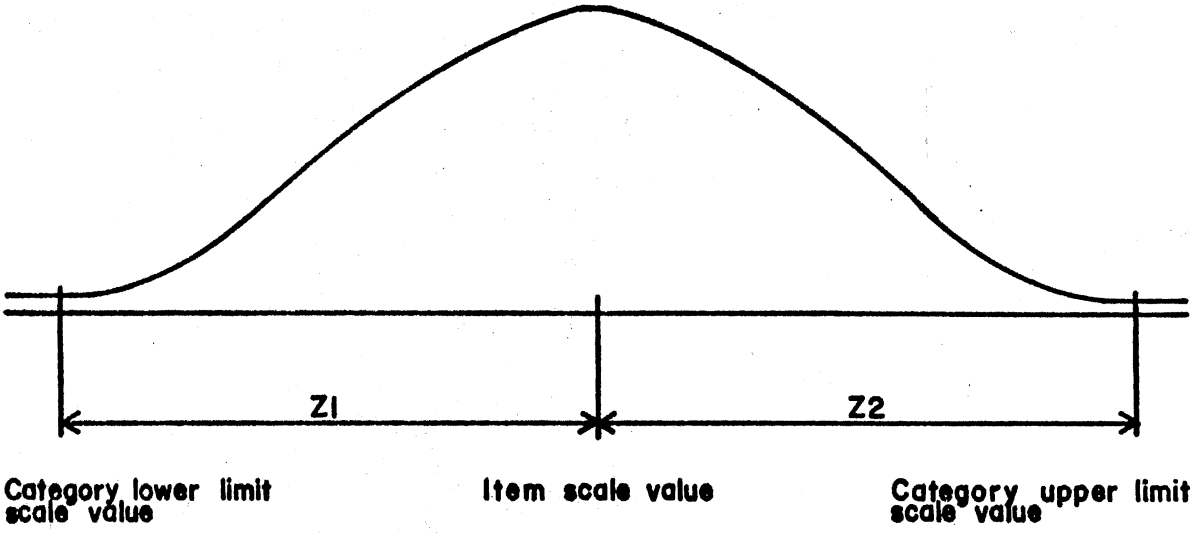

Figure 3. Development of Item Scale Value

resulting z score can be found in a table of the unit normal distribution. The estimated proportion of judgments falling below the category's upper limit can be computed from the normal distribution table. An example is given in Appendix D to illustrate this procedure.

Once the cumulative proportions have been estimated, they can be compared with the actual proportions, and a chi square test can be used to test the goodness-of-fit of the derived scale.

The above test of goodness-of-fit was used to evaluate the scales developed in this research. The result of the chi square test used to evaluate the normality of the distribution (see page 57) and the goodness-of-fit of the scale derived is given in Chapter IV.

Validity of Study

Recall that validity is the extent to which an instrument measures what it was designed to measure. This is distinguished from reliability by the fact that reliability only says that a particular instrument is accurate in measuring a particular phenomenon (regardless of whether or not it is the phenomenon intended to be measured). For example, this questionnaire was designed to construct a disclosure set for information. It would still be reliable if it accurately measured the amount of data in a prospectus, but it would not be measuring what it was intended to measure. To test for validity, the disclosure set constructed from this questionnaire was applied to three bond prospectuses. The prospectuses were then given to five experts in the college bond market, who were asked to rank the prospectuses in the order of their information level. If the bond experts ranked the prospectuses in the same order as the disclosure set, it (as well as the questionnaire itself) could be

assumed to be valid. All the experts ranked the prospectuses in the same order as the disclosure set.

Once a valid disclosure set was developed, it could be used to measure the level of information in college bond prospectuses. The following section presents the methodology used to draw a sample of college bond prospectuses, to compute their disclosure scores, and to test for any significant difference in the disclosure level of public and private colleges.

Sampling of Colleges

To select the sample of colleges and universities to be used in this study, a list of all the colleges in the south central section of the United States was obtained.[7] This list was stratified according to the public or private status of the institution, giving two lists of colleges--a public college list and a private college list. The colleges on both lists were arranged in alphabetical order and assigned numbers from 0 to 100, in sequence. The Rand Corporation's table of randomly selected digits was consulted to determine which colleges would be included in the sample.

Determination of Sample Size

The minimum number of universities needed in this research was determined by using a mathematical manipulation of the student t statistic for differences in independent samples.

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[7]Alabama, Arkansas, Lousiana, Mississippi, Oklahoma, Texas, and Tennessee.

$$n = \frac{t^2(\sigma_A^2 + \sigma_B^2)}{(u_A - u_B)^2}$$

A pilot study was conducted to estimate σ_A^2, σ_B^2, u_A, and u_B. The appropriate value for t was found by using a student t table (46, 54).

Computation of Disclosure Scores

To compute the level of disclosure for each university, the worksheet given in Appendix E was developed. The worksheet divides each item into subparts, found by discussions with the individuals who participated in the formulation of the final questionnaire. Each bond prospectus in this research had three worksheets. The prospectuses were surveyed for the subitems on the worksheet. The fraction of any particular item contained by the prospectuses was recorded on the worksheet. To find the overall score of an item, the scale value for that item, as developed by using the law of category judgment, was multiplied by the fraction for that item on the worksheet. For example, suppose the scale value for item 6, enrollment trends, is 3.401 and that a prospectus mentions the student enrollment for two years. This is 2/3 of the number of years needed, as suggested by college bond experts; therefore, for item 6, this prospectus would receive a value of 2.2673 (2/3 x 3.401). The item scores were added, and the total value was divided by the maximum possible value that the university could achieve. The resulting percentage was the disclosure score value used as a dependent variable in this research. Analysis of covariance was used to test the effect of the independent variable, public versus private control, on the disclosure score.

Analysis of Covariance

In the experimental situation, the groups were intact before the experiment begins; therefore, it was not possible to eliminate the influence of all variables other than control from the disclosure score computations. Under these circumstances, it may not be possible to determine if any difference between the level of disclosure of public and private colleges is due to control or some extraneous variable. Fortunately, there is a statistical technique which can extract the influence of extraneous variables--analysis of covariance (73). The covariance adjustment is appropriate for experiments that meet the following conditions:

1. The experiment contains one or more extraneous variables that could affect the dependent variable.

2. It is not feasible to control experimentally all the extraneous variables.

3. It is possible to obtain a measure of the extraneous variable that does not include effects of the treatment (73).

The analysis of covariance procedure requires two steps. First, the procedure computes the regression between all extraneous variables and the dependent variable and deducts their effect. This leaves the dependent variable free of the influence of the extraneous variables. Second, the analysis of covariance procedure performs regular analysis of variance on the adjusted dependent variable. In this manner, the analysis of covariance procedure frees the analysis of variance test of all effects of the extraneous variables.

Three covariates were used in this research--enrollment, endowment per student, and the percentage of student aid expenditures of total current fund expenditures. The three items were chosen because of the perceived effects risk and size have on college disclosures. A study by the National Commission on the Financing of Postsecondary Education (82) states that the major variables which explain differences in colleges is enrollment. Schipper's 1977 study on college bankruptcy affirms the explanatory power of student enrollment. Enrollment was found to be one of the major factors affecting whether or not a college was distressed. Schipper found two other variables to have a high level of predictive power--student aid expenditures divided by total current fund expenditures and endowment per student. All of the above variables appear to relate to bankruptcy and therefore risk. Because risk and information are positively correlated, variables which explain risk differences could explain information disclosure differences; therefore, enrollment, endowment per student, and the percentage of student aid expenditures of total current fund expenditures were used as covariates to extract disclosure differences not caused by college control.

Summary

This chapter has presented the methodology used in determining if there is a difference between the level of disclosure to potential bondholders of public colleges and that of private colleges. Also described were the disclosure index used in the research, the test used in measuring the reliability of the questionnaire, the appropriate statistical test for determining agreement between judges, and the development of the pool of potential bond buyers. The nonresponse bias

test and the theoretical background of the successive categories procedure were also covered. Further, this chapter described how the sample of colleges used in this research was developed and how the difference in disclosure between public and private colleges was determined. Chapter IV describes the results of this research study, and Chapter V summarizes the experiment and gives the conclusions that can be drawn from this research.

CHAPTER IV

ANALYSIS OF DATA

This research tests the effects of a university's control on its level of disclosure. Chapter I described the current financial situation of public and private colleges and presented evidence that private colleges are financially riskier than public ones. The theory of risk and information was also reviewed, and it was shown that as risk increases the amount of information demanded increases. The following hypotheses were derived:

$H:_{A1}$ On the average, the level of information demanded from private colleges differs from the level of information demanded from public colleges.

$H:_{A2}$ On the average, the level of information disclosed by private colleges to potential bondholders will be greater than the level of information disclosed by public colleges to potential bondholders.

In Chapter II, the information needs of bondholders were discussed and in Chapter III a research methodology for testing the above hypotheses was presented. Chapter IV summarizes, analyzes, and interprets the research results. In particular, sample size adequacy tests are summarized, the reliability of the questionnaire is analyzed, the tests for validity of the scale constructed in this research is discussed, and the impact of a university's control on its level of disclosure is summarized, analyzed, and interpreted.

Pretest of the Questionnaire

The reliability of the questionnaire used in this research was tested twice--intrajudge and interjudge--to insure that the questionnaire would not only extract constant answers from respondents, but also extract consistent answers across respondents. Five experts[1] in the college bond field were given a copy of version one of the questionnaire in Appendix B. Later the questionnaire was again administered to the five raters. A correlation coefficient was computed for each respondent based on his answers during the two administrations of the questionnaire. As Table X indicates, the test-retest reliability of the five raters is very high. The reliability ranges from 89.87 percent to 100 percent. Nunnally (86) has indicated that an acceptable level of reliability is 70 percent for initial research efforts, 80 percent for applied research, and 95 percent for applied situations. The average test-retest (or intrajudge) reliability of the questionnaire used in this research is 95.46 percent. This appears to make it adequate for an initial or applied research situation. Even the lower level of the reliability range is above Nunnally's criterion for both initial and applied research. However, in developing the weights assigned to an information item, this

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[1]The researcher expresses appreciation to Dr. E. E. Davidson, Vice President for Business and Finance, Oklahoma State University; Dr. E. Moses Frye, former legal counsel during the largest sale of bonds in the history of Oklahoma State University; Mr. Everett Hull, former Bond Counselor for the State of Oklahoma; and two individuals who head the municipal bond departments of their respective banks. The latter two individuals were later used in the actual sample and were therefore promised anonymity for their participation in this pilot study and comments on earlier versions of the questionnaire. Appreciation is also extended to a group of Ph.D. candidates in Finance at the University of Arkansas who also made some helpful comments on early questionnaire versions.

research assumed that the respondents (or judges) were interchangeable. In other words, the assumption was that different individuals assigned the same level of importance to each item of information (interjudge reliability). The interjudge reliability was tested by using Ebel's (50) formula for interrater reliability on the second administration of the questionnaire. Table XI presents the results of the second administration of the questionnaire as well as the computation of respondents' agreement. The interrater reliability is above 85 percent, and indicates that the weights assigned to the items are fairly consistent across judges. Because of this high level of response agreement, the questionnaire used in this research effort is considered reliable.

TABLE X

TEST-RETEST RELIABILITY FOR FIVE JUDGES ON TWO ADMINISTRATIONS OF THE COLLEGE BONDHOLDERS' INFORMATION QUESTIONNAIRE

Judge	Correlation Coefficient
A	.8987
B	.9414
C	1.0000
D	.9764
E	.9563
Average Intrajudge Reliability	.9546

TABLE XI

INTERRATER RELIABILITY

Information Items	Raters' Responses A	B	C	D	E	Sum Across	Sum Squared
1. History of College	3	1	1	3	3	11	121
2. Names of Board of Trustees	1	1	2	2	3	9	81
3. Description of Major Buildings on Campus	1	1	1	2	4	9	81
4. Major Building Construction	1	2	2	2	3	10	100
5. College Default History	4	3	4	4	4	19	361
6. Enrollment Trends	4	1	3	4	4	16	256
7. Fund-by-Fund Balance Sheet	3	2	1	4	4	14	196
8. Aggregated Balance Sheet	3	1	1	4	4	13	169
9. Fund-by-Fund Statement of Changes in Fund Balances	3	4	4	4	4	19	361
10. Aggregated Statement of Changes in Fund Balances	3	1	1	4	4	13	169
11. Fund-by-Fund Revenue and Expenditure Statement	4	1	3	3	4	15	225
12. Aggregated Revenue and Expenditure Statement	4	1	3	3	4	15	225
13. Auditor's Report	2	1	3	3	4	13	169
14. Depreciation	2	1	1	3	4	11	121
15. Excess Revenue Over Expenditures	4	4	4	4	4	20	400
16. Total Debt Outstanding	4	4	4	4	4	20	400
17. Revenue and Expenditure Trends	4	1	4	4	4	17	289
18. Project Description	4	4	4	4	4	20	400
19. Description of Mortgaged Property	4	4	4	4	4	20	400
Sum Down	58	38	50	65	73	284	4,524
Sum Squared	3,364	1,444	2,500	4,225	5,329	16,862	

TABLE XI (Continued)

Sum of all responses (X) = 284

All responses squared then squares summed = X^2 = 986

Sum of all squares of row sums = $(V_i)^2$ = 4,524

Sum of all squares of columns sums = $(X_j)^2$ = 16,862

Number of raters = K = 5

Number of information items = N = 19

Total sum of squares = $X^2 - \frac{X^2}{KN} = 986 - \frac{(284)^2}{95} = 136.9894737$

Items' sum of squares = $\frac{(X)^2}{K1} - \frac{X^2}{KN} = \frac{4,524}{5} - \frac{(284)^2}{95} = 55.78947368$

Raters' sum of squares = $\frac{(X)^2}{N} - \frac{X^2}{KN} = \frac{16,862}{19} - \frac{(284)^2}{95} = 38.46315789$

Residual sum of squares = Total sum of squares - Item's sum of squares - Raters' sum of squares = 136.9894737 - 55.78947368 - 38.46315789 = 42.73684213

Sum of Squares	Degrees of Freedom	Variance
Item 55.78947368	(N - 1) = 18	3.099415204
Error 42.73684213	KN - 1 = 94	.4546472567

Ebel's Reliability Formula = $\frac{\text{Variance of items - Variance of error}}{\text{Variance of items}}$

$= \frac{3.099415204 - .4546472567}{3.099415204}$

$= .8533119228$

A comparison of the reliability of this questionnaire with others used in the development of a disclosure set is not possible. Cerf (23) and Singhvi and Desai (97) did not use the questionnaire approach. Buzby (19) gave indications of having performed reliability tests but did not report results.

Response Rates

The questionnaire was sent to a pool of municipal bond experts who had been randomly assigned to three groups. Group 1 received Version 1 of the questionnaire instructions, Group 2 received Version 2, and Group 3, Version 3. After three weeks, follow-up phone calls were made. Sixty-two questionnaires were eventually returned, and the overall response rate was 73.8 percent. Table XII presents each group's response rate which is highest for the instructions specifying the college as public; second for private; and third, for the instructions not identifying the college. Because Oklahoma has 12 public colleges and only 7 private ones, the respondents possibly were more familiar with public bond issues and had a greater interest in research related to public colleges. Some ambiguity could have developed since Version 3 did not identify colleges as being public or private. This confusion possibly resulted in the low rating for Group 3. The response rate for private colleges is significantly higher than for an unidentified college but lower than that for public colleges. Again, the familiarity problem probably explains this result.

TABLE XII

RESPONSE RATE OF OKLAHOMA COLLEGE BOND EXPERTS BY GROUPS

	Type of College	Total in Group	Questionnaires Returned	Response Rate
Group 1	Public	28	25	89.29%
Group 2	Private	28	22	78.57
Group 3	Unidentified	28	15	53.57
	Total	84	62	73.81%

Nonresponse Bias

The response rates differ for each group; therefore, the seriousness of any nonresponse bias was separately tested for each group. The test used was the same employed by Buzby in the development of his disclosure set. Mean weights were calculated for each item for the first five and last five questionnaires received in each group. The t test was used to determine if there was a significant difference between the mean and any item for either group. Tables XIII and XIV present the results of the nonresponse bias tests of each group. Column 1 is the numbers assigned to each of the items in the questionnaire. Columns 2, 4, and 6 are the mean weight differences for each questionnaire item for the group that did not have a college control identified, the private college group, and the public college group, respectively. Columns 3, 5, and 7 give the statistical significance of the mean difference in the preceding columns. Table XIII applies to general obligation bonds and Table XIV to revenue bonds. The results of the t test provide evidence that there

TABLE XIII

TEST OF NONRESPONSE BIAS FOR GENERAL OBLIGATION BOND QUESTIONNAIRE

Item	Unidentified		Private		Public	
	Differences in Mean	Level of Significance of t Score	Differences in Mean	Level of Significance of t Score	Differences in Mean	Level of Significance of t Score
1	1.2000	.2434	-.4000	.5857	.2000	.5407
2	.2000	.6092	.6000	.3792	1.0000	.2728
3	1.6000	.1458	.6000	.4006	0	---
4	.8000	.3902	.6000	.3839	0	---
5	.2000	.3465	-.2000	.3465	-.2000	.3465
6	0	---	-.6000	.3779	-.4000	.1731
7	-.6000	.5038	.8000	.2933	1.6000	.1546
8	-.8000	.2399	-.2000	.6250	1.6000	.1950
9	-.6000	.1929	1.0000	.1632	0	---
10	-.4000	.5172	.2000	.6509	1.0000	.2385
11	1.0000	.2203	0	---	.4000	.2064
12	1.0000	.2887	.2000	.6305	0	---
13	-.2000	.6250	-.2000	.5892	1.2000	.2371
14	.8000	.3392	0	---	1.4000	.2085
15	-.4000	.4735	.4000	.3465	0	---
16	0	---	.4000	.3465	-.4000	.3719
17	-.4000	.5058	.4000	.5172	-.4000	.3719
18	0	---	0	---	-.4000	.3465
19	0	---	0	---	-.4000	.3465

TABLE XIV

TEST OF NONRESPONSE BIAS FOR REVENUE BOND QUESTIONNAIRE

Item	Unidentified		Private		Public	
	Differences in Mean	Level of Significance of t Score	Differences in Mean	Level of Significance of t Score	Differences in Mean	Level of Significance of t Score
1	1.4000	.1929	-.2000	.6250	1.0000	.1168
2	-.6000	.1215	.6000	.3792	2.0000	.1022
3	1.4000	.1485	.6000	.4006	-.6000	.2555
4	1.8000	.1521	.4000	.4378	-.8000	.2988
5	0	---	-.2000	.3465	0	---
6	.2000	.3465	0	---	.2000	.3465
7	.4000	.5591	.6000	.4006	1.8000	.1057
8	.2000	.6528	.2000	.6403	2.2000	.1199
9	-.6000	.4336	1.0000	.1632	.2000	.6160
10	.8000	.3429	.2000	.6509	1.2000	.1400
11	1.0000	.1731	-.7000	.3115	.6000	.3096
12	1.8000	.1527	0	---	.8000	.2751
13	-.6000	.3792	-.2000	.5892	1.0000	.2924
14	1.2000	.1770	0	---	2.2000	.1180
15	.4000	.3465	.4000	.3465	.6000	.2555
16	.5000	.3673	.4000	.3465	.2000	.4494
17	.8000	.2783	.4000	.5172	-.6000	.3465
18	0	---	0	---	0	---
19	0	---	0	---	0	---

was no significant nonresponse bias. None of the mean differences is significant at the 10 percent level. Most of the t scores fall in the 30 to 40 percent level while 45 percent fall above the 40 percent level, 17 percent fall between 10 and 20 percent, and 14 percent fall between the 20 and 30 percent level. With 21 percent of the mean differences equaling 0 and none of the t scores being significant at the traditional 1 percent, 5 percent, or 10 percent levels, indications are that there is no significant nonresponse bias.

Respondents' Agreements

One of the assumptions of the scaling procedure used in this research is that respondents are interchangeable. In other words, individual A assigns the same weight to item one as individual B in identical decision situstions. This assumption was tested using Ebel's interjudge reliability test. Nunnally's criterion for an acceptable level of significance was used. Table XV presents the results of this test for all six groups. Notice all percentages are above Nunnally's 70 percent criterion for initial research and 85 percent for basic research. The mean interjudge reliability is 95.88 percent, which means respondents agreed on over 95 percent of the weights assigned. Agreement was highest for the bonds associated with a public college; second for those associated with a private college; and third for those with college control not identified. The greatest agreement was found for the weights assigned to general obligation bonds with a private college assumed to be issuing the bonds and only three-and-one-half points separate the lowest respondent agreement from the highest respondent agreement. This result indicates a very strong level of agreement with

the weights assigned, regardless of the colleges' control. Perhaps, in this case, the classification private or public did not make a significant difference in agreement levels and individuals responding were familiar with the type of bond and college they were asked to use as a reference in assigning weights to information items. This explanation is further strengthened by the fact that three individuals returned questionnaires with only one portion, the revenue bond portion, answered, Two of the individuals were using public colleges as a reference, and one was using a private college. In all these cases the respondents indicated, on the returned questionnaire, that unfamiliarity with that type of bond or that kind of college issuing that type of bond was the reason for their lack of response.

TABLE XV

RESPONDENTS' AGREEMENT LEVELS

Public College--General Obligation Bonds	97.10%
Public College--Revenue Bonds	94.01
Private College--General Obligation Bonds	97.93
Private College--Revenue Bonds	95.13
Unidentified College--General Obligation Bonds	93.68
Unidentified College--Revenue Bonds	94.45
Average Reliability	95.88

The largest agreement difference using revenue bonds or general obligation bonds as a reference was only 2.8 percent. This difference

is so small that it can be considered immaterial. Overall, the indication is that respondents agreed on the weights assigned. Using Nunnally's traditional criteria for this type of research, all of the interjudge numbers are above 70 and 85 percent. As Nunnally has indicated, this is a sufficient level of agreement to conduct basic research.

Effect of Public or Private College Control on Information Demanded

Table XVI presents the mean and variance of each information item based on the weights assigned by the questionnaire respondents. From a review of the table, it is obvious that the mean weights for a public college bond is lower than for a private college bond. The weights for an unidentified college bond fall between the public and private weights. It is also apparent from Table XVII that the mean item weights for a general obligation public college bond are different from the private mean item weights. A review of Table XVII reveals the rank order assigned to information items for varying bond types and university control. The ranks are not consistent from one type of college to another, nor are the weights the same from one type of bond to another. From a review of Table XVIII, it is impossible to determine a definite rank order of the information items. A closer analysis discloses, however, that certain categories of information items do exist--very important information items, relatively unimportant information items, and a middle range of information items.

Description of mortgaged property, college default history, project description, total debt outstanding, revenue and expenditure trends, enrollment trends, and excessive revenues over expenditures make up the

TABLE XVI

MEAN AND VARIANCES OF INFORMATION ITEMS, REVENUE BONDS

Information Item	Public		Private		Unidentified	
	Mean	Variance	Mean	Variance	Mean	Variance
1	1.5600	1.0900	2.0909	1.3246	1.8000	1.4571
2	1.4800	1.7600	1.5000	1.7857	.8000	.7428
3	1.4583	1.2155	1.6818	.8939	1.9333	1.0666
4	1.6000	1.3333	1.8181	1.0129	2.6000	.8285
5	3.9600	.0400	3.9545	.0454	3.9333	.0666
6	3.7200	.2100	3.4545	1.0216	3.6000	.8285
7	2.2000	1.8333	2.5454	1.4025	2.2000	2.4571
8	1.8400	1.6400	2.6363	1.5757	1.8666	1.6952
9	1.7600	1.5133	3.0000	1.0000	2.6000	1.9714
10	1.6800	.8100	2.4545	1.4025	1.9333	1.2095
11	3.0400	.9566	3.3500	.7657	3.2666	1.3523
12	2.5600	.9233	2.9090	1.0389	2.2666	1.6830
13	2.7600	1.5233	2.8636	.7900	2.6000	1.2571
14	1.6800	1.4766	1.9545	1.8549	1.7333	1.7809
15	3.5200	.5100	3.7272	.3982	3.7333	.3523
16	3.6000	.5833	3.7272	.4935	3.5333	.5523
17	3.6000	.3333	3.4545	1.0216	3.4666	.4905
18	3.8400	.3900	4.0000	0	4.0000	0
19	3.9600	.0400	4.0000	0	4.0000	0

TABLE XVII

MEAN AND VARIANCE OF INFORMATION ITEMS, GENERAL OBLIGATION BONDS

Information Items	Public		Private		Unidentified	
	Mean	Variance	Mean	Variance	Mean	Variance
1	1.2272	1.2316	2.0746	1.3476	1.8000	1.4571
2	1.0454	1.5692	1.4285	1.7571	.8$\overline{666}$	.8380
3	1.5454	1.4793	1.7142	1.2142	1.8000	1.3142
4	1.6181	1.6558	1.8571	1.2285	2.2000	1.6000
5	3.7272	.7792	3.9523	.0476	3.9$\overline{333}$	.0$\overline{666}$
6	3.3181	1.0844	3.7142	.5142	3.7$\overline{333}$	.3523
7	1.4545	1.5930	2.5238	1.4619	1.9333	2.4952
8	1.2727	1.7316	2.4285	1.6571	1.3$\overline{333}$	1.2380
9	1.3636	1.0995	2.8095	1.1619	2.3$\overline{333}$	1.3809
10	1.1818	1.0129	2.6190	1.4476	2.2$\overline{666}$	1.7809
11	1.9090	1.4199	3.1428	.8285	2.6000	1.2571
12	1.5454	1.1168	0	.9000	2.4$\overline{666}$	1.6952
13	2.0454	2.0454	2.8571	.8285	2.6666	1.3809
14	1.5000	1.0000	2.0000	2.0000	1.4000	1.4000
15	3.1818	1.4891	3.7619	.5604	3.4666	.8380
16	3.3$\overline{636}$	1.2900	3.7142	.4142	3.6$\overline{666}$	.3809
17	3.1818	1.2987	3.2380	1.5904	3.1$\overline{333}$	1.1238
18	3.5454	1.2121	3.8571	.4285	3.1800	.6000
19	3.6181	.8939	4.0000	0	4.0000	0

TABLE XVIII

RANK ORDER OF INFORMATION ITEMS

	Information Item	General Obligation			Revenue		
		Pub.	Pri.	U	Pub.	Pri.	U
1.	History of College	17	15	15	17	15	17
2.	Names of Board of Trustees	19	19	19	18	19	19
3.	Description of Major Buildings on Campus	11	18	15	19	18	14
4.	Major Building Construction	10	17	13	16	17	9
5.	College Default History	1	2	2	1	3	3
6.	Enrollment Trends	5	5	4	4	6	5
7.	Fund-by-Fund Balance Sheet	14	13	14	10	13	13
8.	Aggregated Balance Sheet	16	14	18	12	12	16
9.	Fund-by-Fund Statement of Changes in Fund Balances	15	11	11	13	9	9
10.	Aggregated Statement of Changes in Fund Balances	18	12	12	14	14	14
11.	Fund-by-Fund Revenue and Expenditure Statement	9	8	9	8	8	8
12.	Aggregated Revenue and Expenditure Statement	11	9	10	10	10	12
13.	Auditor's Report	8	10	8	9	11	9
14.	Depreciation	13	16	17	14	16	18
15.	Excess Revenues Over Expenditures	6	4	6	7	4	4
16.	Total Debt Outstanding	4	5	5	5	4	6
17.	Revenue and Expenditure Trends	6	7	7	5	6	7
18.	Project Description	3	3	3	3	1	1
19.	Description of Mortgaged Property	2	1	1	1	1	1

upper category of items that appear to be very important. Regardless of the type of college or bonds, these items are always ranked as the top seven. Description of mortgaged property, project description, and college default history are always the top three. These items appear to be necessary information for making a decision on a bond issue.

The lower category of information items consists of the college's history, names of members of board of trustees, description of major buildings on campus, and depreciation. These items were consistently ranked in the lower third (14 and below). These information items appear to be unimportant in making college bond decisions.

The middle category of information items is ambiguous. None of the items is ranked above eight for any type of college or bonds, but some of them occasionally were ranked in the bottom third. The middle category of information items includes major building construction, fund-by-fund balance sheet, aggregated balance sheet, fund-by-fund statement of changes in fund balances, fund-by-fund revenue and expenditure statement, aggregated revenue and expenditures statement, and the auditor's report. These information items appear to be important but not necessary in making a bond decision. Sometimes these information items can be unimportant in making a college bond decision based on the questionnaire results.

From Tables XVI, XVII, and XVIII, it is evident that college control makes a difference in the rank order of information items. Also, the mean weights assigned to information items are higher for a private college bond than for a public one. While providing an indication that college investors demand different information from a private college than from a public one, these findings do not provide statistical evidence of the significance of the difference.

Table XIX provides the results of the student t test of differences in means for the public and private college weights. While the exact levels of significance are presented, none of the t scores for revenue bonds is significant using the traditional .10 and .05 cut-off levels. Table XVII confirms that the mean item score for a private college tends to be higher than that for a public college. A review of the item variances indicates that most are greater than the mean differences between the public and private college weights. The above factors help explain the results of the t test--that the differences, while evident, are not statistically significant.

The mean differences for fund-by-fund statement of changes in fund balances, aggregated statement of changes in fund balances, and aggregated revenue and expenditures statement are statistically significant at the .05 level of significance. Fund-by-fund balance sheet, aggregated balance sheet, and fund-by-fund revenue and expenditure statements are statistically significant at the .10 level. All of these information items deal with the three basic financial statements for a college. They are also in the middle category of importance based on the rank orders in Table XVIII. It appears that the upper category items are so important that regardless of the type of college control, they are needed; therefore, they are given high weights for both public and private college bonds, leaving little difference in the public and private college means. The lower category of unimportant information items also receives the same weights regardless of the type of college. Their consistent, low weights leave little mean difference between the public and private mean scores. The middle category of items fluctuate between being ranked in the lower third and middle third of the information

TABLE XIX

RESULTS OF THE EFFECT OF CONTROL ON THE INFORMATION DEMANDED FROM A COLLEGE

	Information Item	Level of Significance	
		General Obligation	Revenue
1.	History of College	.1313561978	.2008135524
2.	Names of Board of Trustees	.3295557116	.8197618840
3.	Description of Major Buildings on Campus	.4941228342	.3864145040
4.	Major Building Construction	.4925210550	.4046307388
5.	College Default History	.2877011304	.7830064921
6.	Enrollment Trends	.2339633154	.2873364637
7.	Fund-by-Fund Balance Sheet	.0995194735	.3338737660
8.	Aggregated Balance Sheet	.0953441631	.1450488709
9.	Fund-by-Fund Statement of Changes in Fund Balances	.0407826156	.0547183063
10.	Aggregated Statement of Changes in Fund Balances	.0457532780	.1169092334
11.	Fund-by-Fund Revenue and Expenditure Statement	.0571421749	.2845814899
12.	Aggregated Revenue and Expenditure Statement	.0348890953	.2731560128
13.	Auditor's Report	.1427886137	.5624345311
14.	Depreciation	.2547970464	.3937561968
15.	Excess Revenues Over Expenditures	.2694186270	.3041756988
16.	Total Debt Outstanding	.1896281208	.4394788212
17.	Revenue and Expenditure Trends	.6973828197	.4394721108
18.	Project Description	.2970110508	.2584062950
19.	Description of Mortgaged Property	.2159264986	.3172812931

items. These items tend to receive a lower score if the college is public than if it is private. This trend is consistent enough to cause a statistically significant difference in the means for certain public college and private college items.

Since hypothesis A1 states that the level of information demanded from private colleges differs from the level of information demanded from a public college, the above results affirm the hypothesis. Potential bondholders do demand a different level of information from private colleges than those that are public. In particular, a potential bondholder demands that both public and private colleges disclose the upper category information items (description of mortgaged property, college default history, project description, total debt outstanding, revenue and expenditure trends, enrollment trends, and excessive revenues over expenditures) and demands that a private college disclose some of the middle category items--fund-by-fund or aggregated balance sheet, fund-by-fund or aggregated statement of changes in fund balances, and fund-by-fund or aggregated revenue and expenditure statement. The potential bondholders will not demand these items as strongly from a public college.

Scaling of Questionnaire Results

The means developed in Tables XVI and XVII are useful in discussion of bondholders' information demands, and the categories developed above are useful for the same purpose. The means and the categories do, however, lack some precision. For example, in Table XVI, both items 9 and 13 have a mean weight of 2.6 when the college control is not identified. The items have different variances, however. This raises

a question as to whether or not both items should receive the same weight. It is possible, through use of a scaling procedure, to develop weights that consider the variance difference such as for items 9 and 13. This procedure was described in Chapter III and illustrated in Appendix D.

Tables XX and XXI present the results of the scaling procedure. The difference in the total weights assigned to a public college general obligation bond from all other college types is conspicuous. The scaling procedure used has divided each weight by its standard deviation creating a standard unit weight negating the affects of variances. All standardized unit weights have variances of one; therefore, the relative importance of all the information items for public and private colleges can be compared by looking at their standardized unit weights.

An analysis of Table XX reveals 12 of the 19 information items are considered more important to making a decision on a private college revenue bond than for a public college revenue bond. This result, again, provides evidence that potential college investors demand more information from a private than a public college. The differences are not very great, however. The average difference on the 12 items is only .2878. The mean difference between the weights assigned to a public college bond and a private college bond is only .1316. Because this difference is small, no conclusive statements can be made. The difference is, in fact, so small that a single set of weights could probably be developed for a revenue bond without any reference to the control of the college. An attempt was made to develop a significant set of weights by not identifying the college control. The respondents were asked to assign weights, and then the scaling procedure was used to develop a "final"

TABLE XX

WEIGHTS ASSIGNED TO REVENUE BONDS

Questionnaire Item	Type of College		
	Public	Private	Unidentified
1. History of College	1.4138	1.7703	1.3433
2. Names of Board of Trustees	1.3064	1.2575	.6056
3. Description of Major Buildings on Campus	1.3262	1.4455	1.4819
4. Major Building Construction	1.4516	1.5302	1.9039
5. College Default History	3.5619	3.4071	2.9293
6. Enrollment Trends	3.2065	2.9697	2.6855
7. Fund-by-Fund Balance Sheet	1.9748	2.1792	1.6316
8. Aggregated Balance Sheet	1.6486	2.2517	1.3711
9. Fund-by-Fund Statement of Changes in Fund Balances	1.6095	2.5415	1.9148
10. Aggregated Statement of Changes in Fund Balances	1.5123	2.0944	1.4461
11. Fund-by-Fund Revenue and Expenditure Statement	2.6961	2.8482	.6440
12. Aggregated Revenue and Expenditure Statement	2.2573	2.4528	1.6902
13. Auditor's Report	2.4739	2.4180	1.9012
14. Depreciation	1.5274	1.6638	1.2713
15. Excess Revenue Over Expenditures	3.1348	3.2039	2.7658
16. Total Debt Outstanding	3.2148	2.9697	2.6024
17. Revenue and Expenditure Trends	3.1925	3.2170	2.5000
18. Project Description	3.4565	3.4530	2.9959
19. Description of Mortgaged Property	3.5619	3.4530	2.9958
Total of Weights	44.6268	47.1265	36.6796

set of weights. A survey of Table XVI indicates that the mean weights received fall between those of public and private colleges. However, for 14 of the 19 items, the variance is either the first or second highest of the three, probably a direct result of the respondents' not knowing whether to answer for a public or private college. The ambiguity of the situation resulted in larger variances than when the college was identified. With the scaling procedure controlling for the higher variance, the resulting weights are lower on the scale that did not identify the college's control than for those that did.

An analysis of Table XXI reveals that all of the weights on the public college scale are below that for the private college scale. Obviously, if a public college issues a general obligation bond, potential college investors demand less information than they do from a private college; therefore, a common scale could not be developed for this study.

A comparative study of Tables XVIII and XXII reveals the ability of the scaling procedure to reproduce approximately the same rank orders as the actual respondents. Differences between the respondents' rankings and the scaling procedures' rankings is the variance. The ranks for respondents was developed using only the mean. The ranks of the scaling procedure controls for both means and variance. Note that ties which existed using means only have been broken by the scaling procedure because of variance differences.

Table XXIII is provided so that the reader can determine how items were placed in the categories disclosed in Table XXIV. Note, again, that the same seven items which were identified from respondents' mean as being necessary are ranked as essential using the scaling procedure.

TABLE XXI

WEIGHTS ASSIGNED TO GENERAL OBLIGATION BONDS

	Questionnaire Item	Type of College		
		Public	Private	Unidentified
1.	History of College	.8933	1.8094	1.5905
2.	Names of Board of Trustees	.7363	1.2340	.8051
3.	Description of Major Buildings on Campus	1.0735	1.5410	1.6008
4.	Major Building Construction	1.1420	1.6471	1.8866
5.	College Default History	2.0610	3.4812	3.2210
6.	Enrollment Trends	1.9474	3.2525	3.0650
7.	Fund-by-Fund Balance Sheet	1.0148	2.1735	1.6216
8.	Aggregated Balance Sheet	.8697	2.1317	1.2093
9.	Fund-by-Fund Statement of Changes in Fund Balance	.9236	2.4333	1.9966
10.	Aggregated Statement of Changes in Fund Balance	.8863	2.3000	1.9775
11.	Fund-by-Fund Revenue and Expenditure Statement	1.3113	2.7039	2.2301
12.	Aggregated Revenue and Expenditure Statement	1.1313	2.5584	2.1116
13.	Auditor's Report	1.3289	2.4541	2.2584
14.	Depreciation	.5980	1.7823	1.2518
15.	Excess Revenue Over Expenditures	1.8629	3.3315	2.8563
16.	Total Debt Outstanding	1.9312	3.2606	3.0073
17.	Revenue and Expenditure Trends	1.8865	2.8862	2.5895
18.	Project Description	1.9764	3.4146	3.1273
19.	Description of Mortgaged Property	2.0444	3.5352	3.2787
	Total of Weights	25.6188	47.9305	41.6850

TABLE XXII

RANK ORDER OF ITEMS BASED ON SCALING RESULTS

Questionnaire Item	Revenue			General Obligation		
	Pri.	Pub.	U	Pri.	Pub.	U
1	17	15	16	15	15	16
2	19	19	19	18	19	19
3	18	18	13	12	18	15
4	16	17	9	10	17	13
5	1	3	3	1	2	2
6	4	6	5	4	6	4
7	11	13	12	13	13	14
8	12	12	15	17	14	18
9	13	9	8	14	11	11
10	15	14	14	16	12	12
11	8	8	18	9	8	9
12	10	10	11	11	9	10
13	9	11	10	8	10	8
14	14	16	17	19	16	17
15	7	5	4	7	4	6
16	5	6	6	5	5	5
17	6	4	7	6	7	7
18	3	1	1	3	3	3
19	1	1	1	2	1	1

Pri. = Private; Pub. = Public; U = Unidentified

Also, the placement of items in lower categories of importance is evident for a public college general obligation bond. The noticeable difference in the information demands for a public college general obligation bond is demonstrated by reading across Table XXIV. Information items fall in a lower category for a public college general obligation bond than they do for any other bond type.

TABLE XXIII

CATEGORY LIMITS

Category of Importance Level	Lower Category Limit					
	Revenue			General Obligation		
	Pub.	Pri.	U	Pub.	Pri.	U
0. Unimportant	0	0	0	0	0	0
1. Slightly Important	.5085	.5381	.1380	.5443	.5023	.4815
2. Moderately Important	1.4746	1.3461	1.3666	1.5009	1.4623	1.2363
3. Very Important	2.1873	2.0892	1.7085	2.1712	1.0911	1.7644
4. Essential	2.8145	2.6365	2.2470	2.5293	2.6728	2.1740

Pub. = Public; Pri. = Private; U = Unidentified.

Goodness of Fit of Scaling Procedure

While the scaling results were analyzed in the previous section, nothing has been said about the representativeness of the scale of the original respondents' weights. The scaling weights and category limits were used to estimate the original cumulative category proportions assigned by the questionnaire respondents. A chi square goodness-of-fit

TABLE XXIV

CATEGORY PLACEMENT OF INFORMATION ITEMS

Questionnaire Item	Revenue			General Obligation		
	Pub.	Pri.	U	Pub.	Pri.	U
1	1	2	1	1	2	2
2	1	1	1	1	1	1
3	1	2	2	1	2	2
4	1	2	3	1	2	2
5	4	4	4	3	4	4
6	4	4	4	3	4	4
7	2	3	2	1	3	2
8	2	3	2	1	3	1
9	2	3	3	1	3	2
10	2	3	2	1	3	2
11	3	4	1	2	4	3
12	3	3	2	1	3	2
13	3	3	3	2	3	3
14	2	2	1	1	2	1
15	4	4	4	3	4	4
16	4	4	4	3	4	4
17	4	4	4	3	4	4
18	4	4	4	3	4	4
19	4	4	4	3	4	4

Pri. = Private; Pub. = Public; U = Unidentified

was used to test the accuracy of the scale developed. All of the levels of significance are above 99 percent, thereby indicating the lack of a difference between the weights developed from the scaling procedure and the weights assigned by the original respondents.

Determination of Sample Size

To determine the minimum number of universities needed in this research, a pilot study was conducted by randomly selecting four Oklahoma colleges from a list of Oklahoma colleges. To simplify statistical computations, the sample size of public colleges equalled the sample size of private colleges. The colleges' disclosure scores were developed using the weights developed by the scaling procedure. The results are given in Table XXV. In order to determine a minimum sample size, a level of alpha (the probability of rejecting a true null hypotheses) must be specified. Table XXV presents the sample size requirements given varying alpha levels. The table shows that for this research a sample size of 10 (5 from the public college population and 5 from the private college population) is sufficient.

In previous studies with universities, researchers have received relatively high response rates: Skousen, Smith, and Woodfield (99) had a 52 percent response rate, and Bowen and Minter (15, 16) received response rates from 70 to 100 percent in their annual report on trends in private higher education. Considering the response rates received by other researchers of colleges and universities, it was decided that 40 percent would be a conservative estimate of the response rate to be received in this study; therefore, 30 colleges were included in the sample.

TABLE XXV

SAMPLE SIZE REQUIREMENTS USING PILOT STUDY RESULTS

College Control	Mean Disclosure Score	Standard Deviation
Public	11.57	4.56
Private	38.39	28.73

Level of Significance	Minimum Sample Size
80%	1.508137232
85%	2.438343709
90%	3.183958249
95%	4.520646061

Sample of Colleges

A list of all the public and private colleges in the south central area of the United States was developed using the Education Directory--Colleges and Universities. This list was stratified according to the public or private status of a college. Both lists were arranged in alphabetical order and sequentially assigned numbers starting from one. The Rand Corporation's Table of Random Numbers was used to determine which colleges would be included in the sample.

Letters were mailed to the 15 private colleges sampled. Bond prospectuses for the 15 public colleges were acquired through the colleges' respective state agencies. Telephone calls were made to the state bond agencies requesting their prospectuses. This reduced mailing costs and enabled several prospectuses to be acquired with only one contact. Follow-up telephone calls were made to each of the private

colleges not responding to the initial letter. As a result, a response was received from all private colleges and 14 of the public colleges.[2] Not all of the responses were useful. Some colleges sent copies of their financial statements, others sent bond announcements, and some sent bond prospectuses issued before 1967. A few colleges had never issued bonds.

Bond prospectuses were received from 24 colleges, 10 of which were private, representing a 67 percent response rate, and 14 of which were public representing a 93 percent response rate. The overall response rate was 80 percent. This compares favorably with the response rate received by other researchers in this area.

Table XXVI presents some summary statistics on certain colleges in this sample. There appears to be a significant difference between public and private colleges on all of the three covariates used in this study. Table XXVII presents the results of the disclosure score computations. Regardless of the disclosure rule used, public colleges disclosed less information than private colleges.

Analysis of covariance was used to test for a significant difference between the amount of information disclosed by a private college to their potential bondholders. Because of the large number of prospectuses not containing both endowment and student aid data, two analyses of covariance were conducted: one including all covariates--enrollment, endowment per student, and student aid percentage of total current fund expenditures--and a second with only enrollment as a covariate. Two

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[2]One state agency did not have one of the bond prospectuses requested. A letter to the college's business manager brought no response. Through a follow-up telephone call, it was found that the business manager did not care to participate in the study.

analyses of covariance were done to include all of the colleges in one analysis and to compare results with the analysis including the smaller number of colleges.

TABLE XXVI

MEAN COVARIATE STATISTICS OF SAMPLE COLLEGES

College Control	Enrollment	Endowment per Student	Student Aid Percentage of Current Fund Expenditure
Public	6,038	$ 48.19	.77%
Private	3,391	2,577.58	7.56%

TABLE XXVII

MEAN DISCLOSURE SCORES BY BOND TYPE AND COLLEGE DISCLOSURE RULE

College Control	College Disclosure Rule		
	Public	Private	Unidentified
Public	32.20	30.06	31.34
Private	43.69	42.80	43.39

Table XXVIII presents the results of the analysis of covariance with all covariates. The difference in the level of information disclosed by a public college and the level of information disclosed by a private college is significant at the .01863 level. Using the traditional .05 as a cut-off level of significance, it would appear that there is a significant difference in the amount of information disclosed by a public college and a private college. When combined with the mean disclosure information in Table XXVII, these results support the hypothesis that private colleges disclose more information than public colleges.

The scales used were not found to make any significant difference in the scores colleges received. On the surface, this finding appears to conflict with the earlier conclusion that bondholders demand more information from private colleges than from public ones. If a different scale is used for public and private colleges, expectations may be that the different scales would result in different disclosure scores. This expectation does not hold true in all situations. For example, assume that bondholders were interested in one information item and that it was weighted as 0 in importance from a public college and 4 in importance from a private college. Assume that a prospectus was received which did not disclose the item of information. In both cases, the scales would give the bond a score of 0. While bondholders did demand more information from a private college than from a public college, this difference does not show up from looking at the scores prospectuses received using the scales. The method used earlier in this research does show the demand differences placed on a public and private university. This difference does not appear in the analysis of

TABLE XXVIII

RESULTS OF ANALYSIS OF COVARIANCE WITH ALL COVARIATES

Source of Variation	Sum of Square	Degrees of Freedom	Mean Square	F	Significance of F
Covariates	5,267.6250	3	1,755.8750	10.293	.00159
Enrollment	726.0740	1	726.0740	4.256	.06353
Endowment	1,657.6748	1	1,657.6748	9.717	.00980
Student Aid	149.2245	1	149.2245	.875	.36972
Main Effects	1,536.6680	3	512.2227	3.003	.07670
Control	1,297.3047	1	1,297.3047	7.605	.01863
Scale	16.5999	2	8.2999	.049	.95271
Interactions	537.7461	2	268.8731	1.576	.25010
Explained	7,342.0391	8	917.7549	5.380	.00620
Residual	1,876.4922	11	170.5902		
Total	9,218.5313	19	485.1858		

Covariate	Beta Value
Enrollment	.1319187 E-02
Endowment	-.5874738 E-02
Student Aid	.9878952
Grand Mean	56.66949
Multiple R Squared	.738
Multiple R	.859

covariance because of the confounding effects of the prospectuses on the disclosure scores computed from a particular scale.

The analyses of covariance in Table XVIII contains only eight universities--two public and six private because of nondisclosure of either endowment or student aid data by 16 of the universities sampled. Because of potential nonrepresentation of the covariance in Table XVIII, a second analysis of covariance was conducted using only enrollment as a covariate, allowing the inclusion of all 24 colleges sampled.

Table XIX represents the results of this second analysis of covariance. Note that without the fineness of having endowment and student-aid effects deducted, the mean difference test is not as sharp as in the first analysis of covariance. The difference is still statistically significant at the .05 level. The results using all of the colleges support the hypothesis that there is a difference in the amount of information disclosed by a public college and a private college. There are indications that private colleges disclose more information in bond prospectuses than public colleges because the mean disclosure score for private colleges is significantly higher than the mean disclosure score for a public college. It can be stated that a college's public or private control affects its level of disclosure in its bond prospectuses.

Summary

This research addressed two questions: (1) Is there a difference in the amount of information demanded from a public college and the amount of information demanded from a private college, and (2) do private colleges disclose more information to potential bondholders

TABLE XXIX

RESULTS OF ANALYSIS OF COVARIANCE WITH ENROLLMENT ONLY AS COVARIATE

Source of Variation	Sum of Square	Degrees of Freedom	Mean Square	F	Significance of F
Covariates	3,276.9224	1	3,276.9224	5.577	.02135
Enrollment	3,276.9224	1	3,276.9224	5.577	.02135
Main Effects	2,879.1362	3	959.7119	1.633	.19075
Control	2,841.1243	1	2,841.1243	4.835	.03162
Scale	38.0101	2	19.0050	.032	.96819
Interactions	3.5156	2	1.7578	.003	.99701
Explained	6,159.5742	6	1,026.5957	1.474	.12503
Residual	36,428.5120	62	587.5566		
Total	42,588.0860	68	626.2952		

Covariate	Beta Value
Enrollment	.1639342 E-02
Grand Mean	34.32973
Multiple R Squared	.145
Multiple R	.380

than do public colleges. Both of these questions were answered in the affirmative.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The Financial Accounting Standards Board (FASB) is developing a conceptual framework for nonprofit organizations. The discussion memorandum for the conceptual framework project asked if nongovernmental organizations should have different accounting concepts from governmental organizations, implying that there may be inherent differences in the two types of organizations and that these differences could result in different levels of disclosure between governmental and nongovernmental organizations. This research studied the disclosure differences between a particular type of governmental and nongovernmental nonprofit organization--colleges. In particular, this study addressed the following questions:

1. Do potential bondholders demand a different level of information from public colleges than from private colleges?
2. Do public college managers or trustees disclose a different level of information to potential bondholders than private college managers or trustees?

To gain insight into possible disclosure differences in public and private colleges, this research reviewed the current financial situation of postsecondary educational institutions. Evidence that a college's public or private control might affect its level of disclosure was provided.

A model to measure the information in a college bond prospectus was developed. The first step in developing the model was to identify information items which potential college bondholders might find useful. The accounting literature on college disclosures was reviewed to determine the major information items useful to potential college bondholders. The resulting list was developed into a questionnaire and mailed to municipal bond brokers and bank investment officers. These college bond experts weighted each information item according to the importance it had in making a college bond investment decision.

To develop the list into a questionnaire, a small group of college bond experts was asked to comment on and to make revisions in the questionnaire. The questionnaire was pretested for reliability. Intrajudge reliability was tested by using the test-retest approach. Interjudge reliability was tested using Ebel's interrater reliability measure. The questionnaire was between 89 and 100 percent intrajudge reliable and 85 percent interjudge reliable.

A pool of Oklahoma college bond experts was developed using Moody's 1979 Ratings of Municipal Bonds, the proceedings of the Board of Regents of Oklahoma Colleges, and Oklahoma City and Tulsa telephone directories. When the questionnaires were returned, the Oppenheim test of nonresponse bias was made for each type of college (public, private, and unidentified). To determine whether potential bondholders demanded a different level of information from public colleges than from private colleges, a t score was computed from the mean weight difference on each information item. The t score was statistically significant for the following items of information: major building construction, fund-by-fund balance sheet, aggregated balance sheet, fund-by-fund statement of changes in fund

balances, fund-by-fund revenue and expenditures statement, aggregated revenue and expenditures statement, and the auditor's report. These results indicate that potential bondholders do demand a different level of information from private colleges than from public ones.

To include the affects of variance on the mean weight of importance assigned to an information item, the method of successive intervals (also called method of successive categories) was used to scale the questionnaire results. The validity of the resulting disclosure set to measure the amount of information in a college bond prospectus was tested by allowing college bond experts to rank a group of college bond prospectuses for informativeness. The bond experts' rankings were compared with the rankings of the disclosure set. There was no significant difference in the two sets of rankings.

To assess the number of college bond prospectuses needed to measure any disclosure differences between public and private colleges, a pilot study was conducted using the public and private colleges in Oklahoma. Four colleges were selected from a list of colleges in Oklahoma. The disclosure model was used to measure the level of disclosure for the two public and two private bond prospectuses received. The mean difference in the disclosure scores for public and private colleges was used to determine sample size requirements for varying levels of statistical confidence. To be 95 percent confident of the results of this study, a sample of 10 bond prospectuses was needed.

The sample of colleges used in this research was selected from a list of colleges in the south central section of the United States reported in the Education Directory--Colleges and Universities. The list was stratified according to the public or private status of the

college, and colleges were selected by using the Rand Corporation's table of random numbers.

To determine whether there is a significant difference in the amount of information disclosed by a private college in its bond prospectus from that disclosed by a public college in its bond prospectus, the disclosure set measured the amount of information in each bond prospectus received. Analysis of covariance was used to measure the statistical significance of the mean disclosure scores. The mean disclosure scores were statistically significant, indicating that private colleges disclose a different amount of information in their bond prospectuses than that disclosed by public colleges.

Conclusions

Based on the study results, this research concluded that there is a significant difference in the amount of information demanded from a public college and the amount of information demanded from a private college if a general obligation bond is issued. More specifically, the following conclusions were made:

1. The disclosure set of information items can be divided into three levels of items based on college control and bondholder demand. The first level of items is demanded regardless of college control. The items appear to be so important that a bond decision cannot be made without them. The information items in this first level are description of mortgaged property, college default history, project description, total debt outstanding, revenue and expenditure trends, enrollment trends, and excessive revenues over expenditures.

2. The second level of information is necessary when making a decision if the college is private but not if it is public. The information items in this second level are fund-by-fund or aggregated balance sheet, fund-by-fund or aggregated statement of changes in fund balances, fund-by-fund or aggregated revenue and expenditure statement, and the auditor's report.

3. The third level of information items does not appear to be very useful to most bondholders in making investment decisions regardless of the type of college issuing a general obligation bond. The information items in this third level are the college's history, names of board of trustees, description of major buildings on campus, and depreciation on plant assets.

4. Finally, the test of mean level of information shows that private colleges actually disclose more information in their bond prospectuses than public colleges. Regardless of the type of bond issued, the mean disclosure score for private colleges was larger than the mean disclosure score for public colleges, and the overall mean disclosure score for private colleges was found to be significantly different from the mean disclosure score for public colleges.

Recommendations for Further Study

As indicated by the results of this study, potential bondholders demand more information from private colleges than from public colleges and private colleges disclose more information in their bond prospectuses than do public colleges. These results imply that a basic difference does exist between a public college and a private college.

The difference in risk between the public and private colleges appears to be partly due to college control. Cases may be cited of private colleges in financial distress becoming financially stronger, if not financially strong, by becoming a public college. Examples of changing control in the opposite direction to become financially stronger are infrequent, if they exist. Since college control does make a difference in the level of uncertainty and, therefore, the level of disclosure of a college, the FASB may wish to develop separate accounting principles for a public college and a private college.

This research measured only the level of disclosure of a college. Because level of disclosure is not synonymous with adequacy of disclosure, the quality of college bond disclosure was not measured. Future research efforts could address the overall quality of college bond prospectuses. An overall measure of quality may be developed and applied to college prospectuses.

These study results are based on colleges in the south central area of the United States. Future research could repeat this research effort but draw a larger sample. Finally, this research only addressed one particular type of nonprofit organization. The research methodology could be applied to other types of nonprofit organizations.

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APPENDIXES

APPENDIX A

INFORMATION AND UNCERTAINTY

Green gave a very specific example to show that as risk increases the demand for information also increases. Assume two investments A and B. An investor can only select one investment, A or B, but not both. If the investor selects A and there is a recession, he losses $100. If he selects B the payoffs are reversed--$100 gain if recession, $100 lost if boom. The investor can sample economic statistics at $3 each. Seventy percent of the time a particular statistic will predict correctly. Table XXX is based on the above example, and presents the optimal amount of information (number of statistics) Bayesian analysis determines should be observed before making a final decision.

Note that, in general, as the prior perceived risk (variance) increases, the amount of information purchased increased. In Green's empirical test of the above hypothesis, using game theory, he found that, in general, Bayesian analysis predicted the direction of the relationship between risk and information demands.

TABLE XXX

OPTIMAL LEVELS OF INFORMATION

Prior Probability		Optimal Level of Information
Boom	Recession	
.9	.1	0
.8	.2	5
.7	.3	6
.6	.4	7
.5	.5	7
.4	.6	7
.3	.7	6
.2	.8	5
.1	.9	0

APPENDIX B

QUESTIONNAIRES

Questionnaire--Version 1

This questionnaire presents a list of items of information which could be presented in a bond prospectus for a public college or university. Assume you are evaluating an investment in the university's bonds. Please sort the list of items into five categories:

0 -- items that are unimportant
1 -- items that are slightly important in evaluating the investment
2 -- items that are of moderate importance
3 -- items that are very important in evaluating the investment
4 -- items that are essential

Remember, the university has limited resources to spend on gathering and disclosing information. Therefore, items rated 4 will be disclosed first, then items rated 3, and so on until all funds are used up.

To sort, simply enter a number from 0-4 in the space provided (columns called "Weight") to indicate your feeling on the importance of the items in evaluating the bond investment. Remember, this must be done twice--once for the revenue bond weight and again for the general obligation bond weight.

Questionnaire--Version 2

This questionnaire presents a list of items of information which could be presented in a bond prospectus for a private college or university. Assume you are evaluating an investment in the university's bonds. Please sort the list of items into five categories:

0 -- items that are unimportant
1 -- items that are slightly important in evaluating the investment
2 -- items that are of moderate importance
3 -- items that are very important in evaluating the investment
4 -- items that are essential

Remember, the university has limited resources to spend on gathering and disclosing information. Therefore, items rated 4 will be disclosed first, then items rated 3, and so on until all funds are used up.

To sort, simply enter a number from 0-4 in the space provided (columns called "Weight") to indicate your feeling on the importance of the items in evaluating the bond investment. Remember, this must be done twice--once for the revenue bond weight and again for the general obligation bond weight.

Questionnaire--Version 3

This questionnaire presents a list of items of information which could be presented in a bond prospectus for a college or university. Assume you are evaluating an investment in the university's bonds. Please sort the list of items into five categories:

0 -- items that are unimportant
1 -- items that are slightly important in evaluating the investment
2 -- items that are of moderate importance
3 -- items that are very important in evaluating the investment
4 -- items that are essential

Remember, the university has limited resources to spend on gathering and disclosing information. Therefore, items rated 4 will be disclosed first, then items rated 3, and so on until all funds are used up.

To sort, simply enter a number from 0-4 in the space provided (columns called "Weight") to indicate your feeling on the importance of the items in evaluating the bond prospectus. Remember, this must be done twice--once for the revenue bond weight and again for the general obligation bond weight.

	Revenue Bond Weight	General Obligation Bond Weight
A. Nonfinancial Statement data about Issuing University		
1. History of University--how, why, when, and by whom it is founded	____	____
2. Names of members of the Board of Trustees	____	____
3. Description and history of all major university buildings--when constructed, student capacity, etc.	____	____
4. Major improvements made on university buildings since their construction	____	____
5. Default history of university	____	____
6. Enrollment trends	____	____
B. Financial Statement data about Issuing University		
1. Balance Sheet for each University fund	____	____
2. Aggregated Balance Sheet (all funds data consolidated to form one Balance Sheet)	____	____
3. Statement of Changes in Fund Balance by fund	____	____
4. Aggregated Statement of Changes in Fund Balance	____	____
5. Revenue and Expenditure Statement for each fund	____	____
6. Aggregated Revenue and Expenditure Statement	____	____
7. Auditors' Report	____	____
8. Depreciation on Plant Assets and Method used to compute depreciation	____	____
9. Excess of Revenues over Expenditures (Net Income) for the University (aggregation of all funds)	____	____
10. Total Debt Outstanding--amount, names of payees, times interest earned, etc.	____	____
11. Revenue and Expenditure Trends	____	____
C. Financial data related to this Bond Issue Only		
1. Description of Project to be constructed with bond proceeds--project revenue, major customers, engineers report, etc.	____	____
2. Description of mortgaged property used as security on this bond issues--date building constructed, building's use, appraisal value, etc.	____	____

	Revenue Bond Weight	General Obligation Bond Weight
D. Other (Please indicate)		
1. _____	____	____
_____		
2. _____	____	____
_____		
3. _____	____	____
_____		
4. _____	____	____
_____		

PERSONAL DATA ON RESPONDENT

Age _____

Years experience in the University bond market _____

Highest educational level (High School, BS, MS, Ph.D.) _____

In your company's organization chart, how many levels of management are there above you? _____

APPENDIX C

FIRMS INCLUDED IN THE STUDY

Bank of Oklahoma

Blyth, Eastman, Dillon, and Company, Inc.

C & F Investments

City National Bank and Trust

E. F. Hutton

Fidelity Bank

First National Bank and Trust, Ada, Oklahoma

First National Bank and Trust, Oklahoma City

First National Bank and Trust, Stillwater, Oklahoma

First National Bank and Trust, Tulsa

First State Financial, Inc.

Liberty National Bank and Trust

Merrill, Lynch of Tulsa

Merrill, Lynch, Pierce, Fenner, and Smith, Oklahoma City

Oppenheim, Leo and Co., Inc.

Rauscher, Pierce Securities Corporation

R. J. Edwards, Inc.

Stifel, Nicolaus of Enid

Stifel, Nicolaus of Oklahoma City

Stifel, Nicolaus of Tulsa

Stillwater National Bank

Thomson, McKinnon Securities, Inc.

Woolsey and Company, Inc.

World Financial Services

APPENDIX D

METHOD OF SUCCESSIVE CATEGORIES

The development and testing of the interval scales developed in this research study are illustrated by the simple numerical example given in this appendix. Assume that Table XXXI represents the rating of informativeness that seven college bond buyers gave to items A, B, and C. To develop an interval scale for the ratings requires only a conversion of each rating to a z score. The z score for each category is found by looking up the cumulative proportion of responses falling below the upper limit of that category in a normal distribution table. Table XLII contains z scores and ordinate value of the normal distribution.

A two-step process was used to develop the cumulative proportions. The proportion of responses falling within a category is given in Table XXXII. For example, of the seven individuals rating item A, two placed it in category 0. The proportion of judgments falling within category 0 for item A is .286 (2/7). The other proportions were found in a similar manner. The cumulative proportions given in Table XXXIII are found by summarizing the proportions given in Table XXXII horizontally. The resulting z scores found in Table XXXIV were developed by consulting the normal distribution table in Table XLII. For example, the z value for .286 is found by looking down the column headed "Area from z = 0" until

.214 is found.[1] Looking across the row from .214, it is found that the z score for a cumulative proportion of .286 is -.565. Also, the ordinate of the normal distribution at a z of -.565 can be found by looking in the next column along the same row. This value is found to be .3401 and is recorded in Table XXXV. The remaining values of Tables XXXIV and XXXV were found in a similar manner.

The values in Table XXXIV represent an estimate of the upper limit for each category. These values can be used to develop the boundaries of every category, while Tables XXXVI and XXXVII can be used to develop a single representative mean value of each category.

Guilford has shown that the mean value for any interval on a normal distribution is found by

$$Z_c = \frac{f(a) - f(b)}{F(b)}$$

where:

Z_c is the Z score for the category's mean,

f(a) is the ordinate value for the lower limit of the category,

f(b) is the ordinate value for the upper limit of the category, and

F(b) is the proportion of judgment falling in the category.

Table XXXV gives the upper limit for each category. Of course, the upper limit of category 0 is the lower limit of category 1 and so on. The lower limit of category 0 is 0. Table XXXVI gives the values for the difference between the ordinates of the categories. Table XXXVII gives the estimates for the category means.

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[1]Because z = 0 is .5, it is necessary to deduct the cumulative proportion from .5, then look for the value of the difference for negative values, a minus sign must be attached to the z score.

TABLE XXXI

RATING

Item	College Bond Buyers						
	A	B	C	D	E	F	G
A	0	1	1	2	3	4	0
B	1	2	2	3	4	4	0
C	2	3	3	4	4	4	1

TABLE XXXII

PROPORTIONS F(b)

Item	Category				
	0	1	2	3	4
A	.086	.286	.143	.143	.143
B	.143	.143	.286	.143	.285
C	.000	.143	.143	.286	.429

TABLE XXXIII

CUMULATIVE PROPORTION

Item	Category 0	1	2	3	4
A	.286	.572	.715	.858	1.00
B	.143	.286	.572	.715	1.00
C	.000	.143	.286	.572	1.00

TABLE XXXIV

DISTANCE IN Z UNITS OF UPPER CATEGORY LIMITS
FROM MEAN OE EACH ITEM

Item	Category 0	1	2	3	4
A	-.565	.181	.568	1.0714	---
B	-1.067	-.565	.181	.568	---
C		-1.067	-.565	.181	---
	-2.448	-1.451	.184	1.8204	
	-.816	-.484 or 0.192	.061	.607	

TABLE XXXV

ORDINATE B FOR EACH ITEM

Item	Category 0	1	2	3	4
A	.3401	.3924	.3395	.2247	
B	.2258	.3401	.3924	.3395	
C		.2258	.3401	.3924	

TABLE XXXVI

ORDINATE A LESS ORDINATE B

Item	Category 0	1	2	3	4
A	-.3401	-.0523	.0529	.1148	.2247
B	-.2258	-.1143	-.0523	.0529	.3395
C		-.2258	-.1143	-.0523	.3924

TABLE XXXVII

ORDINATE A LESS ORDINATE B DIVIDED BY PROPORTION OF JUDGMENT IN THE CATEGORY

Item	Category 0	1	2	3	4
A	-1.189	-.1830	.3700	.8030	1.5700
B	-1.579	-.7990	.1830	.3700	1.1900
C		-1.579	-.7990	-.1830	.9200

The values in Table XXXVII are developed by dividing the entries in Table XXXII by the corresponding entry in Table XXXVI. For example,

$$\frac{-.3401}{.286} = -1.189 .$$

Estimates for the category means and the category boundaries are reproduced in Table XXXVIII for the reader's convenience.

Recall that an interval scale on the differences between values is important; therefore, the zero point is not unique and can be placed at any convenient point. The row labeled "M_d" gives the differences between points on the scale. For example, the difference between the mean of category 0 and the lower limit of category 1 for item A is .624; for item B, .512. The average difference between the mean of category 0 and the lower limit of category 1 is $\frac{(.624 + .512)}{2} = .568$. The other differences were computed in a similar manner. Given the differences between each point on the scale, the final interval scale is found by setting the zero point at the mean of category 0 then adding the differences consecutively; the boundaries and category means are placed on the scale. The resulting scale, with its values, is given in the row labeled "scale values" of Table XXXVII.

The computation of the value for each item is given by multiplying the categories' mean by the proportion of responses for that item falling into that category. The resulting sum is the item's scale value. Table XXXIX illustrates the computation of the item scale value.

To test the consistency of the scale developed, the proportions are estimates from the scale values. In Table XL, the z score estimate for each category limit on each item is given. The estimates are made by

TABLE XXXVIII

SCALE VALUES

Item	0		1		2		3		4	
	Lower Limit	Mean	Lower Limit	Mean	Lower Limit	Mean	Lower Limit	Mean	Lower Limit	Mean
A	-1.189		-.565	-.183	.181	.370	.568	.803	1.0714	1.57
B	-1.579		-1.067	-.799	-.565	-.183	.181	.370	.5680	1.19
C				-1.579	-1.067	-.799	-.565	-.183	.1810	.92
ΣZ	-2.768		-1.632	-2.561	-1.451	-.612	.184	.990	1.8204	3.68
$\bar{Z}$				-.982						
Σd			1.136	.65	1.11	.839	.796	.806	.8304	1.8596
M_d			.568	.325	.37	.280	.265	.269	.2768	.62
Scale Values	0		.568	.893	1.263	1.543	1.808	2.077	2.3538	2.9738

TABLE XXXIX

COMPUTATION OF ITEM SCALE VALUE

Category	Category Means	Proportion of Responses Within Each Category			Means X Proportion		
		A	B	C	A	B	C
0		.286	.143	.000			
1	.893	.286	.143	.143	.255	.128	.128
2	1.543	.143	.286	.143	.221	.441	.221
3	2.077	.143	.143	.286	.297	.297	.594
4	2.974	.143	.286	.429	.425	.851	1.276
		Item scale value			1.198	1.717	2.219

TABLE XL

Z SCORE ESTIMATE OF CATEGORY LIMIT

Scale Values		Category Boundaries			
Item	Value	.568	1.263	1.808	2.354
A	1.198	-.630	.065	.610	1.156
B	1.717	-1.149	.454	.091	.637
C	2.219	-1.651	.956	-.411	.135

subtracting the item value from each of the category boundaries. For example, the estimated z score from item A and category 0 is -.63 (.568 - - 1.198). The cumulative proportion below that category's upper limit is found by looking up the estimated z scores in a normal distribution table. The resulting estimates are given in Table XLI. To find the average deviation from the true estimate, each entry in Table XLI is deducted from the corresponding entry in Table XXXIII. For this example, the mean deviation was .0277. This appears to be a low average deviation, but Guilford has proposed a procedure which can be used to test the statistical significance of the deviations.

$$\chi^2 = \frac{N \Sigma (\theta - \theta^1)^2}{821}$$

where:

χ^2 is the chi square value,

N is the number of judges,

θ is the actual proportion, and

θ^1 is the estimated proportion.

The chi square in this example was .0001743094. The number of degrees of freedom is 5 (12 values in the complete matrix - 7 parameters estimated) (3 item values and 4 category boundaries). The chi square is not significant at the .99 level. For this example, the scale developed is an excellent predictor of the judges' ratings.

TABLE XLI

ESTIMATED PROPORTION WITHIN CATEGORY

Item	Category				
	0	1	2	3	4
A	.264	.476	.729	.875	1.0
B	.125	.326	.536	.739	1.0
C	.049	.169	.341	.553	1.0

TABLE XLII

DEVIATES AND ORDINATES FOR AREAS UNDER THE NORMAL CURVE

Area from $z = 0$	z	Ordinate at z	Area from $z = 0$	z	Ordinate at z	Area from $z = 0$	z	Ordinate at z
.000	0.0000	.3989	.040	0.1004	.3969	.080	0.2019	.3909
.001	0.0025	.3989	.041	0.1030	.3968	.081	0.2045	.3907
.002	0.0050	.3989	.042	0.1055	.3967	.082	0.2070	.3905
.003	0.0075	.3989	.043	0.1080	.3966	.083	0.2096	.3903
.004	0.0100	.3989	.044	0.1105	.3965	.084	0.2121	.3901
.005	0.0125	.3989	.045	0.1130	.3964	.085	0.2147	.3899
.006	0.0150	.3989	.046	0.1156	.3963	.086	0.2173	.3896
.007	0.0175	.3989	.047	0.1181	.3962	.087	0.2198	.3894
.008	0.0201	.3989	.048	0.1206	.3961	.088	0.2224	.3892
.009	0.0226	.3988	.049	0.1231	.3959	.089	0.2250	.3890
.010	0.0251	.3988	.050	0.1257	.3958	.090	0.2275	.3887
.011	0.0276	.3988	.051	0.1282	.3957	.091	0.2301	.3885
.012	0.0301	.3988	.052	0.1307	.3955	.092	0.2327	.3883
.013	0.0326	.3987	.053	0.1332	.3954	.093	0.2353	.3881
.014	0.0351	.3987	.054	0.1358	.3953	.094	0.2378	.3878
.015	0.0376	.3987	.055	0.1383	.3951	.095	0.2404	.3876
.016	0.0401	.3986	.056	0.1408	.3950	.096	0.2430	.3873
.017	0.0426	.3986	.057	0.1434	.3949	.097	0.2456	.3871
.018	0.0451	.3985	.058	0.1459	.3947	.098	0.2482	.3868
.019	0.0476	.3985	.059	0.1484	.3946	.099	0.2508	.3866
.020	0.0502	.3984	.060	0.1510	.3944	.100	0.2533	.3863
.021	0.0527	.3984	.061	0.1535	.3943	.101	0.2559	.3861
.022	0.0552	.3983	.062	0.1560	.3941	.102	0.2585	.3858
.023	0.0577	.3983	.063	0.1586	.3940	.103	0.2611	.3856
.024	0.0602	.3982	.064	0.1611	.3938	.104	0.2637	.3853
.025	0.0627	.3982	.065	0.1637	.3936	.105	0.2663	.3850
.026	0.0652	.3981	.066	0.1662	.3935	.106	0.2689	.3848
.027	0.0677	.3980	.067	0.1687	.3933	.107	0.2715	.3845
.028	0.0702	.3980	.068	0.1713	.3931	.108	0.2741	.3842
.029	0.0728	.3979	.069	0.1738	.3930	.109	0.2767	.3840
.030	0.0753	.3978	.070	0.1764	.3928	.110	0.2793	.3837
.031	0.0778	.3977	.071	0.1789	.3926	.111	0.2819	.3834
.032	0.0803	.3977	.072	0.1815	.3924	.112	0.2845	.3831
.033	0.0828	.3976	.073	0.1840	.3922	.113	0.2871	.3828
.034	0.0853	.3975	.074	0.1866	.3921	.114	0.2898	.3825
.035	0.0878	.3974	.075	0.1891	.3919	.115	0.2924	.3823
.036	0.0904	.3973	.076	0.1917	.3917	.116	0.2950	.3820
.037	0.0929	.3972	.077	0.1942	.3915	.117	0.2976	.3817
.038	0.0954	.3971	.078	0.1968	.3913	.118	0.3002	.3814
.039	0.0979	.3970	.079	0.1993	.3911	.119	0.3029	.3811

TABLE XLII (Continued)

Area from $z = 0$	z	Ordinate at z	Area from $z = 0$	z	Ordinate at z	Area from $z = 0$	z	Ordinate at z
.120	0.3055	.3808	.165	0.4261	.3643	.210	0.5534	.3423
.121	0.3081	.3804	.166	0.4289	.3639	.211	0.5563	.3417
.122	0.3107	.3801	.167	0.4316	.3635	.212	0.5592	.3412
.123	0.3134	.3798	.168	0.4344	.3630	.213	0.5622	.3406
.124	0.3160	.3795	.169	0.4372	.3626	.214	0.5651	.3401
.125	0.3186	.3792	.170	0.4399	.3621	.215	0.5681	.3395
.126	0.3213	.3789	.171	0.4427	.3617	.216	0.5710	.3389
.127	0.3239	.3786	.172	0.4454	.3613	.217	0.5740	.3384
.128	0.3266	.3782	.173	0.4482	.3608	.218	0.5769	.3378
.129	0.3292	.3779	.174	0.4510	.3604	.219	0.5799	.3372
.130	0.3319	.3776	.175	0.4538	.3599	.220	0.5828	.3366
.131	0.3345	.3772	.176	0.4565	.3595	.221	0.5858	.3360
.132	0.3372	.3769	.177	0.4593	.3590	.222	0.5888	.3354
.133	0.3398	.3766	.178	0.4621	.3585	.223	0.5918	.3349
.134	0.3425	.3762	.179	0.4649	.3581	.224	0.5948	.3343
.135	0.3451	.3759	.180	0.4677	.3576	.225	0.5978	.3337
.136	0.3478	.3755	.181	0.4705	.3571	.226	0.6008	.3331
.137	0.3505	.3752	.182	0.4733	.3567	.227	0.6038	.3325
.138	0.3531	.3748	.183	0.4761	.3562	.228	0.6068	.3319
.139	0.3558	.3745	.184	0.4789	.3557	.229	0.6098	.3313
.140	0.3585	.3741	.185	0.4817	.3552	.230	0.6128	.3306
.141	0.3611	.3738	.186	0.4845	.3548	.231	0.6158	.3300
.142	0.3638	.3734	.187	0.4874	.3543	.232	0.6189	.3294
.143	0.3665	.3730	.188	0.4902	.3538	.233	0.6219	.3288
.144	0.3692	.3727	.189	0.4930	.3533	.234	0.6250	.3282
.145	0.3719	.3723	.190	0.4959	.3528	.235	0.6280	.3275
.146	0.3745	.3719	.191	0.4987	.3523	.236	0.6311	.3269
.147	0.3772	.3715	.192	0.5015	.3518	.237	0.6341	.3263
.148	0.3799	.3712	.193	0.5044	.3513	.238	0.6372	.3256
.149	0.3826	.3708	.194	0.5072	.3508	.239	0.6403	.3250
.150	0.3853	.3704	.195	0.5101	.3503	.240	0.6433	.3244
.151	0.3880	.3700	.196	0.5129	.3498	.241	0.6464	.3237
.152	0.3907	.3696	.197	0.5158	.3493	.242	0.6495	.3231
.153	0.3934	.3692	.198	0.5187	.3487	.243	0.6526	.3224
.154	0.3961	.3688	.199	0.5215	.3482	.244	0.6557	.3218
.155	0.3989	.3684	.200	0.5244	.3477	.245	0.6588	.3211
.156	0.4016	.3680	.201	0.5273	.3472	.246	0.6620	.3204
.157	0.4043	.3676	.202	0.5302	.3466	.247	0.6651	.3198
.158	0.4070	.3672	.203	0.5330	.3461	.248	0.6682	.3191
.159	0.4097	.3668	.204	0.5359	.3456	.249	0.6713	.3184
.160	0.4125	.3664	.205	0.5388	.3450	.250	0.6745	.3178
.161	0.4152	.3660	.206	0.5417	.3445	.251	0.6776	.3171
.162	0.4179	.3656	.207	0.5446	.3440	.252	0.6808	.3164
.163	0.4207	.3652	.208	0.5476	.3434	.253	0.6840	.3157
.164	0.4234	.3647	.209	0.5505	.3429	.254	0.6871	.3151

TABLE XLII (Continued)

Area from $z = 0$	z	Ordinate at z	Area from $z = 0$	z	Ordinate at z	Area from $z = 0$	z	Ordinate at z
.255	0.6903	.3144	.300	0.8416	.2800	.345	1.0152	.2383
.256	0.6935	.3137	.301	0.8452	.2791	.346	1.0194	.2373
.257	0.6967	.3130	.302	0.8488	.2783	.347	1.0237	.2362
.258	0.6999	.3123	.303	0.8524	.2774	.348	1.0279	.2352
.259	0.7031	.3116	.304	0.8560	.2766	.349	1.0322	.2342
.260	0.7063	.3109	.305	0.8596	.2757	.350	1.0364	.2332
.261	0.7095	.3102	.306	0.8633	.2748	.351	1.0407	.2321
.262	0.7128	.3095	.307	0.8669	.2740	.352	1.0450	.2311
.263	0.7160	.3087	.308	0.8705	.2731	.353	1.0494	.2300
.264	0.7192	.3080	.309	0.8742	.2722	.354	1.0537	.2290
.265	0.7225	.3073	.310	0.8779	.2714	.355	1.0581	.2279
.266	0.7257	.3066	.311	0.8816	.2705	.356	1.0625	.2269
.267	0.7290	.3058	.312	0.8853	.2696	.357	1.0669	.2258
.268	0.7323	.3051	.313	0.8890	.2687	.358	1.0714	.2247
.269	0.7356	.3044	.314	0.8927	.2678	.359	1.0758	.2237
.270	0.7388	.3036	.315	0.8965	.2669	.360	1.0803	.2226
.271	0.7421	.3029	.316	0.9002	.2660	.361	1.0848	.2215
.272	0.7454	.3022	.317	0.9040	.2651	.362	1.0893	.2204
.273	0.7488	.3014	.318	0.9078	.2642	.363	1.0939	.2193
.274	0.7521	.3007	.319	0.9116	.2633	.364	1.0985	.2182
.275	0.7554	.2999	.320	0.9154	.2624	.365	1.1031	.2171
.276	0.7588	.2992	.321	0.9192	.2615	.366	1.1077	.2160
.277	0.7621	.2984	.322	0.9230	.2606	.367	1.1123	.2149
.278	0.7655	.2976	.323	0.9269	.2596	.368	1.1170	.2138
.279	0.7688	.2969	.324	0.9307	.2587	.369	1.1217	.2127
.280	0.7722	.2961	.325	0.9346	.2578	.370	1.1264	.2115
.281	0.7756	.2953	.326	0.9385	.2568	.371	1.1311	.2104
.282	0.7790	.2945	.327	0.9424	.2559	.372	1.1359	.2093
.283	0.7824	.2938	.328	0.9463	.2550	.373	1.1407	.2081
.284	0.7858	.2930	.329	0.9502	.2540	.374	1.1455	.2070
.285	0.7892	.2922	.330	0.9542	.2531	.375	1.1503	.2059
.286	0.7926	.2914	.331	0.9581	.2521	.376	1.1552	.2047
.287	0.7961	.2906	.332	0.9621	.2511	.377	1.1601	.2035
.288	0.7995	.2898	.333	0.9661	.2502	.378	1.1650	.2024
.289	0.8030	.2890	.334	0.9701	.2492	.379	1.1700	.2012
.290	0.8064	.2882	.335	0.9741	.2482	.380	1.1750	.2000
.291	0.8099	.2874	.336	0.9782	.2473	.381	1.1800	.1989
.292	0.8134	.2866	.337	0.9822	.2463	.382	1.1850	.1977
.293	0.8169	.2858	.338	0.9863	.2453	.383	1.1901	.1965
.294	0.8204	.2849	.339	0.9904	.2443	.384	1.1952	.1953
.295	0.8239	.2841	.340	0.9945	.2433	.385	1.2004	.1941
.296	0.8274	.2833	.341	0.9986	.2423	.386	1.2055	.1929
.297	0.8310	.2825	.342	1.0027	.2413	.387	1.2107	.1917
.298	0.8345	.2816	.343	1.0069	.2403	.388	1.2160	.1905
.299	0.8381	.2808	.344	1.0110	.2393	.389	1.2212	.1893

TABLE XLII (Continued)

Area from z = 0	z	Ordinate at z	Area from z = 0	z	Ordinate at z	Area from z = 0	z	Ordinate at z
.390	1.2265	.1880	.430	1.4758	.1343	.470	1.8808	.0680
.391	1.2319	.1868	.431	1.4833	.1328	.471	1.8957	.0662
.392	1.2372	.1856	.432	1.4909	.1313	.472	1.9110	.0643
.393	1.2426	.1843	.433	1.4985	.1298	.473	1.9268	.0623
.394	1.2481	.1831	.434	1.5063	.1283	.474	1.9431	.0604
.395	1.2536	.1818	.435	1.5141	.1268	.475	1.9600	.0585
.396	1.2591	.1806	.436	1.5220	.1253	.476	1.9774	.0565
.397	1.2646	.1793	.437	1.5301	.1237	.477	1.9954	.0545
.398	1.2702	.1780	.438	1.5382	.1222	.478	2.0141	.0525
.399	1.2759	.1768	.439	1.5464	.1207	.479	2.0335	.0505
.400	1.2816	.1755	.440	1.5548	.1191	.480	2.0537	.0484
.401	1.2873	.1742	.441	1.5632	.1176	.481	2.0749	.0464
.402	1.2930	.1729	.442	1.5718	.1160	.482	2.0969	.0443
.403	1.2988	.1716	.443	1.5805	.1144	.483	2.1201	.0422
.404	1.3047	.1703	.444	1.5893	.1128	.484	2.1444	.0400
.405	1.3106	.1690	.445	1.5982	.1112	.485	2.1701	.0379
.406	1.3165	.1677	.446	1.6072	.1096	.486	2.1973	.0357
.407	1.3225	.1664	.447	1.6164	.1080	.487	2.2262	.0335
.408	1.3285	.1651	.448	1.6258	.1064	.488	2.2571	.0312
.409	1.3346	.1637	.449	1.6352	.1048	.489	2.2904	.0290
.410	1.3408	.1624	.450	1.6449	.1031	.490	2.3263	.0267
.411	1.3469	.1610	.451	1.6546	.1015	.491	2.3656	.0245
.412	1.3532	.1597	.452	1.6646	.0998	.492	2.4089	.0219
.413	1.3595	.1583	.453	1.6747	.0982	.493	2.4573	.0195
.414	1.3658	.1570	.454	1.6849	.0965	.494	2.5121	.0170
.415	1.3722	.1556	.455	1.6954	.0948	.495	2.5758	.0145
.416	1.3787	.1542	.456	1.7060	.0931	.496	2.6521	.0119
.417	1.3852	.1529	.457	1.7169	.0914	.497	2.7478	.00913
.418	1.3917	.1515	.458	1.7279	.0897	.498	2.8782	.00664
.419	1.3984	.1501	.459	1.7392	.0879	.499	3.0902	.00336
.420	1.4051	.1487	.460	1.7507	.0862	.4995	3.2905	.00178
.421	1.4118	.1473	.461	1.7624	.0844	.4999	3.7190	.00030
.422	1.4187	.1458	.462	1.7744	.0826	.49995	3.8906	.00021
.423	1.4255	.1444	.463	1.7866	.0809	.49999	4.2649	.00004
.424	1.4325	.1430	.464	1.7991	.0791			
.425	1.4395	.1416	.465	1.8119	.0773			
.426	1.4466	.1401	.466	1.8250	.0755			
.427	1.4538	.1387	.467	1.8384	.0736			
.428	1.4611	.1372	.468	1.8522	.0718			
.429	1.4684	.1357	.469	1.8663	.0699			

Source: Guilford (50), pp. 559-562.

APPENDIX E

WORKSHEET FOR DISCLOSURE COMPUTATIONS

Information Item	Prospectus Disclosure	Weight	Score
1. History of college			
2. Names of members of the Board of Trustees			
3. Description and history of major buildings on campus			
4. Major construction a. Detail information - 1.0 b. General reference - 1/2			
5. Default history of university a. 10 years - 1.0 b. 9 years - 9/10 c. 8 years - 8/10			
6. Enrollment trends a. 3 years - 1.0 b. 2 years - 2/3 c. 1 year - 1/3			
7. Fund-by-fund balance sheet a. 2 years - 1.0 b. 1 year - 1/2			
8. Aggregated balance sheet a. 2 years - 1.0 b. 1 year - 1/2			
9. Fund-by-fund statement of changes in fund balance a. 2 years - 1.0 b. 1 year - 1/2			
10. Aggregated statement of changes in fund balance a. 2 years - 1.0 b. 1 year - 1/2			

11.	Fund-by-fund revenue and expenditure statement a. 2 years - 1.0 b. 1 year - 1/2	_____	_____	_____
12.	Aggregated revenue and expenditure statement	_____	_____	_____
13.	Auditor's report percentage of financial statements covered	_____	_____	_____
14.	Depreciation a. Detail disclosure - 1.0 b. General reference - 1/2	_____	_____	_____
15.	Excess revenue over expenditures	_____	_____	_____
16.	Total debt outstanding a. Amount and name of payees - 1.0 b. General reference - 1/2	_____	_____	_____
17.	Revenue and expenditure trends a. 3 years - 1.0 b. 2 years - 1/2 c. 1 year - 1/3	_____	_____	_____
18.	Description of project a. Detail description - 1.0 b. General discussion - 1/2	_____	_____	_____
19.	Description of mortgaged property a. Time building constructed - 1/4 b. Building use - 1/4 c. Appraisal value - 1/2 All - 1.0	_____	_____	_____
Total				_____

VITA

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Doctor of Philosophy

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