Quality perception and the championship effect: Do collegiate sports influence academic rankings?

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Abstract

This study finds that the average college ranking from *U.S. News & World Report* for the two years after winning a national championship in football or basketball is significantly improved compared to the two years before. Consistent with increased applications, acceptance rates are lower and SAT scores are higher. However, in a larger sample that includes schools that did not win a championship, a relationship between sports performance and academic rank was not found. These results bring into doubt the effectiveness, or at least efficiency, of pursuing success in major sports programs as a means to improve academic ranking.

Keywords: School Choice: Retention; College Rankings; Sports

1. Introduction

Rankings have become an American obsession, even in academe (Arenson, 1997). In higher education, the growing demand for rankings is fueled by several trends including higher costs and the view of students as consumers. Rankings of colleges play an increasingly important role as information tools for prospective students, as well as marketing devices for institutions. Rankings are publicly visible performance scorecards and winners in the ranking game widely publicize the results.

A change in rankings can have a significant impact on an institution's success. Monks and Ehrenberg (1999) found that a drop in college rank leads to a declining applicant pool, resulting in the university accepting a greater percentage of applicants and a generally lower quality of the entering class. Improved rankings are used to attract students, increase alumni donations, recruit faculty members and administrators, and to attract new benefactors. In general, quality rankings tend to change rather slowly. Grewal, Deardon and Lilien (2008) found university ranks are sticky and difficult to change.

Most rankings of U.S. higher education institutions are produced by magazines and newspapers. The *U.S. News & World Report* college rankings are the oldest and most widely used benchmarks for relative school performance. The publication began ranking American colleges in 1983 and the rankings became an annual event starting in 1987. Their rankings are based on a multidimensional methodology using a weighted combination of seven broad indicators of quality. Because of the importance of educational rankings and the subjective nature of measuring educational quality, the various methodologies employed to determine rank have been widely scrutinized. For example, the *U.S. News & World Report* rankings have been criticized for emphasizing resources and reputation and not being reflective of student learning (Carey 2004; Kuh and Pascarella 2004).

1.1 Link to Sports

When the University of Florida won the national championships in both football and basketball in 2006, they received 25,400 applications the following year, which was an eight percent increase over the previous year (Kipp, 2007). Collegiate athletics provide visibility and potentially play a key role in marketing the institution. Successful programs that compete for championships effectively get free three-hour commercials on national television. Kipp (2007) reported that universities that had recently won a football or basketball championship had an increase in applications for admission and in some cases, alumni support and donations also increased. After winning a national championship, Kipp describes that, the students, faculty, and staff get very excited, and there is a general good feeling about the university.

As a consequence of national exposure and positive publicity, potential new students may find a university more attractive. Ehrman and Marber (2008) found that when a school was successful in sports, almost unanimously applications for admission increased. Holmes (2009) found that alumni donations at a private liberal arts college increased in years when the college achieved greater athletic prestige measured by the win-loss record of the men's hockey team. Monks (2003) found a number of extracurricular activities, including intercollegiate athletics, are correlated with alumni giving. Roy, Graeff and Harmon (2008) examined the effects of a university's move to NCAA Division I-A football and found that it can create a positive image for a university, attract students, foster alumni involvement, and enhance school spirit.

2. Hypothesis Development

Since winning a football or basketball national championship brings positive publicity and an increase in applications, the university can increase enrollment and/or be more selective. If, as is the case at many large institutions, enrollment numbers are relatively fixed, larger applicant pools provide the opportunity to select higher SAT applicants. The higher quality of incoming students may consequently improve retention and graduation rates. In addition, winning a national championship can foster student involvement and enhance school spirit, and the resultant increased student engagement can further improve retention and graduation rates. All of these factors should contribute to an improvement in overall university rankings.

Thus, this study's hypothesis is that the average of overall college ranking from the two years after winning a national football or basketball championship will be improved (a lower rank number) compared to the average ranking from two years before. The opportunity for greater selectivity after a championship is expected to result in lower acceptance rates and resultant increases in SAT scores and improved retention. This study also examines whether a link between successful sports programs and overall college ranking is limited to winning a championship by testing whether average levels of sports performance are related to academic rankings. If improvements in sports performance lead to higher academic rankings, then higher average levels of national sports rankings are expected to be positively related to academic rankings. Finally, it is hypothesized that improvement in sports performance, measured by national ranking, will be followed by improved academic ranking.

3. Data and Methodology

The data set began with a list of universities that won a NCAA Division I national championship in either basketball or football from 1992 to 2006. This period was based on data availability and the need for consistency in how the *U.S News & World Report* college rankings were reported. Football and men's basketball were selected as the two highest profile and revenue generating collegiate sports. Table 1 lists the championship schools for each year. When two universities shared the national football title both schools were included in the sample.

[Insert Table 1 here]

In typical event-study methodology, the year of a championship was considered t=0. Ranking data was collected from *U.S. News & World Report* for the two years before and two years after the championship. The college guidebooks are published in late August or September and their covers are dated one year ahead. Hence, if a university won a championship in 2004, ranking data was collected from guidebooks dated from 2003 to 2007. Data from the 2005 issue (coinciding to the 2004 championship) was considered t=0 and not utilized. The two-year window on both sides of the championship was selected to reflect that the publicity and attention from a championship might take a couple of years to be reflected in ranking data that includes quality perceptions and actual student behavior. One-year and three-year windows were also investigated.

All of the universities in the sample were categorized as national universities based on the Carnegie Foundation classifications. The overall score reported by *U.S. News & World Report* was based on seven weighted measures of quality: peer assessment (25%), graduation and retention rates (20%), faculty resources (20%), student selectivity (15%), financial resources

(10%), alumni giving (5%), and graduation rate performance (5%). Based on this overall score, schools were listed in descending order with a lower rank number corresponding to higher quality. If no individual numerical rank was given for a second, third or fourth tier school, then the midpoint rank of that tier was used. This was a weakness in the methodology. However, approximately half of the schools in the study were assigned a unique ranking in the first or second tier and none of the schools that won championships jumped from one tier to another. When a subset of the data that included only schools with unique numerical rankings was used, the results did not substantively change.

In addition to recording the overall rank, six of the individual quality measures reported by *U.S. News & World Report* that were available throughout the sample period were also utilized. Peer reputation was based on the mean response on a survey of top academics (university presidents, provosts, and deans of admissions) who were asked to rate each school's academic performance on a scale of 1 (marginal) to 5 (distinguished). Freshman retention was the average percentage of freshmen who returned the subsequent fall. The graduation rate was calculated as the percentage of students who earned a degree in six years or less. The SAT score was recorded as the midpoint of scores of students who were admitted and enrolled in the previous year. The acceptance rate was the percentage of applicants who were admitted during the previous year. Finally, the alumni giving rate was calculated as the average percentage of living alumni who donated to their school during the previous two years.

4. Results

4.1 Impact of Winning a Championship

Table 2 reports the mean academic ranking for colleges two years prior and two years after winning a national football championship. The average rank number is lower (mean difference = -6.87) indicating a clear improvement in overall quality after winning a championship. Based on a paired t-test, this is a statistically significant difference at the 4% level. Since the comparison is of rankings, a more appropriate nonparametric test is the Wilcoxon signed rank test, which is significant at the 6% level.

[Insert Table 2 here]

Table 2 also reports the average for each of the individual quality measures for the two years prior and two years after winning a national football championship. Based on a paired t-test, there is no significant change in peer reputation or alumni giving. Consistent with a greater number of students applying to these colleges after winning a championship, there is a significant decline in acceptance rates (mean difference = -3.60%). Correspondingly, the SAT scores are higher (mean difference = 26.5), along with improved freshman retention (mean difference = 0.97%), and graduation rates (mean difference = 3.42%).

Table 3 reports the mean academic ranking for colleges two years prior and two years after winning a national basketball championship. The overall rank of these colleges improved with a mean difference of 7.47 after winning the title. This difference is significant using the Wilcoxon signed rank test at the 5% level. Similar to the football championships, the results are consistent with more students applying to these schools. The acceptance rates are significantly lower (mean difference = -3.62%) and correspondingly the average SAT scores are higher (mean difference = 19.7) and freshman retention and graduation rates are improved (mean differences of 1.23% and 3.00% respectfully).

[Insert Table 3 here]

When the above analysis was repeated using only one year before and after the championship, the results were qualitatively the same, but at a lower level of significance. The increased publicity and attention from a championship could take a number of years to be reflected in these quality measures. Similarly, when the observation period was increased from two to three years before and after the championship, the same trends were observed, but again with a lower level of significance. This can be explained by the greater noise and confounding factors inherent in a longer event-study window.

Overall, the evidence indicates that national championships in football and basketball improve academic ranking in the *U.S. News & World Report*. This relationship seems to be driven by an increase in applications for admission and the related improvements in SAT scores and freshman retention. Interestingly, the six-year graduation rate also improves in the two years following the championship. The timing of the championship and the measurement of the graduation rates does not allow for the increased selectivity to impact graduation rates. This is potential evidence that a major sports championship increases the engagement of all enrolled students and makes it less likely that junior and senior level students leave the university before they graduate. Given that championships not only make schools more desirable to incoming students, but also may improve the engagement of already enrolled students, promotion of major sports programs might be an important recruitment and retention strategy for higher education institutions. In order for success in sports to be an efficient strategy to improve academic rankings, success may need to be defined beyond the unlikely event of winning a national championship. The next section details tests to determine whether success in sports programs, other than winning a championship, is effective in influencing academic quality perception.

4.2 Tests for the Impact of Football Rankings

If successful sports programs improve academic rankings, a positive relationship should exist between sports ranking and academic ranking. Because football and basketball yielded consistent results in the previous section, only NCAA Division I football rankings were used for this part of the study. All schools with teams that finished at least one season within the top 20 in the Sagarin *USA Today* football ratings (Sagarin, 2009) from 1998 to 2006 were initially included in the sample. Five schools with top twenty finishes (Air Force, Boise State, Fresno State, Marshall, and Notre Dame) were omitted because they were not included as national universities in the *U.S. News & World Report* rankings. The final sample included 55 universities.

The mean Sagarin ranking over the nine-year period was compared with the mean *U.S. News & World Report* ranking over a comparable nine-year period. As in the previous section, a two-year lag was used to allow for the impact of sports performance, with an additional one-year adjustment because the *U.S. News & World Report* College Guidebooks are dated and published one year in advance. Thus, the study used academic performance measures from *U.S. News & World Report* from publications dated 2001- 2009. Table 4 shows the mean values of football and academic rankings as well as the mean values for the six individual academic quality measures for each of the 55 schools.

[Insert Table 4 here]

Cross-sectional Spearman correlations, appropriate for ranked data, were calculated between the mean football ranks and the academic data. Contrary to the study's hypothesis, no significant relationships exist between mean levels of sports performance and mean levels of academic ranking or the components of the rankings. Although winning a championship appears

to move the *U.S. News & World Report* ranking, schools with higher levels of football performance do not enjoy better (or worse) levels of academic ranking.

Further tests were conducted to determine whether improvements in sports performance change academic rankings. For each of the 55 institutions, a time-series correlation was calculated between the end-of-the-season Sagarin ranking with the lagged *U.S. News & World Report* ranking (2001- 2009). The correlations of the football rankings with the six related components of academic ranking were also calculated. The resultant cross-sectional mean values for each of the correlations are reported in Table 5.

[Insert Table 5 here]

The results indicate that improvement in football ranking does not significantly impact the *U.S. News & World Report* academic ranking. There is a significant positive relationship between football ranking and freshman acceptance percentages. Consistent with the results relating to championships, improved football performance (a lower rank number) is related to lower percentages of freshman acceptance rates. Presumably, the increased number of applications due to positive publicity drives this result. However, unlike the results relating to winning a championship, there is no evidence that increased SAT scores, improved freshman retention, or increased six-year graduation rates follow improved football performance.

5. Discussion and Conclusion

Given that Grewal, Deardon and Lilien (2008) found that university ranks are fairly sticky and difficult to change, finding that overall college ranks significantly improve after a football or basketball championship is worthy of note. Grewal et al. found that, on average, a university's rank will be within four units of its rank the previous year with greater than 90% probability. This study documents a mean improvement in overall rank of 6.87 for football and 7.47 for basketball measured from two years before a championship to two years after.

The results on individual quality measures are consistent with the increased publicity and attention of a national championship resulting in an increase in applications for admission. This is supported by previous research by Kipp (2007) and Ehrman and Marber (2008). With a larger application pool, there is an opportunity for greater selectivity, which is reflected in significantly reduced acceptance rates. If the number of enrollments is relatively fixed, the larger number of applications means the school can select from higher SAT applicants and the higher academic quality can result in improved retention.

These results could be used to support criticism of the *U.S. News & World Report* college rankings. Carey (2006) claims that the rankings are largely a function of fame, wealth and exclusivity and not reflective of how well the schools educate their students. There is a movement towards shifting the conversation about collegiate quality away from resources and reputation and towards indicators of student learning and graduation rates (Pascarella 2001; National Survey of Student Engagement 2004).

Although increased selectivity can help explain the improved freshman retention rates, there was not sufficient time in the event study window for the greater selectivity of admissions to impact six-year graduation rates. Thus, it is likely that other factors, such as a sense of belonging, involvement and pride were contributing to the students' success. Kipp (2007) reported that winning a national championship excites faculty, students and staff, and the whole campus can become more upbeat and optimistic. Roy, Graeff and Harmon (2008) found that success in sports can foster involvement and enhance school spirit. Numerous studies have

reported links between student engagement and increased retention and graduation rates (Kuh 2001; Pascarella and Terenzini 2005; Reason, Terenzini and Domingo 2006; Tinto 1993). Engagement is enhanced when students feel connected to something and they have a sense of belonging to a community (Leonhardt 2005; Ostrove and Cole 2003; Walpole 2003). The excitement of winning a national championship can bring a sense of pride, community and belonging.

Despite the apparent positive impact of a national championship in football or basketball, the results bring into doubt the effectiveness, or at least the efficiency, of pursuing success in major sports programs as a means to improve academic ranking. The study does not find a relationship between the mean level of football ranking and academic ranking. Nor do improvements in football ranking improve overall college ranking. It appears that schools with higher levels of sports performance, or improved performance, do not garner improved levels of academic ranking – unless they win the championship.

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Table 1

Football and basketball national champions (1992 - 2006)

Year	Football	Basketball
1992	Alabama	Duke
1993	Florida State	North Carolina
1994	Nebraska	Arkansas
1995	Nebraska	UCLA
1996	Florida	Kentucky
1997	Michigan	Arizona
	Nebraska	
1998	Tennessee	Kentucky
1999	Florida State	Connecticut
2000	Oklahoma	Michigan State
2001	Miami (FL)	Duke
2002	Ohio State	Maryland
2003	LSU	Syracuse
	USC	
2004	USC	Connecticut
2005	Texas	North Carolina
2006	Florida	Florida

Table 2

Mean results before and after NCAA football championships (n=17)

	Overall Rank	Peer Reputation	Retention Percentage	Graduation Percentage	SAT Midpoint	Acceptance Percentage	Alumni Giving
Mean from two years before (B2)	77.53	3.52	83.63	57.84	1154.0	69.05	17.9
Mean from two years after (A2)	70.66	3.53	84.60	61.26	1180.5	65.45	17.5
Difference in means (A2-B2)	-6.87	0.01	0.97	3.42	26.5	-3.6	-0.4
Standard deviation	13.47	0.094	1.099	4.595	25.39	5.688	4.887
t-value (paired t-test)	-2.22	0.44	3.86	3.24	4.55	-2.76	-0.31
p-value	.0392	.6656	.0012	.0044	.0002	.0128	.7368
Wilcoxen Signed Rank Test (Z)	-1.90						
p-value	.0572						

Table 3
Mean results before and after NCAA basketball championships (n=15)

	Overall Rank	Peer Reputation	Retention Percentage	Graduation Percentage	SAT Midpoint	Acceptance Percentage	Alumni Giving
Mean from two years before (B2)	63.47	3.59	87.27	69.19	1204.5	56.84	17.8
Mean from two years after (A2)	56.00	3.60	88.5	72.19	1224.2	53.22	19.1
Difference in means (A2-B2)	-7.47	0.01	1.23	3.00	19.7	-3.62	1.31
Standard deviation	14.45	0.068	1.498	1.844	27.23	5.99	2.60
t-value (paired t-test)	-2.07	0.54	3.19	6.51	2.90	-2.42	1.81
p-value	.0564	.6052	.0066	.0002	.0110	.0288	.0952
Wilcoxen Signed Rank Test (Z)	-1.98						
p-value	.0478						

Table 4
Spearman correlation of mean football ranks with mean values of academic performance (n=55)

	Mean Results from 1998-2006 (Football Rank) and 2001-2009 (*U.S. News and World Report* Data)							
University	Football Rank	Academic Rank	Peer Reputation	Retention %	Graduation %	SAT Midpoint	Acceptance %	Alumni Giving
Alabama	37.11	92.00	3.02	83.44	61.33	1177.8	78.78	26.00
Arizona	57.56	95.78	3.60	77.67	55.22	1106.7	84.44	9.33
Arizona State	42.56	147.67	3.29	76.22	52.11	1096.7	86.78	11.67
Arkansas	32.67	144.78	2.76	80.78	50.22	1255.6	81.44	21.11
Auburn	25.11	92.11	3.04	83.00	65.56	1191.7	79.67	22.11
Boston College	34.89	38.11	3.53	94.89	88.33	1316.7	31.44	24.89
BYU	49.00	83.22	3.03	91.33	71.89	1355.6	71.22	20.33
California	44.11	20.67	4.77	95.89	85.22	1317.2	25.00	15.67
Clemson	35.00	78.44	3.07	87.11	72.89	1200.0	58.67	24.56
Colorado	40.11	82.11	3.56	83.22	65.89	1224.0	83.67	11.00
Florida	13.11	62.22	3.59	92.44	75.22	1243.3	54.67	17.89
Florida State	11.44	103.22	3.07	86.22	64.56	1159.0	60.67	16.44
Georgia	18.22	68.89	3.44	91.33	71.56	1213.3	62.89	17.67
Georgia Tech	28.22	38.22	4.02	89.56	71.78	1333.1	63.56	32.56
Illinois	72.89	39.89	4.07	92.00	79.67	1383.3	66.56	12.78
Iowa	42.22	71.00	3.64	83.11	65.11	1230.6	83.33	14.11
Kansas State	26.00	145.11	2.88	78.78	55.44	1172.2	66.00	22.00
Louisville	35.00	184.33	2.61	74.11	35.44	1152.8	77.00	13.00
LSU	25.00	153.00	2.82	84.33	57.22	1213.9	77.22	17.67
Maryland	41.11	65.78	3.69	91.22	71.00	1263.9	48.67	14.89
Miami-Florida	13.00	66.67	3.19	86.33	67.67	1226.1	45.33	15.00
Miami-Ohio	71.11	72.67	3.32	90.00	79.78	1322.2	73.67	18.11
Michigan	12.78	25.00	4.52	95.67	84.89	1411.1	54.33	14.67
Michigan State	46.33	78.00	3.52	89.11	69.89	1216.8	71.67	14.78
Minnesota	40.33	74.44	3.77	84.56	55.67	1263.9	70.33	11.67
Mississippi	55.11	156.89	2.69	77.00	52.89	1158.3	76.78	15.00
Mississippi St.	71.11	156.89	2.40	80.00	54.89	1166.7	72.33	14.67
Missouri	53.63	87.63	3.34	84.25	65.25	1300.0	87.75	10.25
Nebraska	22.89	101.78	3.17	80.33	57.00	1225.0	75.89	23.00
N. C. State	41.11	85.56	3.14	89.22	65.67	1183.9	62.22	23.33
Ohio State	13.78	69.33	3.70	86.00	62.22	1280.6	71.33	16.33
Oklahoma	13.22	112.56	2.99	82.78	54.33	1261.1	87.44	20.00
Oregon	28.22	114.11	3.34	82.89	62.00	1110.1	88.44	13.67
Oregon State	32.89	156.89	2.96	80.00	59.22	1077.2	87.33	15.22
Penn State	33.44	47.56	3.82	92.67	82.22	1191.1	54.11	20.89
Purdue	31.67	71.67	3.80	86.78	65.44	1136.7	80.33	17.56
South Carolina	53.67	105.00	2.97	82.56	61.00	1136.1	66.33	22.78
Southern Miss	50.78	191.56	2.19	73.11	46.67	1052.8	57.33	14.44
Stanford	53.44	5.67	4.90	98.00	93.33	1450.6	12.56	38.11
Syracuse	54.22	64.22	3.38	91.44	77.89	1213.9	59.78	20.11
TCU	58.11	99.67	2.71	82.22	65.78	1157.2	66.89	26.89
Tennessee	18.89	93.44	3.16	78.22	58.11	1211.1	68.89	15.22

Table 4 (continued)
Spearman correlation of mean football ranks with mean values of academic performance (n=55)

	Mean Results from 1998-2006 (Football Rank) and 2001-2009 (*U.S. News and World Report* Data)							
University	Football Rank	Academic Rank	Peer Reputation	Retention %	Graduation %	SAT Midpoint	Acceptance %	Alumni Giving
Texas	10.56	49.00	4.08	91.00	72.33	1221.1	55.44	12.89
Texas A&M	34.44	67.56	3.56	89.33	74.67	1185.0	71.00	19.89
Texas Tech	31.44	156.89	2.71	80.78	52.44	1101.1	70.89	22.78
Toledo	65.78	218.89	2.26	70.78	42.78	1086.1	94.67	8.78
Tulane	97.11	45.89	3.44	86.00	73.33	1335.1	55.00	22.89
UCLA	31.56	25.44	4.28	96.67	85.22	1287.2	25.89	13.89
USC	18.11	30.44	3.87	94.44	78.56	1332.2	29.67	32.67
Utah	44.67	115.33	3.11	76.89	53.67	1191.7	88.67	11.56
Virginia	14.67	80.00	3.41	88.00	74.44	1190.6	68.67	18.89
Washington	48.00	45.00	3.94	91.00	71.89	1181.1	73.00	15.33
Washington St.	45.89	107.33	3.03	83.78	60.44	1072.2	78.44	19.44
West Virginia	37.00	156.89	2.70	78.67	56.00	1079.7	92.22	10.44
Wisconsin	23.33	34.78	4.22	92.00	77.67	1383.3	65.11	13.89
Spearman Correlation		.150	-.186	-.190	-.082	-.128	.191	-.130
p-value		.2645	.1651	.1572	.5419	.3421	.1544	.3340

Table 5
Cross-sectional mean of time-series Spearman correlations between football rank and measures of academic quality (n=55)

Spearman Correlation	Academic Rank	Peer Reputation	Retention %	Graduation %	SAT Midpoint	Acceptance %	Alumni Giving
Mean	-0.001	0.068	0.056	0.070	.081	0.149	0.080
t-value	-0.003	1.489	0.892	1.156	1.281	3.012	1.247
p-value	0.998	0.142	0.376	0.253	0.205	0.004	0.218