“The New Depression in Higher Education” Revisited

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A. Introduction.

In a time of increasing financial stress and simultaneously increasing demand for higher education (Rand, 1997), public concern for the price of higher education has grown proportionately. Private colleges are especially burdened by the need to charge tuition at levels far above that charged by publicly subsidized institutions. Their financial viability depends – in many cases – directly on tuition and fee receipts. But in the complex world of higher education finance, the viability of private institutions depends on many other factors, as well – endowment, private gifts, efficiency of operations, perceived quality and reputation, and an assortment of state and federal financial aid programs.

There are no clear standards upon which to model the financial status of private higher education. They take on debt to improve their physical plant, run operating deficits, discount tuition, and raise gift and endowment funds as vigorously as they can to maintain their solvency. Some are healthy enough to withstand even sustained economic downturns; many others are, as one president put it recently, “only 3 years away from bankruptcy.” This variability in financial strength has apparently been growing for at least two decades. David Breneman recognized that “the gulf separating the wealthiest and poorest colleges grew substantially” during the 1980’s (1994, p. 85). In this paper, we explore IPEDS\(^1\) data and experiment with cluster analysis to assess models for

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\(^1\) Integrated Postsecondary Education Data System, a product of the National Center for Education Statistics. See http://nces.ed.gov/ipeds/
comparing financial viability among private liberal arts colleges – as a prelude to wider application of these same methods to other strata of institutions.

B. Conceptual Framework.

Earl Cheit attempted to establish a method to analyze the financial condition of colleges and universities in his 1971 book, *The New Depression in Higher Education*. He conducted 41 case studies of a range of institutions, using a single standard: whether an institution could “carry out its self-determined mission at a level of quality it sets for itself” (p. 36). He noted (as Robert Maynard Hutchins did earlier and Howard Bowen did later) that “colleges and universities tend to spend all the money they raise” (p. 37), suggesting that standards for financial health can only be subjectively tested against whether institutions achieve their respective missions. Cheit visited the institutions in his study and classified them into three broad categories:

“No financial trouble.

Headed for financial trouble.

In financial difficulty.” (p. 40)

He relied on interviews with administrators to reach a judgment on where each institution should be placed.

David Breneman (1994) conducted a considerably more refined approach to the assessment of the financial condition of private liberal arts colleges. He identified a sample of nearly 200 institutions meeting several criteria and for whom data were available. He constructed a composite index of financial condition based on a set of indicators (based on per-student ratios) for each institution. The ten groups were
described and compared and a follow-up set of case studies was completed for 12 institutions.

Still later, in 1996, KPMG an international accounting firm, was contracted by the U. S. Education Department to develop strictly financial ratios to use in a multivariate classification of financial health (KPMG, 1996; also see Chabotar and Honan, 1996). Drawing on a business model, and on standard accounting practice, KPMG identified nine ratios that would collectively portray the financial condition of an institution of higher education. Relying on panels of experts, and accounting for the non-profit character of colleges and universities, KPMG was able to reduce the nine to three ratios. They further proposed to norm the population of colleges and universities with a weighted index that combined all three ratios, and to divide the group into four broad categories:

“
I Exemplary financial health;
II Financially sound;
III Potential problem; or
IV Immediate problem.”

Cheat’s scheme and KPMG’s more sophisticated scheme both aimed at the same target: classifying and norming the financial condition of colleges and universities. Neither scheme, as nearly as we can tell, has been used for larger studies, nor even to achieve any kind of empirically based norming. Cheat did estimate that about three-quarters of private institutions and about half of public colleges were at least “headed for trouble,” if not already in trouble. But those projections are now over 30 years old and have not been reexamined with recent data. (We should note that several commercial ventures provide
empirically based “norming” services to colleges and universities, including John Minter Associates, JBL Associates, and NCHEMS.)

The National Center for Education Statistics’ IPEDS data includes variables that roughly equate to variables included in the KPMG ratios, and IPEDS data are publicly available for analysis either via download or the Peer Analysis System, an on-line interactive program that allows computation of ratios and either select or standardized composition of peer groups. We have developed and tested a cluster analysis approach in which we first calculate financial ratios and then statistically produce clusters of institutions whose financial condition is mathematically “close.” Our analysis is broader than either of the earlier two in the sense that we tested three categories of ratios. The first is the closest approximation of the three final KPMG ratios we can construct from IPEDS data. The second is a set of ratios assessing the role of long-term debt in institutional finance. These ratios were developed and tested by Stump (forthcoming), and were used in a cluster analysis procedure which showed, essentially, that debt was used to accomplish reasonable financial objectives – rather than to take advantage of arbitrage opportunities in an interest rate environment that favored preserving endowments while borrowing for operating revenue. We have also developed a third set of ratios using student enrollment as the denominator in roughly the same fashion modeled in Breneman’s (1994) classic study. These ratios acknowledge that tuition-dependence is likely to be the financial foundation for most private liberal arts colleges, and that per-student income from sources other than tuition is likely to provide the margin of financial stability among these institutions. The Williams College Project on
the Economics of Higher Education has taken a similar approach in some of its analyses, relying on financial ratios that use FTE student enrollment as the denominator (Winston, Carbone, and Hurshman, 2001). Similarly, Leslie and Heubert (1987) point out that because the student experience is the most important outcome of education, financial analysis of college and universities should use “measure[s] of dollars per student” (p 189), and Rosovsky illustrates the usefulness of per student ratios in comparing the endowments of different types of institutions (1990, pp. 228-230).

We envision two key problems that require extensive analytical work. First, KPMG ratios may or may not differentiate among institutions. An exploratory cluster analysis of 1996 IPEDS data for as many of Cheit’s institutions as possible, using close approximations to KPMG ratios, produced one cluster of 29 diverse institutions and three clusters of one institution each. (The remainder were missing some or all data.)

KPMG’s ratios were developed from accounting definitions that would lead to a general assessment of financial health for non-profit institutions. Because the financial structure of various types of colleges and universities diverges so radically, we suggest that these generic ratios may, in fact, be so generic that their application to the groups of institutions for which they were developed (publics, non-profits, proprietaries, and hospitals) may result in too many “false negatives.” That is, if generic ratios are used to establish criteria for financial “health,” they may be so generic as to misclassify as “healthy” institutions in some strata that are less stable than peers with the same type of control and mission. To respond to this problem, we propose to broaden the conceptual

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2 IPEDS data definitions do not necessarily conform to KPMG definitions. Accordingly, we plan to use data elements that appear to meet the general purposes of KPMG’s effort to describe and classify financial condition.
foundations of ratios we will study in exploring the classification of institutions by financial condition. The ratios we have constructed for our sample of private liberal arts colleges may or may not be applicable to other types of institutions with much different financial profiles. For example, we suggest that ratios involving tuition revenue and endowment value are key indicators of the financial condition of private liberal arts colleges, while ratios involving state appropriations and research grants and contracts might be more appropriate for public universities. But our approach differentiates sources of revenue and types of expenditures, where the KPMG and Stump approaches use more generic aggregates of revenue sources and types of expenditure. Those two approaches are more focused on the bottom line – corporate-style – while we think the approach we are suggesting permits a more nuanced analysis.

The second important problem lies in norming and validating standards for financial “health” or stability. We are aware of no established norms that allow comparison of institutional financial condition, although proprietary methods are applied by firms that establish bond-ratings for higher education institutions. (Chabotar and Honan, 1996, have outlined ratios used by bond-rating firms.) Cheit used a subjective and judgmentally based rubric to establish his three classes of financial condition. KPMG relied on panels of experts to converge on criteria and indexes recommended in their report. It tested its ratios on small samples (25 public and 80 private institutions), without indicating how representative those samples were, nor how diverse their missions.

We suggest an empirical approach. Neither Cheit nor KPMG contemplated the need to stratify institutions by type of control or mission. Cheit, in fact, simply lumped his sample of 41 highly diverse institutions together. They ranged from a public community
college in Florida to a private research university in Massachusetts. KPMG did establish different measures for broad and generic categories of institutions (e.g., public) but did not allow for the important distinctions among subclasses (e.g. research universities vs. community colleges). We contend that more refined comparison peer grouping is needed in order to assess the comparative financial condition of subclasses of a) private institutions and b) public institutions. Within these broad groupings, mission distinguishes the sources of revenue and expenditure and implies far different distributions of financial ratios for the various strata of institutions. (In other words, the financial profiles of public community colleges will – almost by definition – differ from those of private research universities.) Any attempt to describe, compare, and contrast the financial status of institutions should take these two stratifications into account. In this exploratory paper, we have restricted our analysis to private liberal arts colleges, but we are using three different sets of ratios, all developed with slightly different purposes in mind. We compare the discriminatory power of these three sets and discuss the methodological and conceptual issues that emerge.

C. Methods.

This paper presents the results of cluster analyses performed by SPSS on financial data for a population of 355 private liberal arts colleges. Data from the Integrated Postsecondary Education Data System (IPEDS) collected by the U. S. Department of Education’s National Center for Education Statistics (NCES) were used. Fiscal year 1996 data were obtained through the NCES website, http://nces.ed.gov/ipeds/fin9596/, and downloaded into the Statistical Package for the Social Sciences version 11.0.1 (SPSS). Private, nonprofit, four year institutions were chosen by selecting the appropriate code for
the sector variable located in the Finance data file. The selection was then limited to two Carnegie classifications, Baccalaureate (Liberal Arts) Colleges I and Baccalaureate Colleges II. We eliminated institutions from outside the continental United States (principally Puerto Rico) and eliminated institutions with enrollments of less than 600 on the theory that these institutions would be presumptively marginal and would skew the clustering process. We wanted a more conservative test of the discriminatory power of our ratios, so eliminating the most fragile and marginal outliers would force the clustering process to discriminate among more homogeneous institutions. We also eliminated those with exceptionally outlying financial ratios that we had reason to suspect were in error, as well as those with missing data. This resulted in a file of 355 institutions. (This is a larger group than Breneman, 1994, included; his more conservative standard for including institutions eliminated those with graduate and/or professional programs of study. He noted that such programs were becoming more common among institutions in this sector, possibly altering the fundamental character of the whole sector.)

The following data items were extracted (SPSS variable names are in parentheses):

- All institutional characteristics variables
- Current fund revenues (totalcfr)
- Current fund expenditures (totalcfe)
- Year end endowment market value (endmarkt)
- Tuition and fees (tuitfees)
- Long-term debt at the end of the fiscal year (balendyr)
- Mandatory transfers (mandtran)
- Total fund balance (totalfb)
Total student enrollment (enrolled) was obtained from the FY 1996 Fall Enrollment File, http://nces.ed.gov/ipeds/lpedsef95.html

The following ratios were computed and placed on the SPSS file.

- **Revenues**: cfr.stud = totalcfr / enrolled
- **Tuition and fees**: tf.stud = tuitfees / enrolled
- **Expenditures**: cfe.stud = totalcfe / enrolled
- **Long-term debt**: ltd.stud = balendyr / enrolled
- **Endowment**: endow.st = endmarkt / enrolled
- **KPMG viability**: kpmgviab = totalfb / balendyr
- **KPMG primary reserve**: kpmgprim = totalfb / (totalcfr + mandtran)
- **KPMG net income**: kpmgneti = totalcfr / (totalcfr - totalcfe - mandtran)
- **Revenue to expenditures**: cfr.cfe = totalcfr / totalcfe
- **Long-term debt to expenditures**: ltd.cfe = blaendyr / totalcfe
- **Year-end endowment market value to expenditures**: ev.cfe = endmarkt / totalcfe
- **Long-term debt to year-end endowment market value**: ltd.ev = balendyr / endmarkt

Hierarchical cluster analyses using SPSS were performed using the five per student ratios. The squared Euclidean distance method was used, the default SPSS method.

IPEDS data are voluntarily reported, and the accuracy of the data depends on consistent application of definitions for each data element by those reporting on behalf of the institutions.

Our initial task was to develop sets of ratios to use as independent variables in the clustering process. We began with the assumption that the KPMG ratios should be
subjected to an empirical test. These ratios, developed from a conventional accounting frame of reference, were produced for the federal Education Department as measures to “… assess the financial responsibility of institutions participating in Title IV programs” (1996). The KPMG method assumes that “…..financial condition of institutions can be assessed by measuring the same fundamental elements of financial health (using ratios) regardless of differences in accounting and reporting requirements or organizational differences” (1996). They proposed using “viability,” “primary reserve,” and “net income” ratios, exploring the use of similar ratios for public institutions, non-profits, proprietary organizations, and hospitals. While the KPMG ratios are both intuitively appealing and based on conventional ratios used in accounting, we have explored other ratios in earlier work. Specifically, Stump (forthcoming) demonstrated the utility of ratios based on long-term debt. These ratios discriminated among institutions’ reliance on long-term debt, grouping them according to their strategic use of debt relative to other sources of funding for current operations and capital projects.

We elected to begin our analysis by applying ratios and cluster analysis to the subpopulation of private liberal arts colleges, institutions that have experienced the most challenging financial conditions of any sector during the past three decades. A recent Chronicle of Higher Education report showed that over 30 institutions of higher education – virtually all private, and mostly baccalaureate-granting, had closed since 1997. (Chronicle, 2002) A New York Times article (Zhao, 2002) further reported Michael McPherson’s and Morton Schapiro’s estimate that only about 10 percent of the private liberal arts sector appeared to be in “secure” condition. They suggest that
endowment value is a principal discriminating variable. Breneman (1994) also concluded that about 10 percent were in “troubling” financial health.

We reasoned that private liberal arts colleges are student-intensive institutions, most of which we assumed would be dependent on income from tuition (and financial aid that supplements the tuition capacity of students and their families). But they are also student-intensive in the sense that their expenditures should, in theory, be mainly targeted to the quality of the student experience. Therefore, the amount of income they generate per student and their expenditures on functions like instruction and student services per student should be important indicators of their ability to attract and hold a dependable flow of committed and responsive students. The idea that wealth or “savings” can be used in this way is explored by Winston, Carbone, and Hurshman (2001).

Accordingly, our third set of ratios is focused on the acquisition and expenditure of resources per student. Tuition and fee income per student, for example, can be an indicator of both market strength (ability to charge a high tuition) and market weakness (the need to discount measured by a gap between the flow of actual revenue per student and the sticker price per student). But merely focusing on tuition revenue is too narrow a picture. Endowment funds (or funds from other sources) give institutions the capacity to perform social and educational functions well beyond what they might do if completely reliant on tuition. Winston, Carbone, and Hurshman (2001) have compared the economic behavior of colleges and universities to “churches,” or charitable organizations that spend to accomplish a social good, and a “car dealer” who aims to clear a profit. An institution that might otherwise be motivated to admit only the children of wealthy people with the capacity to pay can expand its availability to underserved populations by substituting
income from the charitable trust (its endowment) for tuition payments. In addition, institutions with more per-student resources from all sources should be in a position to add value to students’ experiences, if they spend those resources on things that enhance whatever contributes to students’ learning, growth, and development (Leslie and Fretwell, 1996).

We argue that purely financial ratios – ratios, for example, that measure something like expendable fund balances to long-term debt – as universally applicable as they may be, do not recognize the importance of student-intensiveness in the mission of (especially) private liberal arts colleges. Therefore, we constructed a set of ratios with a per-student denominator. (One added advantage of this set of ratios is that it controls for institutional size, but we considered that to be subsidiary to the main purpose.) As we have noted above, others (Breneman, 1994; Leslie and Heubert, 1987; Rosovsky, 1990; and Winston, Carbone, and Hurshman, 2001) have all used variants of the per student ratio in their analyses.

We used the SPSS hierarchical cluster analysis routine, specifying the formation of four clusters, with each of our three families of ratios, the KPMG, Stump, and per-student sets. We did not use the weighting routine recommended by KPMG in its report to the Education Department. Our goal was different. KPMG attempted to establish thresholds of financial “health.” Its weighting and scaling were also attributed to its own proprietary knowledge and experience in rating institutions credit-worthiness. It is not clear how “subjective” their weighting and scaling may have been. Our goal at this stage was less about establishing thresholds for financial health than about assessing different families of ratios for their power to discriminate among private liberal arts institutions. We
provide an extended synopsis of the financial data for our clusters of institutions, and speculate about the meaning of these data in assessing financial condition. But we are principally interested in methods for clustering (and discriminating among) groups of institutions in order to describe their differing conditions and (in later work) the correlates of those differing conditions.

D. Results and interpretation.

Three families of ratios produced three different four-tiered clusters. The per-student ratios were more effective than the other two (KPMG and Stump) families of ratios in separating institutions into groups. Note that each of these procedures (Table 1) produced large clusters of institutions and only a few outliers in the remaining clusters.
Table 1: Cluster distribution* of private liberal arts colleges using three different sets of ratios.

<table>
<thead>
<tr>
<th>Clusters</th>
<th>Per Student</th>
<th>KPMG</th>
<th>Stump</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N, % of Total N</td>
<td>N, % of Total N</td>
<td>N, % of Total N</td>
</tr>
<tr>
<td>1</td>
<td>318, 89.58</td>
<td>334</td>
<td>94.08</td>
</tr>
<tr>
<td>2</td>
<td>26, 7.32</td>
<td>2</td>
<td>0.56</td>
</tr>
<tr>
<td>3</td>
<td>9, 2.54</td>
<td>17</td>
<td>4.79</td>
</tr>
<tr>
<td>4</td>
<td>2, 0.56</td>
<td>2</td>
<td>0.56</td>
</tr>
<tr>
<td>Total</td>
<td>355, 100.00</td>
<td>355</td>
<td>100.00</td>
</tr>
</tbody>
</table>

*Rounding errors not corrected.

Table 2: Mean per student ratios by cluster, private liberal arts colleges.

<table>
<thead>
<tr>
<th>Cluster</th>
<th># in Cluster</th>
<th>Enrollment</th>
<th>Current Fund Revenue</th>
<th>Tuition and Fees</th>
<th>Current Fund Expenditures</th>
<th>Endowment</th>
<th>Long-term Debt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mega-wealthy</td>
<td>2</td>
<td>981</td>
<td>$41,590</td>
<td>$16,122</td>
<td>$42,434</td>
<td>$500,903</td>
<td>$44,134</td>
</tr>
<tr>
<td>(Original)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wealthy</td>
<td>9</td>
<td>1740</td>
<td>$40,399</td>
<td>$16,868</td>
<td>$40,388</td>
<td>$267,639</td>
<td>$28,323</td>
</tr>
<tr>
<td>(Original)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthy</td>
<td>26</td>
<td>1746</td>
<td>$34,931</td>
<td>$17,369</td>
<td>$33,805</td>
<td>$131,068</td>
<td>$14,464</td>
</tr>
<tr>
<td>(Original)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>15</td>
<td>1681</td>
<td>$29,912</td>
<td>$16,682</td>
<td>$29,353</td>
<td>$75,136</td>
<td>$11,817</td>
</tr>
<tr>
<td>(Follow-up)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transitional</td>
<td>32</td>
<td>1548</td>
<td>$25,679</td>
<td>$14,801</td>
<td>$25,349</td>
<td>$47,338</td>
<td>$8,495</td>
</tr>
<tr>
<td>(Follow-up)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marginal</td>
<td>57</td>
<td>1601</td>
<td>$20,621</td>
<td>$12,179</td>
<td>$20,670</td>
<td>$25,845</td>
<td>$6,577</td>
</tr>
<tr>
<td>(Follow-up)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weak (Follow-up)</td>
<td>214</td>
<td>1579</td>
<td>$13,228</td>
<td>$7,540</td>
<td>$12,894</td>
<td>$6,739</td>
<td>$3,588</td>
</tr>
<tr>
<td>Total</td>
<td>355</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Means</td>
<td></td>
<td>1554</td>
<td>$29,480</td>
<td>$14,509</td>
<td>$29,270</td>
<td>$150,667</td>
<td>$16,771</td>
</tr>
</tbody>
</table>
Table 2 presents the descriptive results of clustering our sample of 355 institutions using the per-student financial ratios. We used each of the following indicators divided by the number of students reported as enrolling in the fall of 1996: total current fund revenues, tuition and fee revenues, current fund expenditures, endowment market value, and long-term debt. Four clusters resulted, numbering respectively 2, 9, 26, and 318 institutions. The first three clusters ("Mega-Wealthy," "Wealthy," and "Healthy") are identified as "original" clusters in Table 2. We conducted a second clustering procedure on the fourth and largest cluster, breaking this group down further into clusters of 15, 32, 57, and 214 institutions. These clusters are identified as "follow-up" clusters ("Average," "Transitional," "Marginal," and "Weak") in Table 2.

In the first iteration, "Mega-Wealthy," containing only two institutions, was clearly distinguishable by relatively small enrollments (averaging less than 1,000) and relatively large endowments (averaging over $476 million in market value). They averaged over $500,000 in endowment per student, nearly twice as much as "Wealthy," containing 9 institutions. This endowment per student figure, as Table 2 shows, was over 70 times the endowment per student of "Weak", what we ultimately considered our most threatened (and largest) cluster. These two institutions are obviously wealthier by far than virtually all other private liberal arts colleges and they are able to capitalize on their wealth by incurring far more long-term debt than institutions in any other cluster. In fact, they had more than ten times the long-term debt per student than the weakest cluster, and more than 1.5 times the debt per student of the second "wealthiest" cluster. Wealth apparently begets wealth as well as debt. Winston, Carbone, and Hurshman (2001)
reached the same conclusion and David Breneman (1994) also remarked on the trend toward increasing distance between the wealthiest and poorest institutions.

“Wealthy” with nine institutions was, on all measures, the second wealthiest. These institutions averaged nearly twice as many students (1740 vs. 981) as those in “Mega-Wealthy,” which meant that their endowments per student were about half as large — given that they averaged nearly as much in endowment value. In most other respects, they appeared very similar to the wealthiest institutions, except in size. This meant that they simply ‘managed’ their wealth differently by spending roughly similar resources on a larger number of students. All but one were included in US News’ “top 50” liberal arts colleges for 2003, suggesting that spreading this kind of wealth over more students is viable in a market where the ineffable “reputational” rankings are taken seriously.

Even “Healthy”, composed of 26 institutions, seems to be a very strong group. But there is a very substantial fall-off in the key ratios from “Wealthy.” Their endowment and long-term debt per student are about half of those in “Wealthy.” They are slightly more tuition dependent (measured by tuition and fees per student) than institutions in either of the top two clusters. Their revenues and expenditures per student (notwithstanding that their enrollments average just about exactly those in “Wealthy”) are 86% and 84% of those in “Wealthy,” their closest statistical neighbor. (There is a slightly wider gap between revenues per student and expenditures per student than in “Wealthy,” as well, perhaps reflecting a slightly more conservative management approach.) Twenty of the 26 institutions in “Healthy” are listed in the U. S. News “top 50,” and the remaining six are listed in the next tier. So, although there is an observable fall-off in
measured wealth, perceived quality is still high with a roughly proportional scattering of institutions into the second tier.

Our initial fourth cluster was so large and varied that we elected to subject it to a second cluster analysis using per student ratios. We used the same (per-student) ratios and the same procedural specifications for this iteration. The fourth cluster was divided into “follow-up” clusters, labeled “Average,” “Transitional,” “Marginal,” and “Weak” in Table 2. These institutions are markedly different from those in the first three clusters. They all enroll an average of about 1600 students, close to the 1700-plus enrolled in “Wealthy” and “Healthy.” But their revenues and endowments range from half as large to comparatively miniscule. In the case of “Weak,” by far the largest of all with 214 institutions (60% of the sample), the data suggest both marginal financial condition and relatively low per-student expenditures.

Taking the clusters individually, “Average” (15 institutions) is not far below “Healthy” on key measures, except for endowment value. “Average’s” endowment market value averages just under $127 million to “Healthy’s” $232 million — in other words, slightly over half as large. Because they are slightly smaller, “Average’s” endowment per student is 57% that of “Healthy’s.” Revenues, expenditures, and long-term debt per student are commensurately lower, as well. “Average” holds its tuition and fee revenue per student at about the same levels as the two wealthiest clusters, though, suggesting that these institutions remain competitive in the marketplace.

“Transitional” (32 institutions) is more clearly a transitional set of colleges in a financial sense. On all measures, the gap between institutions in “Transitional” and the top three clusters is marked, particularly so in the area of long-term debt and endowment
per student, which we think can serve as measures of long-term resilience, although debt, of course, may also be a sign of trouble under some conditions. Per student expenditures are less than 2/3 of those among the top two clusters. The top four clusters are able to sustain between $16,000 and $17,000 in tuition and fee revenue per student, but “Transitional” institutions fall about $2,000 below that, signaling a change in market strength. They do not have the endowments (only 15% the market value of endowments in the top two clusters) to fill the gap, either. Nor do they borrow anywhere near as much. Recall that “Average” and “Transitional” were grouped together with the two still weaker clusters in the first iteration, so it is to be expected that signs of having crossed a boundary of some kind would begin to appear among the institutions that, in the first iteration, formed the weakest cluster. We think that boundary occurs between “Average” and “Transitional.” Note that this is the point at which tuition and fee income per student first falls a notch – about $2,000, a non-trivial amount. This drop-off is similar to that of related indicators of long-term vulnerability such as endowment per student and long-term debt per student.

“Marginal” (57 institutions) shows more confirmed signs of marginal condition. Endowment values are only one-tenth the size of those in the wealthiest clusters. Tuition per student is also over $2,600 less per student than that of “Transitional” institutions. Endowment per student is just over half of that of “Transitional” institutions, and long-term debt is about 3/4 that of “Transitional.” These latter two ratios may indicate more dependence on short-term revenue sources, but short-term revenue (tuition and fees per student) does not hold up as well as in other sectors. Furthermore, “Marginal” is the first (below “Mega-Wealthy,” the very wealthiest) in which current fund expenditures per
student average more than current fund revenues – a net deficit. This is likely a sign that these institutions scramble hard to provide a competitive experience for their students, but may not be able to generate enough revenue to keep pace.

Finally, “Weak” with 214 institutions is the largest, constituting about 60% of all private liberal arts colleges in the sample. It is the weakest cluster by far, and it is weak across the board on both long- and short-term measures. Notwithstanding that its institutions’ average enrollment is consistent with enrollments in the other clusters, it takes in less in tuition and fees per student by a wide margin. In fact, tuition and fee revenue per student is less than 2/3 that of “Marginal,” making this the widest gap between clusters, proportionally and in absolute dollar terms, on this measure. The long-term measures of financial stability are also remarkably weaker than those of “Marginal.” Endowment per student is only ¼ that of “Marginal,” and long-term debt per student is just over half that of “Marginal.” This is the only cluster, though, in which long-term debt per student is more than ¼ of endowment per student. In “Weak,” long-term debt is over half the value of endowment market value. In other words, institutions in “Weak” cannot back their long-term debt with remotely as much in endowment assets. They probably borrow close to or beyond capacity. Their expenditures per student, possibly a more worrisome sign than other indicators, are dramatically below even those of “Marginal.” In fact they are less than 2/3 those of “Marginal.” At some indeterminate point, expenditures per student must impact the quality of education, although that point is exceedingly indeterminate as far as we can tell. Nevertheless, these institutions simply cannot sustain tuition and fee income at a level that is at all comparable to institutions in the other clusters. We cannot attribute the level of tuition and fee revenue per student
specifically to either market pressure to keep tuition rates down or to tuition discounting, although perhaps both factors are at work. Whatever the explanation, tuition and fee revenues per student simply fall off sharply between “Marginal” and “Weak” institutions.

Undoubtedly some of the institutions in “Weak” are at risk. At least one of those in our “Weak” cluster has closed since the IPEDS data were gathered. (But we note that closures of liberal arts colleges remain few and far between, the predictions of Cheit and Breneman notwithstanding.) In the present economic environment, others will undoubtedly be living hand-to-mouth and at the mercy of their creditors and financial aid programs that provide their students with grants and loans. They form a public policy problem, albeit a largely invisible and probably less urgent one than has often been suggested. Their aggregate enrollment is close to 350,000, and many of their students would probably seek less costly higher education in the (subsidized) public sector if their institutions were to close. But because so many institutions in this cluster are religiously affiliated, it is also likely that students at institutions that might close would remain in that sector. The numbers are also distributed throughout the U. S., so if as many as a quarter (or 90,000) were to be “orphaned” by closing institutions, they could probably be absorbed readily by other public and private institutions in a system that currently educates about 15,000,000.

We will try to illustrate what we think are critical “break points” in the continuum of financial condition with more complete descriptions of selected (but unnamed) institutions. We especially want to focus on the “Transitional” cluster, and the “Weak” cluster, the most marginal one.
“Transitional” is comprised of institutions that – on average – seemed weaker across the board than institutions in stronger clusters. The key break points in financial strength seemed to us to be in endowment per student and in tuition and fee revenue per student, as well as in the relationships among per student ratios. The two institutions in this cluster with the lowest tuition and fee revenue per student (#46 and #51) were also among the smaller with about 900 and 500 fewer students respectively than the average of over 1500 for the cluster. They were located in different parts of the country, and held slightly below and slightly above average amounts of endowment per student (for their cluster). Long term debt per student was almost double the average of the cluster in one case, but on the order of half of the average in the other. Both ran operating surpluses (excess of current fund revenues over current fund expenditures). Given the long-term debt level per student, at about twice the tuition and fees per student, and given that its endowment per student was below the average for this cluster, #46 appears to us to be, in Cheit’s language, at least nominally “headed for trouble.” The other institution, #51, while not a wealthy institution by any means, did not show equivalent warning signs in the ratios we analyzed.

The two institutions (#49 and #60) in this cluster with the lowest endowment per student (in the low $30,000’s vs. an average of over $47,000 per student for the cluster of 32 institutions) appeared to be relying heavily on long-term indebtedness to keep pace. One held over $15,000 in long term debt per student, and the other held over $19,000 per student, well over twice the cluster’s average of about $8,500. One of the two ran an operating deficit of about $2.4 million on current funds revenues of just over $68 million, or about 3.5%. Expenditures per student were about $1,000 higher than revenues per
student. The other institution ran a small operating surplus of about 1%. On the whole, both institutions appeared to be holding up in a competitive sense, as their expenditures per student were above the average, but in one case that meant the institution, borrowing heavily and running an operating deficit, was at least stretched thinly. In the other case, long-term debt per student was higher than tuition and fee income per student, a pattern we believe is unsustainable in the long term.

Size may have been a factor in both cases. One was only about 2/3 the average size of institutions in this cluster, and the other was among the largest (over 2500 students where the average was 1548. Both institutions appeared under-endowed for their respective sizes, but it is not clear that either would have been better off with fewer students. The smaller one (about 1100 students), for reasons that are not clear from the data, was borrowing far more heavily (per student) than others in its cluster. And its borrowing was ahead of its tuition and fee revenue per student. Its long term debt per student was the highest relative to endowment per student in this cluster – by a substantial margin. The larger of the two showed signs of having overextended its resources by admitting more students – quite possibly without realizing either a per student revenue advantage or economies of scale (given that it had to borrow as heavily as it was). So the picture in this transitional cluster is a mixed one, with individual institutions showing varied symptoms of stress.

“Marginal,” composed of 57 institutions, shows a more straightforward picture. Almost half (24) of this group were running an operating deficit per student. In relative terms, these institutions were more dependent on long-term debt than on endowment, compared to those in “Transitional.”
“Weak” is by far the most worrisome because these institutions are the most likely to close. Indeed, as noted, one of them has recently done so. Ironically, though, the institutions in this cluster appear to be living within their means (more revenue per student than expenditure on the average), at least compared to those in “Marginal” where operating deficits were common. Fewer than 1/3 (64) were running operating deficits. Some had borrowed comparatively heavily, others had little or no endowment, tuition income per student was much lower than in any other cluster, and expenditures per student averaged less than 1/3 of those in the “wealthiest” clusters.

But these institutions seem to carry on. Why, in the face of such daunting financial statistics, do they continue? Many are church-related. Others seem to occupy a particular market niche. A few are historically black colleges and universities (HBCU’s). Virtually none would be recognizable as nationally known institutions, but many are certainly well known in their particular niches. It does not seem outlandish to suggest that students at the church related institutions seek communities of faith in which to experience “college.” Similarly, their faculty and staff may well see their work as charitable or missionary. In other words, what sustains these institutions is the faith of their students and the charity of their staff – rather than financial wealth. In this conclusion, we concur with David Breneman, who said, “Economic analyses miss the important intangible factors, such as dedication, commitment, loyalty, sacrifice, and belief which typify and motivate many of those who support these schools” (1994, p. 137).

Because this cluster is so diverse, representative cases are difficult to identify. Institution #88, however, is indicative, if not representative. It is a church-related
(Protestant denomination) institution with an enrollment just over 600. Its endowment per student is among the smallest in the cluster (under $500), and its long-term debt per student (over $13,000) among the highest. Long term debt per student is more than twice the tuition and fee revenue per student (over $6,000). Data on faculty salaries show averages for this institution to be far below national averages. Institution #126, an independent private institution, is located in a rural Midwestern state with current fund expenditures per student of under $5000 per student. Yet long-term debt at this institution is a miniscule (less than $800 per student), on par with endowment per student (just over $400). The data for this institution may have been skewed by the large number of part-time students reported in their headcount. Unfortunately, it is possible that enrollment figures are inconsistently reported from institution to institution so, although we have confidence in the aggregate picture represented among our clusters, we have less confidence in the accuracy of any single institution’s data – or position among the clusters.

Without further study, we will not generalize, but it does appear that “charity” on the part of faculty and staff who are almost certainly paid far below average salaries and wages (based on profession-wide rates), as well as the religious drawing power of these institutions, contributes to their survival in the face of relatively bleak overall statistics. That does not mean that the institutions in this cluster are “sustainable.” Many appear to be in very marginal condition. At the most marginal, expenditures are higher than revenues, endowments are small, and long-term debt is substantial in comparison to other indicators. But the picture is more complex than we had imagined when we began this project. Single indicators, and even arrays of financial indicators, do not seem to capture
what sustains institutions in the most challenged cluster. Breneman, grappling with the same conclusion, referred to the “intangible resources” that seem to keep the most fragile institutions alive (1994, p. 137).

E. Discussion and conclusion.

Our results lead us to two issues that we believe require both reconceptualization and further study. First, can we estimate the financial health of private liberal arts colleges with existing data and standard statistical routines? To the extent that data are available, the answer to that question is a qualified “yes.” Second, is there a standard financial benchmark to which private liberal arts colleges might be compared? The answer here is a good deal more complicated.

Starting with the second question first, we have carefully composed a particular set of ratios that use student enrollment as the denominator. These ratios seem to have worked particularly well when clustering private liberal arts colleges. It remains to be seen whether they would work as well on, say, public research universities. But others have used similar ratios on samples of institutions that cross lines of mission, size, control, etc. (Winston, Carbone, and Hurshman, 2001).

For the private liberal arts colleges, we identified seven clusters, three of which appeared to be wealthy, or well beyond any measure of minimal financial “soundness.” These institutions almost all have strong national reputations, and are well represented in U. S. News rankings. A fourth cluster was noticeably less wealthy, but showed no collective signs of weakness. The fifth and sixth clusters were what we termed “transitional.” They were neither in imminent danger, nor could we affirm their health; these clusters showed varying signs of difficulty, including a substantial portion with
operating deficits. The seventh and largest (60% of our 355 institutions) cluster was collectively in far more marginal condition than the others. Their thin resources notwithstanding, proportionately more appear to be living “within their means” than among the transitional institutions. We suggested that the large portion of religious and well-“niched” institutions among those in this cluster hints at non-financial institutional assets. We do not mean it tongue-in-cheek when we say the sectarian faith of their students and the charity of their (underpaid/overworked) faculty and staff make it possible for them to survive on what look like the thinnest of resource bases.

It is beyond the scope of this paper to assess non-financial assets in any calculation of financial condition, but we suggest that case studies of institutions in our “Weak” institutions would be a fertile way to understand better how marginally funded institutions manage to persist. A more detailed analysis broken out by specific sources of income, such as gifts, grants and contracts, and income from auxiliary enterprises, would provide a more nuanced contrast than our clustering iterations have achieved in this exercise. Also, a cursory look at the operations of some of these institutions suggests that some may have grown upward or sideways, adding graduate, off-campus, continuing education, and contract courses that may generate revenues have not been accounted for among the standard IPEDS categories. (Breneman, 1994, omitted institutions from his sample if they had grown too far upward or sideways.)

Returning to the first question, we think our method -- relying on IPEDS data, forming a set of financial ratios, and conducting cluster analysis through two iterations -- is generally sound. The clusters produced by this method made intuitive sense, and conformed in expected ways to such external evidence as the U. S. News rankings (for
what they may be worth). We offer two cautions. Data for many institutions in this
category were not available in the IPEDS file. So we have less than a complete universe
with no explanation for the missing data – and therefore for the missing institutions.
Second, there is no guarantee that the IPEDS data are a) accurate or b) as we analyzed
them, representative of institutions’ true financial condition.

We settled on per student ratios after neither KPMG nor Stump ratios appeared to
discriminate among institutions in this population. Given that our per student ratios
discriminated more effectively, we think they are more useful than the others.

We have not solved the problem of norming. Our clusters appear to make intuitive
sense, and institutions could use this process to locate themselves relative to others. But
aside from generalizations about relative position, we have not been able to locate a
benchmark or standard for financial health. Just as Cheit’s work involved subjective
judgments about who was “headed for trouble,” or “in trouble,” our analysis left us with
very subjective views about individual cases. Even our poorest cluster contains
institutions that appear to be strategically well-positioned, niched in appropriate ways,
and persistently successful in attracting students who are willing and able to pay (with
financial aid, of course) for their education. We came away with persistent questions
about what signals – if not the ratios we have used – would be necessary and sufficient to
warn an institution of impending catastrophe. Our most fragile cluster contained 60
percent of the institutions in the study; Breneman (1994) and others (Zhao, 2002)
estimated that about 10 percent are in at least “troubling” condition. We have no
established way of knowing which estimate – 60 percent or 10 percent -- is closer to the
real number of institutions poised to fail. So further investigation of variables that may
help to assess financial condition more precisely is in order. Variables that would be especially helpful in our two least wealthy clusters should be identified and studied. Among the variables we either did not or could not include at this stage are measures of short-term borrowing and of sources of funds (like direct and indirect subventions from religious denominations) beyond those identified by IPEDS surveys. Other variables like current gift income, tuition discounting, and economies of scale could be helpful, too.

We are also acutely aware that financial condition is not static. Both macro- and micro-economic trends produce dynamics in the financial condition of all organizations. This study is based on a snapshot. Trend analyses should also be conducted. Trend analyses should become more feasible as more IPEDS data become available. The pace at which IPEDS data are released is excruciatingly slow. We were faced (in 2002) with having to use 1996 data. Large and important changes in macro-economic trends (through both better and worse times) have intervened over the intervening six years, rendering our findings very conditional and perhaps not applicable to specific institutions at this writing. (And that is one important reason why we have elected not to report individual institutional positions in the clusters.) However, we do note that our “wealthiest” clusters institutions as measured by 1996 data were still identifiable among the top private liberal arts colleges in the 2003 U. S. News rankings – which depend in part on measures of financial strength. So it would appear that there is little change in the relative position of the clusters we established (although individual institutions may well show more movement up or down the scale of financial strength).

Finally, we strongly recommend that these data be further interpreted by means of case studies, such as those conducted by Breneman (1994). Raw statistical data leave
much to the imagination. In one example from our clusters, long-term debt and its use by differently situated institutions can be interpreted as both a strength and a weakness. A “wealthy” institution may add value to its already considerable assets by borrowing against them and building new and better capacity. A “poor” institution, on the other hand, may borrow simply to remain alive, putting itself at further and deeper peril by accumulating debt. What a given level of debt means to an institution can only be understood by putting it in the context of the choices that are made and the impact of those choices on both financial condition and effectiveness of the use to which debt is put.

Our assessment suggests that private liberal arts colleges – on the whole – are reasonably managed in a financial sense. Some have more wealth, some have virtually none. Breneman (1994) observed the same wide disparity, noting that “liberal arts colleges do not face a common future” (p. 85). We agree. But only a small minority seems to run operating deficits or take on long-term debt at a level that appears out of line with other financial characteristics. Being well-managed, however, does not mean that a poor institution will sustain the resources it needs to survive. In the group we examined, even some of the poorest seem to be sustainable mainly on the commitments and sacrifices of their students and employees. Whether their resources will be enough to sustain those commitments and sacrifices in recessionary times is a tale that has yet to be told.

E. References.


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