Can We Improve Our Reputation? The Variables that Relate to Change Over Time in the US News Peer Ratings

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Background

- Most studies of reputation have examined which variables relate to prestige for a given year.

- Few studies have explored change over time, and those that do look at changes in the overall rank, as opposed to specifically examining change in reputation.

Research Question

What variables, if any, relate to changes in US News' peer assessment ratings for those institutions which have experienced significant changes in the ratings over the nine-year period from 1999-2007?

Theoretical Frameworks

Two theoretical frameworks were employed in this study, to guide the study design and the selection of variables to include in the analysis.

Resource Dependency (Pfeffer & Salancik, 2003) – An institution's need for physical and financial resources make it interact with its environment to acquire both human and financial resources.

Prestige Maximization (Melguizo & Strober, 2007; Rothschild & White, 1995; Winston, 1999, 2000) – institutions make irrational choices from a traditional economic perspective. Also, education operates on a **customer-input technology.**

Population

- There are four broad categories in the US News hierarchy, roughly based on Carnegie classifications.
- Institutions that remained in the same US News category between 1999 & 2007 were the starting point for inclusion in the study.
- Almost 1100 institutions (1095) remained in the same US News category over those nine years.
- This ensures that these schools had the same group of peer institutions to rate them (if not the same person, at least the same position at those schools).

US News peer assessment

- The measure of reputation employed in the study (DV) is the US News peer assessment rating, which is a reputation score that US News reports from the surveys they administer each spring.
- US News surveys the president, provost, and admissions director of each four-year institution in the country, asking them to rate the academic reputation of their peer institutions on a scale from 1 to 5

  1 = Marginal

  2 = Adequate

  3 = Good

  4 = Strong

Schools that were analyzed

- Across the 1095 schools remaining in the same US News category all nine years, the mean difference between an institution's high and low peer rating over the nine years was 0.24
- Only those schools that had an above-average difference between their high and low score were included in the analysis (difference of 0.3 or more between their high and low peer rating).
- 418 schools had a difference of at least 0.3 (412 analyzed, due to 6 schools having significant lack of data)

Independent Variables

Total of 22 predictor variables collected, in 1 of 5 categories:

SIZE VARIABLES

Student Pop, Faculty Pop, Combined Size Variable

FINANCE VARIABLES

Total Exps, Total Revs, Exp/Stud, Rev/Stud, Tuition

SELECTIVITY VARIABLES

SAT, Top 25% HS, Accept Rate, Combined Selectivity Var

FACULTY VARIABLES

Pubs, Pubs/Fac, Salary, % Fac FT, S-F ratio, % classes <20

STUDENT OUTCOMES VARIABLES

Frosh Retn Rt, Grad Rt, Avg Fr & Grad Rt, Alum Giving Rt

Change in Reputation

One immediate finding just from data collection:

The incredibly disproportionate number of schools that changed in reputation based on which US News (Carnegie) category a school is in.

Of the 412 institutions with above-average change in their peer assessment rating over the nine years:

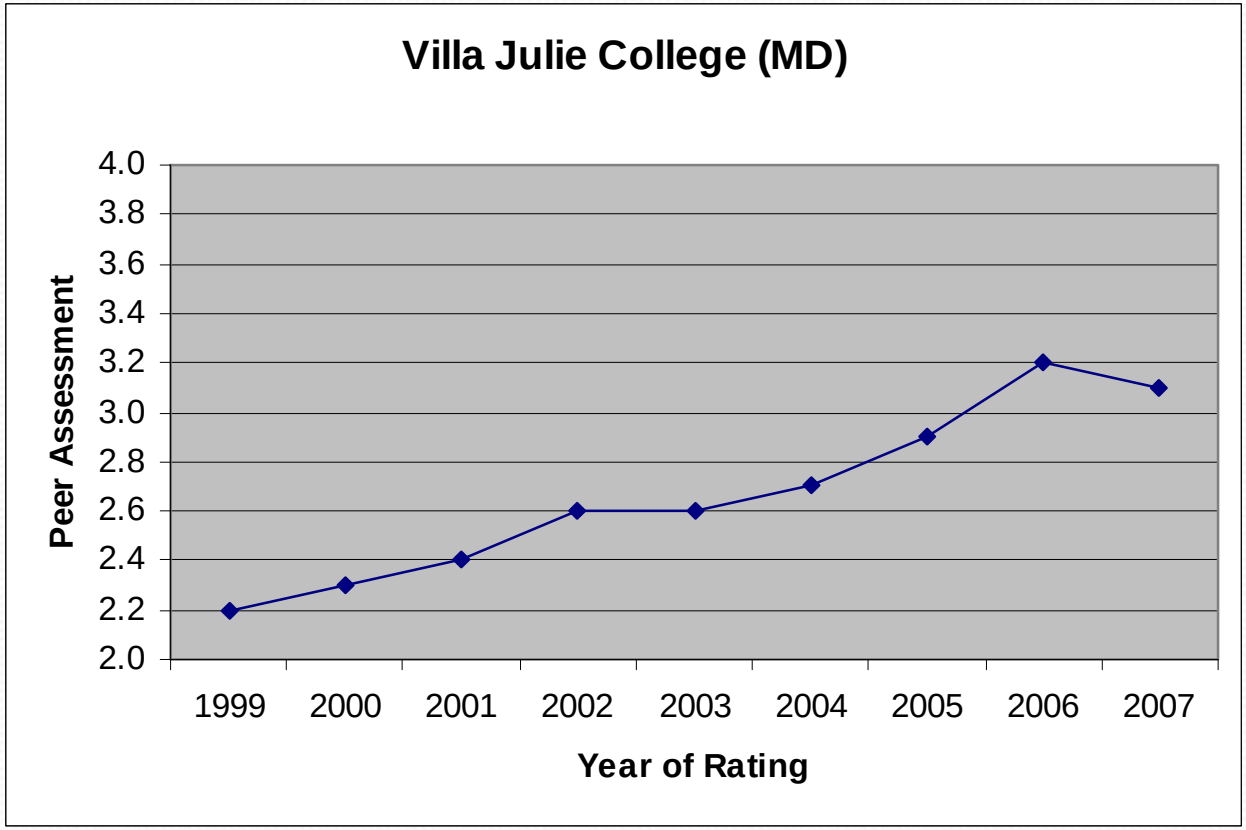
14 "National Universities" (Research Universities)

25 "Liberal Arts Colleges" (Baccalaureate Colleges—Arts & Sciences)

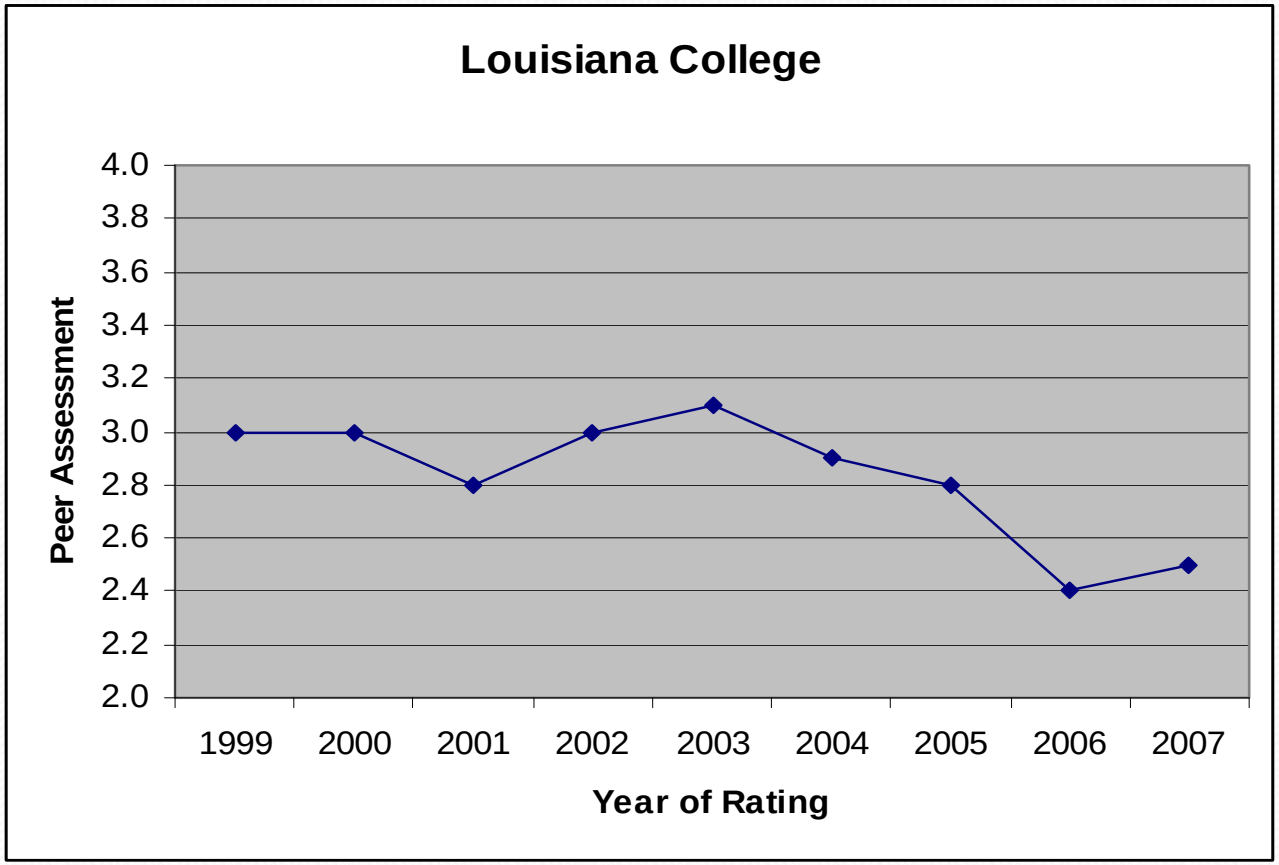
180 "Universities-Masters" (Master's Colleges & Universities)

193 "Comprehensive Colleges—Bachelors" (Baccalaureate Colleges – Diverse Fields)

Growth Curve Plot
Example of increasing trend



Growth Curve Plot
Example of decreasing trend



Study Design

- The data were analyzed using a growth model.
- Predictor variables were collected one year prior to each year of the DV. Thus, predictors are for 1998 to 2006.
- Predictors were entered into the model as time-varying covariates.
- Thus, the model tests both intercepts and slopes as outcomes with school-level covariates predicting change in the ratings for the following year.

Study Design

- In a multilevel longitudinal study, time is considered to be at level-one, while subjects are at level-two.
- Thus, in this study, the level-one model describes how each institution's scores change over time, while the level-two model describes how the changes differ across institutions.
- Three separate analyses were conducted – one for all 412 schools combined, one for master's univs separately, and one for comprehensive colleges separately.

Data Reduction

- For each of the 9 years, both principal components analyses and ordinary least squares regression analyses were conducted in order to reduce the variable space.
- The PCAs shed light on which variables cluster together in forming theoretical constructs relating to reputation.
- The OLS regressions further inform a reduction of the variable space when testing predictors in the growth models.

Summary of PCAs for All-School Model

VARIABLES WITH HIGHEST FACTOR LOADINGS

Rotated factor scores ranged from .7 to .9, depending on year

Factor 1: Combined Size & Faculty Construct

Faculty population (size variable)

Publications per faculty (faculty variable)

Factor 2: Combined Student Selectivity & Outcomes Construct

Avg SAT and Top 25% HS (selectivity variable)

Avg frosh retention and graduation rate (outcomes variable)

Factor 3: Finances Construct

Expenditures per student

Student-faculty ratio

Percent of classes <20

Results of Linear Growth Model for All Schools

Level-One Analysis (Effect of Time)

Variable: **Top 25% HS class**

	Est.	Sig.		Est.	Sig.
1998 (I)	.024	.000	1998 (S)	.001	.034
1999 (I)	.022	.000	1999 (S)	.001	.009
2000 (I)	.021	.000	2000 (S)	.001	.009
2001 (I)	.020	.000	2001 (S)	.001	.002
2002 (I)	.022	.000	2002 (S)	.001	.002
2003 (I)	.022	.000	2003 (S)	.002	.001
2004 (I)	.022	.000	2004 (S)	.002	.001
2005 (I)	.023	.000	2005 (S)	.002	.001
2006 (I)	.023	.000	2006 (S)	.002	.000

Results of Linear Growth Model for All Schools

Level-One Analysis (Effect of Time)

Variable: **Six-Year Graduation Rate**

	Est.	Sig.		Est.	Sig.
1998 (I)	.016	.000	1998 (S)	.001	.024
1999 (I)	.016	.000	1999 (S)	.001	.025
2000 (I)	.016	.000	2000 (S)	.001	.014
2001 (I)	.016	.000	2001 (S)	.001	.008
2002 (I)	.018	.000	2002 (S)	.001	.009
2003 (I)	.018	.000	2003 (S)	.001	.008
2004 (I)	.019	.000	2004 (S)	.001	.004
2005 (I)	.018	.000	2005 (S)	.001	.002
2006 (I)	.018	.000	2006 (S)	.001	.002

Results of Linear Growth Model for All Schools

Level-One Analysis (Effect of Time)

Variable: **Publications per Faculty**

	Est.	Sig.		Est.	Sig.
1998 (I)	.007	.092	1998 (S)	.001	.074
1999 (I)	.008	.064	1999 (S)	.001	.071
2000 (I)	.008	.072	2000 (S)	.001	.070
2001 (I)	.007	.095	2001 (S)	.001	.070
2002 (I)	.008	.054	2002 (S)	.001	.077
2003 (I)	.009	.019	2003 (S)	.001	.064
2004 (I)	.009	.018	2004 (S)	.001	.067
2005 (I)	.008	.030	2005 (S)	.001	.059
2006 (I)	.010	.000	2006 (S)	.000	.143

In practical terms

Size and interpretation of coefficients are telling….

- Both the Top 25% and the Graduation Rate variables have coefficients rounding to 0.02
- Thus, a 10 percentage-point increase in the percent of freshmen that were in the Top 25% of their HS class relates to an increase in the US News peer assessment rating by 0.2. (5 pct pt increase means a 0.1 increase)
- Thus, if a school improves from 60% to 70% of incoming students who were in the Top 25% of their HS class, the school would improve, for example, from a 2.4 to a 2.6 in the US News peer assessment rating.

In practical terms

- The graduation rate variable has the same relationship, such that a 10 percentage point improvement in grad rate relates to a 0.2 increase in US News peer rating.

- Positive signs on the coefficients mean a decrease in any of these three predictor variables relates to a decrease in the US News peer assessment rating.

In practical terms

- The coefficients for the **publications per faculty** variable are smaller than those for the Top 25% and Grad Rate variables……
- More importantly, while the coefficients are statistically significant, they are not significant in a practical sense. The coefficients would mean that all FT faculty, on average, would need ten more publications in a given year to see an increase in peer assessment rating by 0.1 the next year.

Other Two Analyses

Master's Universities Analysis

- Top 25% HS class & Graduation Rate relate to changes in peer assessment scores over time.
- Same magnitude of coefficients…..10 percentage point increase relates to a 0.2 increase in peer rating.

Comprehensive Colleges Analysis

- Top 25% HS class & Graduation Rate relate to changes in peer assessment scores over time.
- Magnitude of coefficients differ slightly…..10 percentage point increase in Top 25 variable relates to a 0.3 increase in peer rating. Same magnitude for Grad Rate variable.

Additional Statistics

Mean of the intercept for all 412 schools = 2.58
Mean of the intercept for master's univs = 2.49
Mean of the intercept for comprehensives = 2.65

Represents the average peer assessment rating for all schools (with above-average change in reputation) across all 9 years of the study.

Thus, the academic reputation rating of these institutions (with above-average change in reputation), as assessed by presidents, provosts, and admissions deans, has averaged 2.5 to 2.6 – right between the rating of "Adequate" (2) and "Good" (3)

Fit Statistics

MODEL FIT for the full 412-school model

Comparative Fit Index (CFI) = .983
Tucker-Lewis Index (TLI) = .977
Root Mean Square Error (RMSEA) = .041
Standardized Root Mean Square Residual (SRMR) = .011

Overview of Results

Across ALL 1300+ schools that were rated by US News between 1999 and 2007, the average peer assessment rating has ranged from a low of 2.85 to a high of 2.90 (thus, no change rounded to one decimal)!!

This is despite the fact that over 400 schools have seen above-average change (at least 0.3) during the period. (Note: 62% of schools show relative stability over time in reputation)

Examining all institutions over nine years, it's clear that upward movers have balanced downward movers, resulting in a nullification effect in reputation change.

Apparently, the data suggests that academic reputation in US News is a zero-sum game. Raters are (either intentionally or unintentionally) only rating a certain number or percentage of schools at a given rating, and if they rate one school higher than the year before, they rate another lower than the previous year.

Overview of Results

From a practical point-of-view, just two variables remained significant in relating to change over time in US News peer assessment ratings, **both having to do with students.**

- Student selectivity – Percent of frosh in Top 25% HS
- Student outcomes – Six-year graduation rate

Obviously, these two variables are not independent of each other…..“better” inputs should mean better outputs.

What does it all mean?

Academic reputation changes very little, if at all, especially for research universities and liberal arts colleges.

Reputations change slowly, and where reputations do change, admissions selectivity seems to be the single most-important influence.

The pool of talented students is limited, and practically every institution is competing for them!!

What does it all mean?

If changes in academic reputation boil down simply to changes in the ability of the students coming in the door, how well does the US News peer assessment rating measure quality in higher education?

Perhaps the title of the annual US News magazine, rather than "**America's Best Colleges**", would more accurately be called "**America's Most Selective Colleges**."

For more information, or a copy of the full paper:

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