DePaul University

ECONOMIC SUSTAINABILITY AND INSTITUTIONAL CHARACTERISTICS

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OVERVIEW

- Three Pillars of Sustainability
- Economic/ Financial Sustainability, and the CFI
- Methodology and Results
- Implications

Introduction

Public Reaction to Calls for Sustainability

- Triple Bottom Line
- Tufts University 1990 → Talloires Agreement

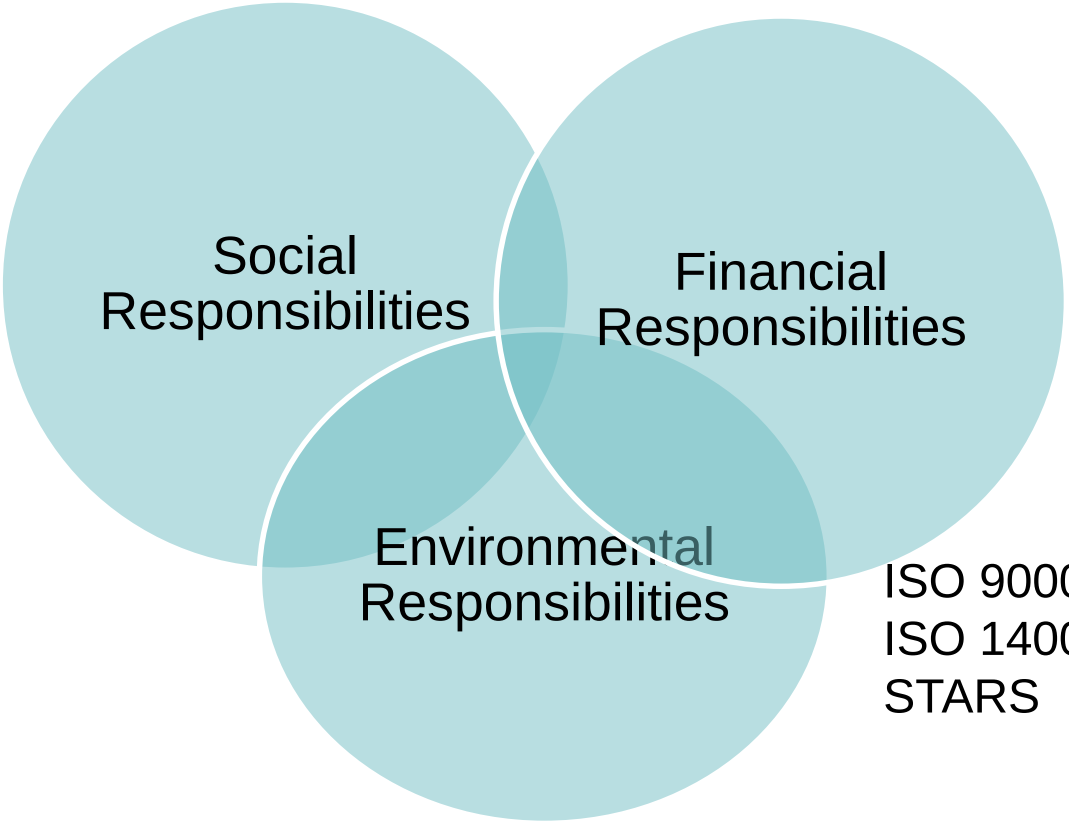
US Higher Education Response

- Leed-certified Buildings
- Refillable Water Bottles
- Motion Lighting Detectors
- Prairie Reclamation

The Three Pillars of Sustainability

SA8000
ISO 26000
STARS
Carnegie

Gov. Fin. Com-
posite Score
CFI



ISO 9000
ISO 14000
STARS

Financial Sustainability

Those indicators of economic sustainability that are most likely to signal the health, and thus the sustainability, of an institution over time.

- Indicators identified by KPMG working with the federal government
- Goal – To create a single metric for managing financial aid
- Result – Development of several metrics (e.g., Federal Financial Composite Score, the Consolidated Financial Index)

Background

Financial Responsibility Composite

- Department of Education
- Three Ratios
- Private Only

Consolidated Financial Index

- KPMG
- Four Ratios
- Private and Public

Financial Responsibility Composite

Section 498(c) Higher Education Act of 1965

- For-profit and non-profit institutions annually submit audited financial statements
- Three ratios gauge the fundamental elements of the financial health of an institution
  - a primary reserve ratio,
  - an equity ratio, and
  - a net income ratio.

http://studentaid.ed.gov/about/data-center/school/composite-scores

Consolidated Financial Index

Strategic Financial Analysis for Higher Education

- Private and public institutions perform the same basic functions.
- Financial ratios can measure and communicate the same objective.
- One score based on four ratios
  - Financial Viability
  - Primary Reserve Ratio
  - Net Income Ratio
  - Return on Net Assets Ratio

http://www.prager.com/Public/raihe6.pdf

- Research Purpose

To further examine the utility of the Consolidated Financial Index

Research Questions

How is financial sustainability, as measured by the CFI, related to various institutional characteristics?

Can the CFI be used to better understand which specific types or categories of institutions are at a greater financial risk than other types of institutions?

Should different norms be used to evaluate different categories of institutions?

The Ratios as Measures of Financial Sustainability

Component	Purpose/Question
Financial Viability Ratio	Does the institution have sufficient expendable net assets to cover its debt, should we need to settle our obligations?
Primary Reserve Ratio	How long can the institution operate using its expendable reserves without relying on additional net assets generated by operations?
Return on Net Assets Ratio	Are we increasing our net assets and thereby able to set aside financial resources to strengthen our future financial flexibility?
Net Income Ratio	Did the Institution live within its means (or not) during the year?

Adapted from the Association of Governing Boards

The Ratios

- The **Viability Ratio** whether the institution may be a credit risk.
- The preferable range is between 1.25 or higher.

- The **Primary Reserve Ratio** should increase at a commensurate with expenses and is a margin of protection against adversity if this were not the case.
- The preferable range is .4 indicating 5 months of reserves (.40 x 12 months).

The Ratios (cont.)

- The **Return on Net Assets** ratio signals the volatility of underlying asset returns such as endowment funds and depends on the mix of endowment-to-plant assets
- The preferable range is 3-4 percent (discounted for inflation)

- The **Net Income Ratio** over several time periods signals whether an institution needs to restructure income and expense streams.
- The preferable range is 2-4 percent.
   - » (Townsley, 2002).

Strength Factors and Weights

Ratio	Strength (Divide by)	Weight (Multiply by)
Financial Viability Ratio	.417	.35
Primary Reserve Ratio	.133	.35
Return on Net Assets Ratio	.02	.20
Net Income Ratio	.013	.10

Interpreting the CFI Score

Below 2 suggests significant cause for concern;

3-4 suggests directing resources for transformation.

5-6 suggests focusing resources to compete in the future.

7-8 suggests a need to allow experimentation with new initiatives.

9-10 suggests the deployment of resources to achieve a robust mission.

Summarized from CIC Financial Indicators Tool

The Sample: Initial Data Set

All institutions based on three criteria (IPEDS)

- granted more than 25 degrees in 2011-12 at a level above the Associate degree,
- Title IV eligible, and
- open to the public.

2,129 institutions with

- 393 Private For-Profit
- 1,122 Private Not-For-Profit, and
- 614 Public institutions

Calculation (AGB Ratios/IPEDS Data)

Primary Reserve Ratio

- Numerator Total Unrestricted Net Assets
- Denominator Total Expenses

Net Income Ratio

- Numerator Change in Net Assets
- Denominator Total Revenues & Investment Return less Total Investment Return

Financial Viability Ratio

- Numerator Total Net Assets
- Denominator Total Liabilities

Return on Net Assets Ratio

- Numerator Change in Net Assets
- Denominator Net Assets at Beginning of Year (Total Net Assets)

Availability of Data

Private For-Profit institutions:

- 62 appear to provide no financial data at all.
- 52 institutions that are missing required data
- The combined percent missing data is 29%.

Public institutions: 46 (7%) missing data;

Private Not-For-Profit institutions: 57 (5%) are missing data.

Pre -Processing

Definitions – Each of the major types of institutions has its own financial reporting systems.

Data have gotten closer since changes in 2001-02 to FASB for public institutions.

Some modifications

- For-Profit where Net Income is used for Increase in Net Assets
- Public institutions, Restricted Expendable Net Assets is added to Unrestricted Net Assets

Capping & Removing Private For-Profits

Ratios are capped at 10 and -4.

The Private For-Profit had 279 institutions with complete enough data to compute the CFI for three years which required 12 indices.

Of the 3,348 indices (12*279), 41.4% were capped at 10 and 7.2% were capped at -4.

At this point the Private For-Profit institutions are removed from further analysis because of data concerns.

Capping Extreme Values

Table 1. Use of Caps on Financial Indices								
	Primary Reserve		Net Income Ratio		Financial Viability		Return on Net Assets	
Year	-4	10	-4	10	-4	10	-4	10
2010-11	7	385	48	823	0	347	32	254
2009-10	4	348	56	617	0	315	48	167
2008-09	4	318	669	264	0	297	648	74

Identifying & Removing Special Purpose Institutions

Carnegie Basic Category – Non-traditional/special purpose colleges and universities

- 182 institutions with full data
- 33 with missing data

Primary Categories

- Medicine (52),
- Ministerial/Theology (59),
- Performing Arts (48).

Special purposes institutions were removed.

DEPAUL UNIVERSITY

Figure 1: Distribution of CFI Scores for 1,451 Colleges and Universities

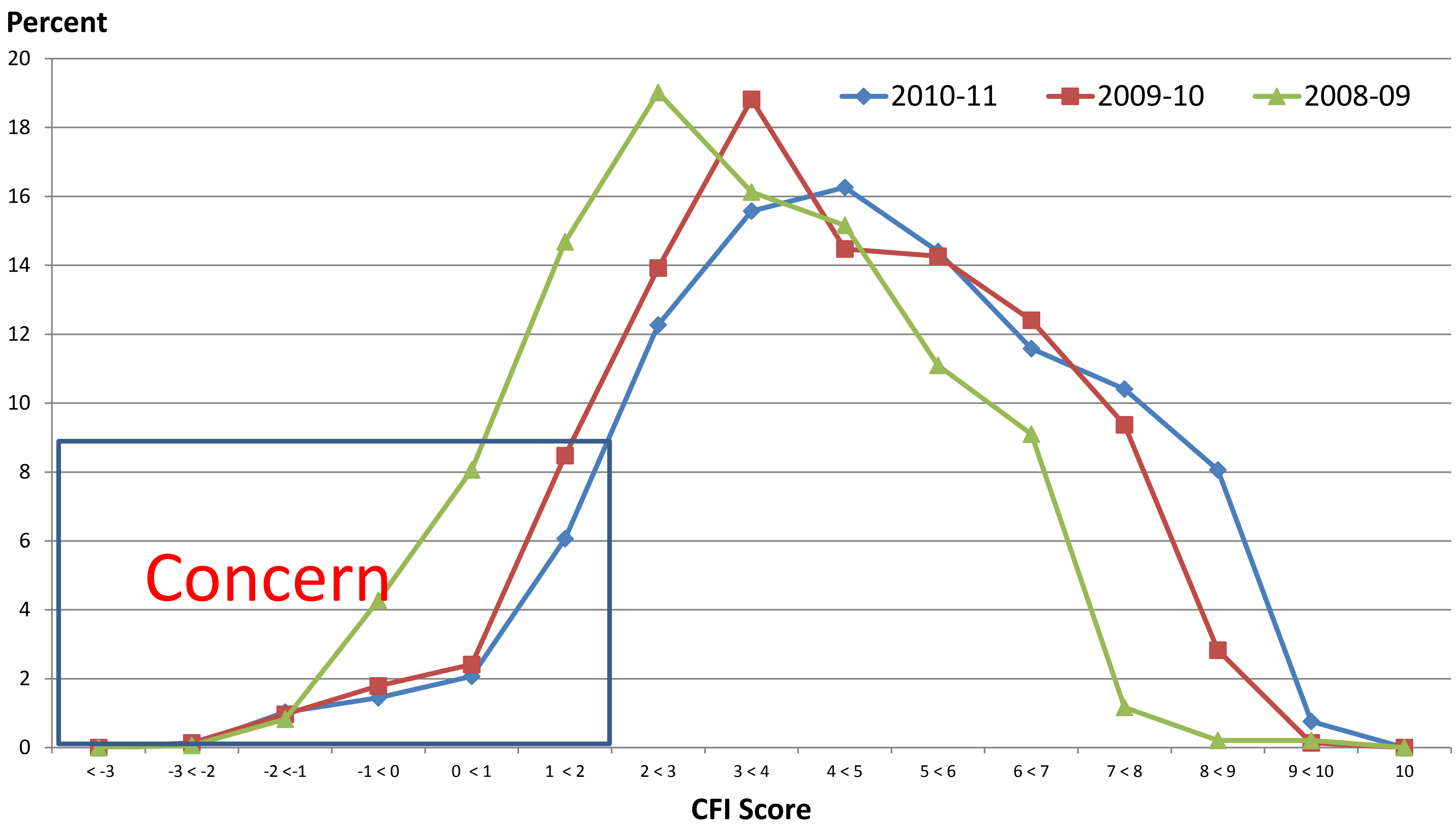


Figure 2: Distribution of Financial Viability Ratio

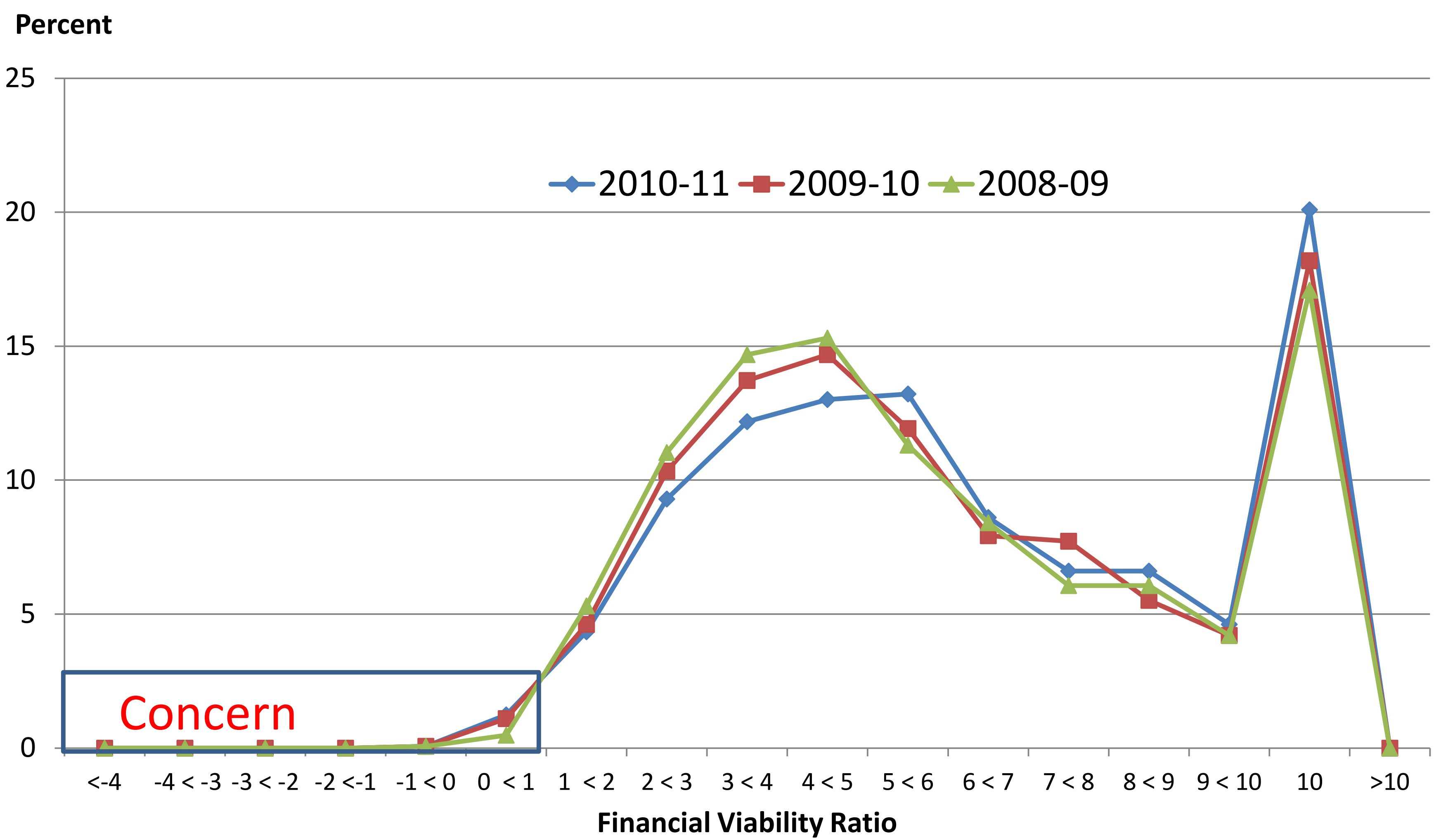


Figure 3: Distribution of Return on Net Assets Ratio

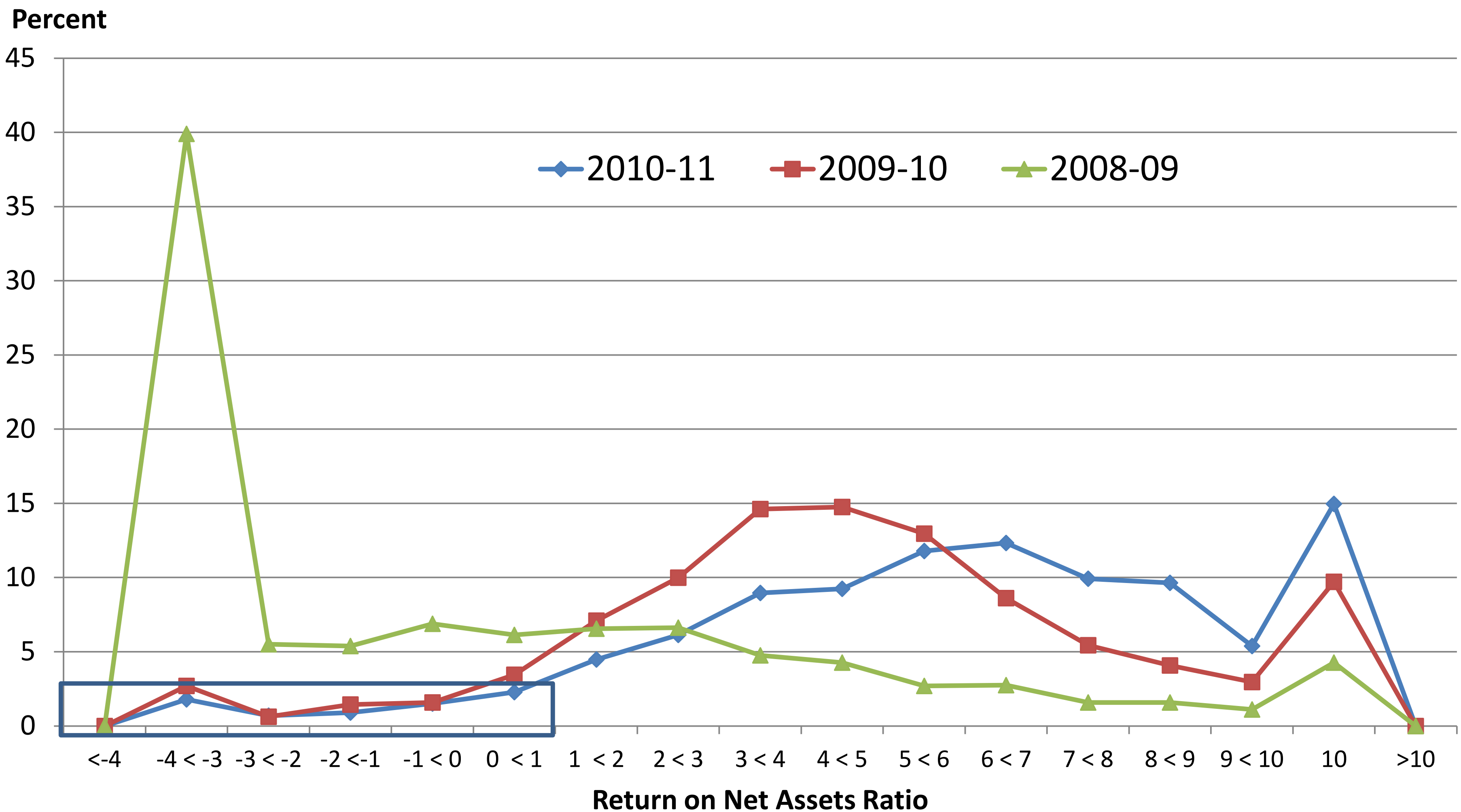


Table 2: Descriptive Statistics

	Min	Max	Mean	Std. Dev.
CFI 2010-11	-2.09	9.20	4.73	2.28
CFI 2009-10	-2.31	9.20	4.32	2.16
CFI 2008-09	-2.20	9.17	3.26	2.00
Valid N	1451			

Is the CFI Reliable and Valid?

- Internal Consistency
- Stability
- Content Validity
- Construct Validity

Internal Consistency

Cronbach's alpha: measure of internal consistency.

- The alphas were:
  - 2010-11 __ .751
  - 2009-10 __ .704
  - 2008-09 __ .486

Implications:

- the CFI in 2008-09 did not have the internal consistency desired
- otherwise it was good.

Return on Net Assets was the problem

Re: Content Validity

Four ratios initially developed for the DoE -- changed the formula under duress.

NACUBO and others concerned about lack of transparency in the federal methodology.

The bond rating agencies use KPMG/CFI an the core of their ratings.

In its 6th edition, The Financial Ratio contains chapters on what each component ratio means and how to use the CFI.

Table 3: Correlations (Stability & Construct Validity)

	CFI 2010-11	CFI 2009-10	CFI 2008-09
CFI2010-11	**1.000**	**.904**	**.771**
CFI2009-10	**.904**	**1.000**	**.852**
CFI2008-09	**.771**	**.852**	**1.000**
Primary Reserve 2010-11	.870	.829	.701
Primary Reserve 2009-10	.830	.835	.731
Primary Reserve 2008-09	.805	.804	.747
Net Income 2010-11	.712	.531	.340
Net Income 2009-10	.578	.695	.411
Net Income 2008-09	.158	.220	.456
Financial Viability 2010-11	.779	.792	.785
Financial Viability 2009-10	.723	.793	.807
Financial Viability 2008-09	.683	.738	.816
Return on Net Assets 2010-11	.486	.224	.029
Return on Net Assets 2009-10	.191	.375	.075
Return on Net Assets 2008-09	-.229	-.105	.228

Preferable Range for Ratios

Net income ratio	• *within* or above 2-4 percent (3+)
Viability ratio	• 1.25 or higher (3+)
Primary reserve ratio	• variable (with .4 indicating five months of reserves -- .40 times x12 months (3+)
Return on net assets	• 3%-4% above inflation (3+)

(number is criteria standardized by Strength)

Table 4 : Means for Measures for Public and Private Not-for Profit Institutions

2010-11 Ratio	Control	N	Mean	Std. Deviation	t
Primary Reserve	Public Private	545 906	2.33 6.59	1.97 3.24	-27.766
Net Income	Public Private	545 906	4.81 8.15	4.06 3.35	-16.947
Financial Viability	Public Private	545 906	4.81 5.59	3.16 2.98	-4.725
Return on Net Assets	Public Private	545 906	3.78 5.77	3.48 3.05	-11.401
CFI	**Public** **Private**	**545** **906**	**3.35** **5.56**	**1.82** **2.13**	**-20.163**

Figure 4: Institutional Distribution for 2010-11 CFI

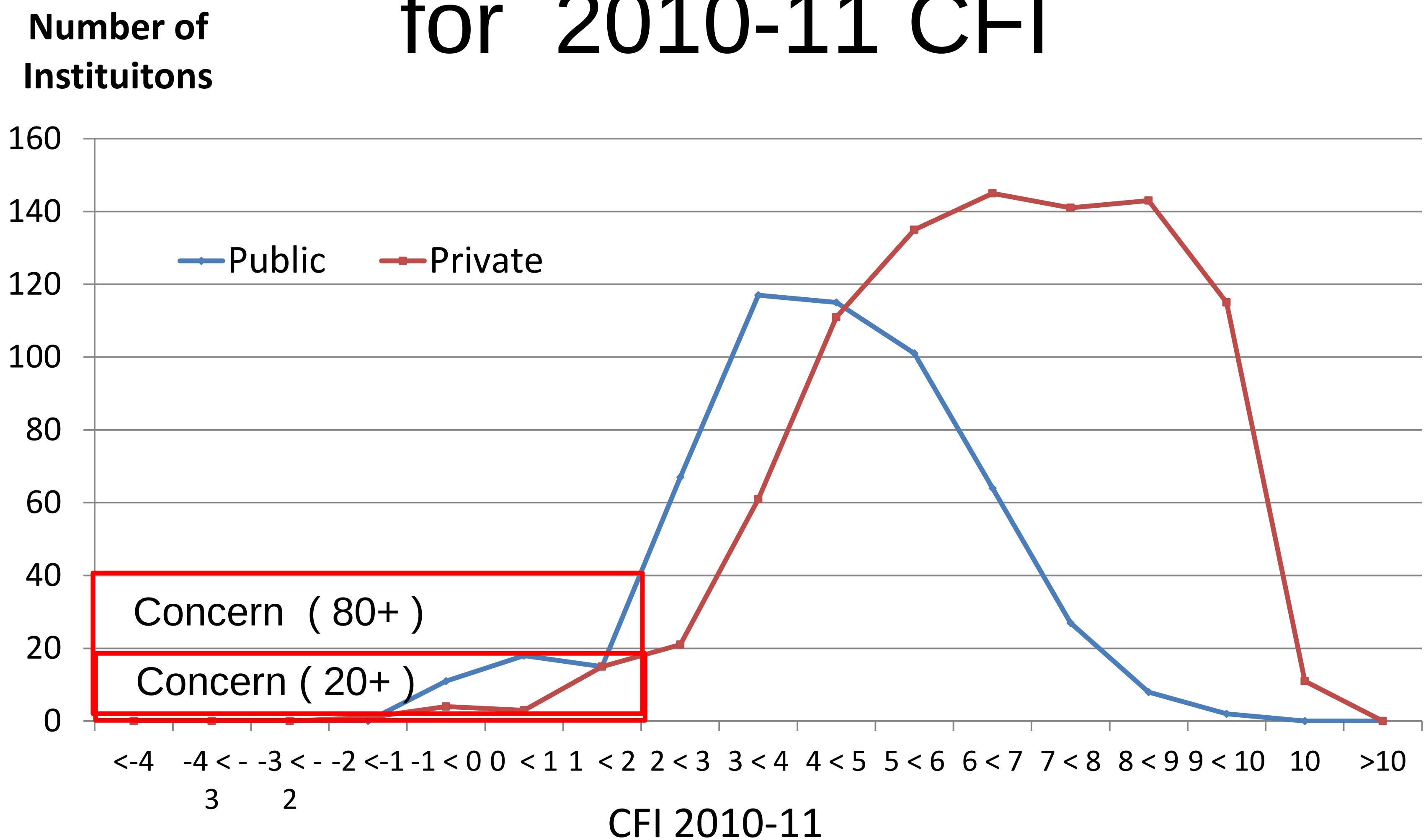


Table 5: Average CFI for Type of Institution

Degree	N	Mean	Std. Deviation
Associate and Bachelors	31	5.050	1.799
Bachelors	555	5.258	2.477
Masters	599	4.331	2.135
Doctorate	266	4.476	1.996
Total	1,451	4.727	2.282

$F = 17.94$, d.f. = 3, 1447, $p<.0001$

Table 6: Correlations with the 2010-11 CFI

Measure	**Private**	**Public**	**Combined**
Institution Control *			.468
Carnegie (4= Doc, 3= Mast, 2= Bach, 1= Assoc)	-.044	.026	-.150
Student Characteristics			
Graduation Rate	.341	.070	.362
Student/ Faculty Ratio	-.070	.002	-.320
First-Time Full-Time Cohort as % Beginning Students	.257	-.013	.274
Retention Rate	.324	.013	.232
FTE Students	.071	.162	-.142
% Graduate Degrees as PhD(Professional/Other)	.005	.093	.121

Table 6: Continued

Measure	Private	Public	Combined
Academic Characteristics			
Instructional Salary and Benefits per FTE Student	<u>.226</u>	-.018	<u>.210</u>
PC Cohort Federal Aid	-.266	-.132	<u>-.219</u>
PC Cohort State Aid	-.139	<u>-.206</u>	<u>-.187</u>
FTE Faculty as % Staff	-.064	-.142	-.128
Average Faculty Salary (ranked)	<u>.260</u>	-.054	.085
FT Faculty as % FTE	.156	.013	.063

Table 6: Continued

Measure	Private	Public	Combined
Financial Characteristics			
Primary Reserve **	.872	.741	.870
Financial Viability **	.832	.817	.779
Net Income **	.609	.730	.712
Leverage Ratio (Unrestricted Net Assets/Liabilities)	.597	.527	.630
Return on Net Assets **	.370	.504	.486
Tuition Discount	.120	.086	.394
Ave Aid per student	.131	.026	.392
Endowment per student	.292	.226	.310
Institutional Exp per student	.090	-.110	.255

** Part of the CFI

Conclusions

- There are some data concerns.
  - The metric needs more work to be applicable for Private For-Profit institutions (IPEDS data).
  - There are definitional concerns with Public institutions.
- The Return on Net Assets and Net Income Ratio do not appear stable enough for annual ratios.
- The CFI seems to have sufficient reliability and validity.
- Separate norms may need to be developed at least by type of control.