

CALCULATION OF COMPOSITE FINANCIAL INDEX (CFI) WHEN THERE IS NO PROPERTY-RELATED DEBT

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Purpose

The purpose of this discussion paper is to provide background information, illustrations and solutions for the calculation of the Composite Financial Index (CFI) when there is no property-related indebtedness of the not-for-profit entity/organization. This issue may be particularly relevant to private, independent K-12 schools.

Background Information – General

The CFI was first published in 1999 in the 4th edition of *Ratio Analysis in Higher Education*, the forerunner to the *Strategic Financial Analysis in Higher Education* publications. The CFI was developed as an overall measure of financial health of a not-for-profit organization and was primarily focused on private colleges and universities. The CFI combines four ratios that were applied widely by users and preparers of financial statements for colleges and universities to communicate key financial information. These four ratios—Primary Reserve, Viability, Return on Net Assets, and Net Operating Revenues—had been calculated and used since the 1970's. They were developed by Peat, Marwick Mitchell & Co. (PMM et al., the predecessor to KPMG) and what is now Prager & Co., LLC.

There have been several editions of *Strategic Financial Analysis in Higher Education* (now in its the 7th edition published in 2010 and the *Summer 2016 Update* to the 7th edition). The co-authors are now KPMG LLP; Prager & Company, LLC with Fred Prager being involved since the 2nd edition of the publication; Ron Salluzzo (former National Industry Director of KPMG's Higher Education) from Attain LLC who has been involved with the series since the 4th Edition; and Philip Tahey, a former partner of KPMG who has been involved since the 4th Edition of the publication series. Messrs. Salluzzo and Tahey have been intimately involved with the CFI since its inception, including establishing the empirical parameters for the calculations (strength, weighting and baseline scores) and maintaining databases to support continued evaluations of the CFI and corresponding ratios. It should be noted that for each edition of *Strategic Financial Analysis in Higher Education*, the conceptual framework and underlying empirical assumptions are validated by Messrs. Salluzzo and Tahey.

Since its introduction, the CFI has gained wide acceptance by private colleges and universities to measure and communicate financial health of an institution. In addition, many other types of not-for-profit organizations, such as museums, health and social services organizations, and others are using the CFI. Recently, private, independent K-12 not-for-profit schools' member organizations have expressed an interest in using this metric to help their Boards, Heads of School and Financial Officers understand and communicate their overall financial health and to inform strategic financial conversation and planning.

Background Information – Calculating the CFI

As noted above, the CFI is comprised of combining four core ratios in a scoring and weighting methodology and algorithm to derive an overall score of financial health. The four-step methodology for calculating the CFI is as follows:

- Values of four core ratios are computed
- These figures are converted to strength factors along a common scale, using mathematical algorithms for the conversion
- Strength factors are then multiplied by specific weighting factors
- The resulting four numbers are totaled to derive the single CFI score

These ratios compare the institution's operating commitments (Primary Reserve Ratio) and its outstanding long-term obligations (Viability Ratio) against its expendable wealth, calculated as Expendable Net Assets. They measure the ability of the institution on a short-term basis to live within its means (Net Operating Revenues Ratio) and the ability of the institution to generate overall return against all net resources (Return on Net Assets Ratio). The four core ratios were selected because they represent measurement of key components of financial health and institutional risk that must be consistently addressed.

The second step in calculating the CFI requires that the four ratios articulate on a common scale. The "Scale for Converting the Core Ratios to Strength Factors" is shown below. By selecting points on the scale and determining a corresponding comparable strength for each ratio, the scoring system achieves a commonality along the range of the scale.

Scoring Scale	1	3	10
Primary Reserve Ratio	.133x	.4x	1.33x
Net Operating Revenues Ratio	1.3%	4%	20%
Return on Net Assets Ratio	2.0%	6%	20%
Viability Ratio	.417x	1.25x	4.17x

The authors set the scoring so that the threshold value of financial health is 3 for each ratio. We believe that the floor for negative values should be -4, which represents 7 levels from the threshold value of 3, and the ceiling should be 10, which is 7 levels above 3. This range, 7 levels above and below the threshold value, reflects our understanding and experience that scores falling outside of this range do not accurately reflect the institution's overall financial health or weakness. Extending strength factors beyond the score of 10 or -4 will create a higher (or lower) CFI and may unduly mask a weakness (strength) in another ratio.

To calculate the strength factor at a point other than those presented in the Table above, the ratio value is divided by the relevant value for 1 reported in the table. As an example, a Viability Ratio of 1.5x converts to a strength factor of 3.6 as follows:

$$1.5x / .417x = 3.597, \text{ or } 3.6$$

Establishing the Threshold Values – We established the threshold values based on our assessments and industry experiences over several decades of measuring financial health of institutions. The Primary Reserve Ratio threshold of moderate financial health is set at .4X, which represents five months of operating expenses. The Viability Ratio threshold is set at 1.25:1, which indicates sufficient expendable net assets to repay outstanding property related debt, although not by excessive amounts. Using 6% as the threshold value for the Return on Net Assets Ratio is intended to establish a rate of return in excess of the growth in total expenses, and is reasonable for the overall investment activity of the institution. The Net Operating Revenues Ratio is set at 4% for private institutions not using an operating performance indicator (e.g., surplus or deficit from operations), as noted in the 6th edition; this level of generated surplus is sufficient to keep pace with, and will likely exceed the growth of, moderate expense levels. Although it is preferable to report an operating indicator, we have noted that many private, independent K-12 schools do not report one in their financial statements, and there is limited commonality among the ones that do report one. Accordingly, all private, independent K-12 schools will need to use the weighting and threshold values in the 6th Edition of *Strategic Financial Analysis in Higher Education* rather than the 7th Edition, which eliminated the information for private colleges not having an operating indicator since almost all private colleges now report one, and the approach is widely accepted and used.

Weighting the Ratios – A key feature of the CFI is that a single score allows weaknesses in individual ratios to be quantitatively offset by strengths in other ratios. The result is the ability to look at overall financial health, not just individual components of financial health. For this process to be most useful, it is important to use the weighting factor consistently for each of the ratios over a number of years.

In certain cases, the Viability Ratio will not apply because some institutions carry no long-term debt. If that is the case, we adjusted the weighting for the Viability Ratio to zero and the remaining three ratios are allocated 100 percent of the weight, proportionate to one another. We understand that many private, independent K-12 schools have no debt which is discussed below.

The weighting pattern is as follows:

Ratio	Institutions with Long-Term Debt	Institutions with No Long-Term Debt
Primary Reserve	35%	55%
Net Operating Revenues	10%	15%
Return on Net Assets	20%	30%
Viability	35%	-

In a “normalized” institution, the suggested weighting would be more heavily skewed toward measurement of retained wealth and less toward current operations. The principal reason for this is the belief that retained wealth and strategic use of debt are stronger indicators of long-term institutional financial health than measures depending on a single year’s performance. We believe that an institution will, at various points in its evolution, find the need to significantly reinvest in itself, and that may mean generating short-term, controlled deficits. These investments may well impact annual operating performance negatively, but may be the most important strategic investments the institution makes. That is not to say that the operating results are unimportant, as evidenced by the use of operating ratios in developing the CFI, just less important than balance sheet values.

Totaling the Calculations – The last two steps in calculating the CFI are to apply the weighting factors against each ratio and then total the four results, as indicated in the example below:

Ratio	Ratio Value/Score of 1	Strength Factor	Weighting Factor	Score
Primary Reserve	.74X/.133	= 5.56	X 35%	= 1.95
Net Operating Revenues	4.23%/1.33%	= 3.18	X 10%	= .32
Return on Net Assets	4.78%/2.0%	= 2.39	X 20%	= .48
Viability	1.28X/.417	= 3.07	X 35%	= 1.07
Composite Financial Index				3.8*

**Number has been rounded to reflect appropriate level of precision as indicated by research*

Specific Issue Information

As noted above, a large number, although a minority, of private, independent K-12 schools have no property or other debt. For some of these schools, little or no debt is a result of a deliberate decision not to use leverage in their business models; for others, it is because they are not financially healthy enough to borrow; and for others, it is an intentional policy decision of their Board of Trustees for numerous reasons. No matter the cause, it is estimated that approximately 5-10% of the private, independent schools in various member organizations do not have debt.

The combination of this large number of institutions with no debt in a new educational industry segment that desires to use the CFI, and specific requests by two private, independent K-12 school member organizations seeking guidance for their members, has prompted two of the authors, Messrs. Salluzzo and Tahey, to revisit the approach initially promulgated in the 4th Edition of *Strategic Financial Analysis in Higher Education* and carried forward since.

When the CFI was developed primarily for private colleges and universities in the mid-1990's, the authors considered the likelihood of no debt in determining the weighting and scoring scales. Since only a few institutions (far less than 1% of the approximately 1,600 four-year private colleges) had no debt, the authors believed that a simple and straightforward approach was warranted. This resulted in re-weighting the remaining ratios in proportion to each other and providing language and guidance that institutions having no debt should consult the authors for further analysis and discussion. Since this approach was adopted, the authors have not been aware of any significant increase in private colleges having no debt, and we have not received any inquiries in the last 20 years.

This matter is important because the approach of assigning a zero to the Viability Ratio and re-weighting the other three ratios may cause unintended consequences on certain institutions— a school with some debt may score a 3.50 for the Viability Ratio Strength Score, while a school, with all other items being equal but no debt, would score a 0.0 for its Viability Ratio. In addition, a school's CFI score would increase as it pays down debt (if it is increasing or maintaining its expendable net assets) but then would incur a decrease in its CFI once the debt is fully repaid as the Viability Ratio component of the CFI drops from 3.50 to 0.0.

For purposes of this publication, the authors have determined that there are **two approaches** to calculating the CFI for schools with no debt. The first approach, the Re-weighting Approach, is to maintain the re-weightings of the remaining three ratios and assign a score of 0 to the Viability Ratio. The other approach, the Maximum Viability Ratio Approach, is to keep the original ratio weightings and assign a score of 3.50 to the Viability Ratio Strength Score. This is illustrated in the following tables.

The first table below shows the impact of the two approaches for actual private, independent K-12 schools without any debt.

Table 1

	School A		School B		School C		School D	
Ratio	Re-weighting	Max Viability Ratio	Re-weighting	Max Viability Ratio	Re-weighting	Max Viability Ratio	Re-weighting	Max Viability Ratio
Primary Res.	.27	.17	.84	.54	2.47	1.57	3.06	1.95
Viability	-	3.50	-	3.50	-	3.50	-	3.50
Ret. On Net Assets	(.66)	(.44)	.33	.19	.42	.28	(.09)	(.05)
Net Op. Rev.	(.60)	(.40)	.21	.14	.92	.62	.48	.32
CFI	(.99)	2.83	1.38	4.37	3.8	5.97	3.45	5.71

The second table below shows five scenarios for schools that are the same except for the amount of debt they have. Scenario A shows the normal weighting and scores when there is some debt. Scenario B adjusts scenario A so that debt is paid off with all other amounts remaining the same as scenario A; this also reflects the reweighting of the Primary Reserve Ratio from 35% to 55%; when this happens the maximum score for each ratio is the weighting value – 55% weighting results in a maximum strength score for that ratio of 5.50. Scenario C is the same as Scenario B except that the Viability Ratio is assigned a value of 3.50 and the remaining three ratios keep their original weightings. Scenarios D and E reflect the effects of using expendable net assets to pay off the debt amount of \$10 million. Scenario D uses the Re-weighting Approach while Scenario E uses the Maximum Viability Ratio Approach and keeps the original weightings. The two annual performance ratios were assigned a value of zero to highlight the impact of the change in debt on the calculations.

Table 2

	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E
Expendable Net Assets	40,000,000	40,000,000	40,000,000	30,000,000	30,000,000
Operating Expenses	40,000,000	40,000,000	40,000,000	40,000,000	40,000,000
Return On Net Assets	-0-	-0-	-0-	-0-	-0-
Net Operating Revenues	-0-	-0-	-0-	-0-	-0-
Debt	10,000,000	-0-	-0-	-0-	-0-
Primary Reserve	2.63	4.14	2.63	3.10	1.97
Viability	3.36	-0-	3.50	-0-	3.50
Return On Net Assets	-0-	-0-	-0-	-0-	-0-
Net Operating Revenues	-0-	-0-	-0-	-0-	-0-
CFI	5.99	4.14	6.13	3.10	5.47

As Table 1 indicates, the Maximum Viability Ratio Approach of assigning a 3.50 to the Viability Ratio will lead to a higher CFI score than by the prescribed Re-weighting Approach. This increase will generally range from 2.0 to 3.0 on the CFI scores. In some instances where the operating ratios are negative, the increase may be greater than 3.50.

Table 2 clearly reflects the change in the CFI when an institution pays off its debt. In Scenario A, the institution has a score of 5.99 which is very healthy and would permit the institution to focus its resources on competing in the future. But if it went to no debt with no other changes to its amounts (e.g., it received a gift to repay the debt), then its CFI score would drop from 5.99 to 4.14 under the Re-weighting Approach. But under the Maximum Viability Ratio Approach, it would increase slightly to 6.13. So, having no debt with all other factors being equal, would result in a fairly significant decrease in the CFI under the Re-weighting Approach. This is also clearly shown when comparing Scenarios D and E to Scenario A where some expendable net assets are used to fully repay the debt. The institution's CFI decreases significantly from 5.99 to 3.10 under the Re-weighting Approach while only slightly under the Maximum Viability Ratio Approach since the Viability Ratio increased while the Primary Reserve Ratio decreased to account for less expendable net assets.

Conclusion

Authors Salluzzo and Tahey evaluated these results and other factors in determining a conclusion to this matter.

Investing expendable net assets in plant (either directly or through paying down debt related to plant) should and does result in a decrease in the CFI as the institution has determined it is better to invest in plant than maintain its expendable net assets levels. And when these net assets are invested in plant, it is difficult for institutions to recapture either expendability of net assets or liquidity of assets, and investing in plant precludes subsequent investment of those assets and net assets in programmatic areas.

As institutions reduce their debt balances, their debt capacity should increase. Debt capacity is generally measured based on the institution's leverage and debt service coverage, and is not solely calculated directly by the Viability Ratio. However, whether additional debt may be borrowed is more dependent on whether the debt is affordable, as measured by debt service coverage ratios.

Messrs. Salluzzo and Tahey believe that is critical to understand the reasons for an institution's' CFI score before assessing which approach – Re-weighting or Maximum Viability Ratio – is more appropriate. Institutions with low CFI scores due to small amounts of expendable net assets compared to their operating expenses and weak operating performance, even though they have little debt, should not show a large increase in their CFI due to a 3.50 Viability Ratio strength score when their small debt balances are fully repaid. Likewise, financially healthy institutions should not show a large decrease in the CFI scores when they fully repay their small outstanding debt balances.

Messrs. Salluzzo and Tahey believe that neither the Re-weighting Approach nor the Maximum Viability Ratio Approach is singularly correct to the exclusion of the other approach. Rather, these two approaches report a range of appropriate values for an institution, with the floor using the Re-weighting Approach and the ceiling using the Maximum Viability Ratio Approach. It is critically important to prepare trend analyses of the CFI and underlying four ratios and correlate those changes to economic events that transpired during those specific years. Institutions with lower Primary Reserve Ratios (under .4 – the threshold value) should use the Re-weighting Approach and consider their CFI to be a floor level since they do not meet the threshold level of expendable net assets compared to operating expenses, and would likely not be able to obtain additional debt if they chose to, or lenders would demand a high interest rate and/or restrictive covenants. Schools with a Primary Reserve Ratio of .40 and above should use the Maximum Viability Ratio Approach more and consider their CFI score under this approach to be a ceiling.

This results in a floor-ceiling approach to CFI scores when the institution has no property-related debt. When reporting the CFI to constituents, the approach selected should be prominently disclosed as well as the CFI score using the approach not chosen, so that users and constituents are fully informed.

It should also be noted that this floor-ceiling approach to calculating the CFI scores for schools with no property-related debt also continues to render peer comparisons unhelpful and even misleading. The authors firmly believe that institutional long-term trend analysis should be prominent, rather than weak or misleading comparative analyses with peers.