

Measuring the Effect of Intercollegiate Athletic Success on Private Giving and Enrollment

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Abstract—Increased popularity and visibility of college athletics has contributed to an environment in which institutions—most of which lack self-sufficient athletics department budgets—reallocate monies from the university general fund and seek additional funding sources to keep up with increasing levels of spending on athletics. Given the prevalence of debates on student debt levels, coach salaries, and athlete pay, empirical evidence on whether this spending yields expected return on investment is necessary. This study considered the relationship between the independent variable of winning percentage of the men’s basketball team at a mid-major university, moderated by National Collegiate Athletic Association (NCAA) tournament appearance, and number of applicants, number of enrollments, average SAT score of students, and donor giving to the university general and athletic funds. The results indicate that, other than a small correlation between athletic success and number of applicants, only when NCAA tournament appearance is used as a moderating variable, these purported benefits are not supported, suggesting the need for a reevaluation of athletic department spending and perceptions on tangible and intangible benefits for universities.

Keywords—Athletic success, enrollment, NCAA, private giving.

I. INTRODUCTION

DEBATES on the intersections among rising tuition prices, spending on college athletics, and donor giving are prevalent, and indicate the need for empirical research on costs and benefits of such investments. In terms of commercialization and media coverage, the popularity of college sports has led to a dramatic increase in broadcasting and sponsorship, including the \$8.8 billion contract with CBS Sports and Turner to cover the NCAA Basketball Tournament through 2032 [1]. This environment has prompted what is referred to as an “arms race” on college campuses, in which institutions build increasingly bigger, better stadiums in order to attract athletic recruits [2, p.367]. While research has yielded mixed results on the actual correlations between supporting high-profile athletic departments and improvements to enrollment and donor giving, the arms race dynamic is occurring at schools with athletic departments at the mid-major and Football Championship Subdivision (FCS) levels as well, and extant research has not yet sufficiently addressed the costs and benefits of athletic spending for schools that do not compete in Power Five conferences, or in FBS football leagues.

Potential benefits of athletic success can be subdivided into direct and indirect categories. Direct benefits include increased attendance at sporting events and attendant revenue increases, as well as broadcast revenues. Potential indirect benefits

regarding admission and enrollment include the possibility that increased athletic success serves as effective advertising, and that athletically successful schools receive more applicants and, as a result, are able to be more selective and admit a lower percentage of applications. The other assumed indirect benefit of athletic success is an increase in private donor and alumni giving. The purpose of the present study is to provide empirical evidence on whether these indirect benefits are commensurate with the cost of athletic success—for a school that does not compete in a Power Five conference or Division I-FBS football—and to provide information for key stakeholders who make decisions regarding athletic department budgets at similar institutions.

The present study assessed the conflict between the benefits and costs of college athletics based on data from 1995-2016 data on a private Midwestern university, hereafter referred to as Anonymous University, that competes in mid-major Division I athletics. Men’s basketball garners the most national attention and success at Anonymous University, generates the most revenue, and has the highest budget. While previous studies have been conducted at Division I Power Five conference universities, as well as private universities that compete in Division II or Division III athletics, Anonymous University provides a unique context because it competes in a Division I mid-major conference for men’s basketball, but a different FCS level conference for football. By examining data from the Office of Advancement on private giving as well as from the Office of Institutional Effectiveness on admissions applications and average SAT scores, this study yielded useful data that have significant implications for decision-makers at similar institutions regarding budget allocations or marketing for major gift campaigns. This quantitative methodology relied heavily on secondary data collection and analysis, and facilitated identification of correlations or trends between athletic success and indirect benefits.

II. LITERATURE REVIEW

A. Evidence that Athletic Success May Have a Positive Impact on University Giving

Using data from the Integrated Postsecondary Education Data System (IPEDS) over a 19-year-period from 1976 to 1995, Humphreys and Modello evaluated 320 colleges or universities that sponsor Division I football and/or basketball, using post season football bowl game and NCAA Division I men’s basketball tournament appearances as a measure of athletic

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success [3]. Importantly, they included restricted and unrestricted gift status to assess whether gifts had been earmarked for athletics or were for general use. The authors found that appearing in bowl games or the postseason basketball tournament did not have a significant effect on unrestricted (general use) donations, but did increase restricted (athletics-earmarked) donations to a university significantly: a 12% increase and 43% increase, respectively [3].

Stinson and Howard assessed the significance of athletic success on giving at a major Division I FBS university that competes in a Power Five conference. They included all donors who gave \$1,000 or more to the University of Oregon annual giving program from 1994 to 2002, and separated these into alumni and non-alumni status and coded gifts for athletics, academics, or other [4]. The authors found that, while alumni give more to academics than do non-alumni, both groups gave more to athletics than academics. Further, they found that, over the period studied, average gift donations to athletics had increased, while those to academics had decreased. In a follow-up study using the Voluntary Support Education (VSE) survey, Stinson and Howard confirmed their previous findings that alumni tend to give more to their alma mater than non-alumni, but that the amount of non-alumni donations tend to be higher. They also found that athletic success does not have a significant impact on giving to university general funds, but does have a statistically significant effect on giving to athletics [5].

B. Evidence that Athletic Success Has No Impact on University Giving

An important study by Turner et al. reported a positive impact on private giving based on athletic success [6], however findings that report a lack of impact are in conflict with university administrators' decisions to justify increased spending on college athletics. Turner et al. assessed data from 15,351 alumni from 15 academically selective private colleges and universities. They found no relationship between win-loss record and university giving at the Division IA schools in the study, but did identify a statistically significant impact of win-loss record and giving at the Division III level. Specifically, they found that a 50% change in winning percentage correlated with an 8% increase in the percentage of graduates who contributed. Further, they found that alumni who participated in varsity athletics were more likely to be sensitive to a change in football success than non-athletes and Division IA and Division IAA universities, but that this change was most pronounced among Division III former athletes [6].

Meer and Rosen addressed data on alumni donations to general university programs and athletic donations from between 1983 and 2006, defining academic success as conference championships, including findings associated with the success of the sport a former athlete played in college. They found that, when an alumnus' former team won a conference championship, his giving increased by an average of 7%. Conversely, the success of an alumna's former team did not affect her giving to either athletic or general university funds. While, like the present study, Meer and Rosen analyzed data from a single university, they did not include an indication of

the type of university or its NCAA division, which may limit the generalizability of their results [7].

C. Correlation between Athletic Success and Impact on Quality and Quantity of Applicants

While more research has addressed applicant quality and quantity than university giving—in part because of more availability of data on the former— [8] extant studies on the effect of athletic success on quality and quantity of university applicants has also yielded varied and inconclusive results. Getz and Siegfried commented on several canonical examples of athletic success increasing the number of applications, most notably report that North Carolina State saw a 40% increase in applications after winning the 1983 NCAA men's basketball championship, and that Boston College received approximately 4,000 more applications after the highly-publicized 1984 football season in which Doug Flutie won the Heisman Trophy [8, p.15]. They also noted that a school whose football winning percentage increases from half to three quarters of its games will see an average application pool increase of 1.3% [8].

Pope and Pope measured yearly data for number of applications, average SAT scores, and enrollment against years of episodic athletic strength, characterized by a trip to the NCAA tournament in basketball and a top-20 finish in the AP poll for football. They found that a top-20 football finish or Sweet 16 appearance correlated with a 2-8% increase in number of applicants, with a range of SAT scores. They also reported that males, African Americans, and former athletes were the demographic groups most likely to be influenced by athletic success when applying to a college or university [9].

Overall, extant research has yielded mixed results with varying degrees of empirical significance, indicating the need for further research on the topic. Extant research has indicated that analyses based on data from a single university can be effective in providing information for university admissions, advancement, and marketing stakeholders, which evidences the efficacy of single-institution based studies. While a great deal of extant research has addressed Division IA and Power Five competing institutions, this study's assessment of data on a single, private, Division I mid-major university constitutes an important contribution to extant research.

III. METHODOLOGY

To address the direct and indirect benefits of athletic success, this quantitative study—based on data from 1995 to 2016—employed secondary data to identify correlations between athletic success, quantity and quality of applicants, and funding trends at Anonymous University. As indicated in the literature review, extant research has based definitions of athletic success on a range of variables. For the purposes of this study, athletic success was operationalized as the basketball team's winning percentage for the season, with a conference tournament championship resulting in a trip to the NCAA tournament as a moderating variable. As the setting for this study was a mid-major university, for which athletic success is not usually measured by national championships, this definition of athletic success was fitting. Anonymous University made its first

NCAA Tournament appearance in 1996, and has won 10 conference tournament championships and made nine NCAA tournament appearances between 1995 and 2016.

Whereas studies including multiple institutions require panel data methods, this quantitative study assessed a single university over a 22-year time span in a time series study model. Using athletic success—defined as the win-loss record of the basketball team with NCAA tournament appearance as a moderator variable—this methodology identified correlations with dependent variables of donation amount and type as well as applicant characteristics. Admissions data gathered included number of applicants to the school, number of students enrolled, and the average SAT score of enrolled students. The data for private giving included yearly donation totals to the university’s general fund as well as to the athletics fund to differentiate between unrestricted and restricted giving.

While some studies limit their definition of donors to those who have met a certain giving threshold, each individual who made a donation of \$0.01 or more from 1995-2016 was included in the data set for his study. Donor data were drawn from the information collected by the Anonymous University Office of Advancement, coded into unrestricted and restricted gifts, and presented with dollar amount but without donor name. The Office of Institutional Effectiveness provided data on enrollment and students’ academic profiles. Anonymous University uses Ellucian databases to track donor information and student characteristics—Advance and Colleague, respectively—which were determined to be reliable instruments. The Associate Vice President for Advancement of Anonymous University provided permission for the restricted and unrestricted giving data to be used in this study, and the Associate Director of Institutional Research agreed to its use of the records on number of applicants, number of students enrolled, and the average SAT score of enrolled students from 1995 to 2016. The Anonymous University men’s basketball records are publicly accessible and were collated from the school’s athletic department website.

After coding the data according to the variables under investigation, they were summarized using mean, standard deviation, and minimum and maximum measures including variance, range, median, mode, skewness, and kurtosis. A Pearson product-moment correlation coefficient was used to evaluate for correlation, after a preliminary analysis to check for violations of the assumptions of normality, linearity, and homoscedasticity. The results are grouped into findings on the four research questions used to guide this study: three on the quantity and quality of university applicants and one on private giving. First: Does a relationship exist between success in men’s basketball and number of applications between 1995 and 2016, and is it moderated between an NCAA tournament appearance? Second: Does a relationship exist between success in men’s basketball and enrollment over the period of investigation, moderated by tournament appearance? Third: Does a relationship exist between men’s basketball and average SAT score of applicants, and is this relationship moderated by tournament appearance? Fourth: Does a relationship exist between success in men’s basketball and private (restricted and

unrestricted) giving at Anonymous University between 1995 and 2016, and is this moderated by attendance at the NCAA men’s basketball tournament?

IV. RESULTS

Descriptive statistics were used to assess the variables: total number of applicants to the university, total number of applicants who enrolled in the university, average SAT score of applicants, the total dollar amount donated to the university general fund, the total dollar amount donated to the discretionary athletics fund. As this time series study assessed the period from 1995-2016, N = 22 indicates the sample as each year included in the study. Attendance at the NCAA men’s basketball tournament was used as a moderator variable, and over the period investigated in this study, the men’s basketball team appeared at the tournament 41% of the time (n = 9 years), and did not make the tournament 59% of the time (n = 13 years). Table I provides the descriptive characteristics assessed for the study variables.

TABLE I
 DESCRIPTIVE CHARACTERISTICS OF STUDY VARIABLES

	N	Minimum	Maximum	Mean	SD
Applicants	22	2705.00	7484.00	4109.41	1446.42
Admitted	22	2333.00	6205.00	3404.50	1131.86
Enrolled	22	656.00	906.00	748.45	69.21
AVG SAT	22	1060.00	1193.00	1136.68	33.97
Total Fund	22	\$1,526,771.65	\$2,322,810.45	\$1,877,513.28	215305.88
Athletic Fund	22	\$120,171.65	\$2,322,810.45	\$462,210.83	436077.86
Win %	22	29%	82%	64.23%	.13

Regarding the number of applicants variable, a preliminary analysis did not reveal any violations of the assumptions of normality, linearity, and homoscedasticity, and a Pearson product-moment correlation coefficient was performed. The results indicate a non-significant correlation between number of applicants and the winning percentage of the men’s basketball team ($r = 0.36$; $n = 22$; $p = .10$). However, a strong, positive, and significant correlation between the variables existed between the variables after controlling for the moderator variable of NCAA men’s basketball tournament appearance ($r = 0.51$; $n = 19$; $p = .02$). An inspection of the zero-order correlation ($r = 0.36$; $p = .10$) suggested that controlling for attendance at the NCAA men’s basketball tournament had a significant effect on the strength of the relationship between these two variables. Taken together, these results suggest that a significant relationship does not exist between winning percentage and number of applicants, but attendance at the NCAA tournament does moderate the relationship between applications to the university and the winning percentage of the men’s basketball team.

The second research question addressed the relationship between winning percentage of the men’s basketball team and the number of students enrolled at the university. After finding that there was no violation of the assumptions of normality, linearity, and homoscedasticity, the results revealed that a non-significant correlation existed between the total number of

students enrolled at the university and the winning percentage of the men's basketball team ($r = 0.20$; $n = 22$; $p = .37$). A non-significant partial correlation existed between the variables, after controlling for attendance at the NCAA men's basketball tournament ($r = 0.09$; $n = 19$; $p = .70$). However, an inspection of the zero-order correlation ($r = 0.20$; $p = .37$) suggested that controlling for attendance at the NCAA men's basketball tournament had an inverse effect on the strength of the relationship between these two variables. These results suggest that there is not a significant relationship between winning-percentage and enrollment, and that NCAA attendance does not significantly moderate this relationship.

Regarding the third research question and the variable of average SAT score of applicants, a Pearson product-moment coefficient indicated a non-significant relationship between winning percentage and average SAT score of admitted students ($r = -0.15$; $n = 22$; $p = .51$). A non-significant partial correlation existed between the variables, after controlling for attendance at the NCAA men's basketball tournament ($r = -0.31$; $n = 19$; $p = .17$). Additionally, an inspection of the zero-order correlation ($r = -0.15$; $p = .51$) suggested that controlling for attendance at the NCAA men's basketball tournament had an inverse effect on the strength of the relationship between these two variables. The relationship between the average SAT scores of applicants and the winning percentage of the basketball team is weakened in years the men's basketball team make the NCAA men's basketball tournament. These results indicate that students with slightly lower overall SAT scores are more likely to apply to the university in years when the men's basketball winning percentage is higher, and that this relationship is slightly stronger in years when the basketball team makes the NCAA tournament. Taken together, these results suggest that there is no significant relationship between winning percentage and average SAT score of applicants, and that this relationship is not significantly moderated by NCAA tournament appearance.

Regarding university giving, the fourth research question addressed the relationship between men's basketball team success and giving to the restricted and unrestricted university funds. The results indicate virtually no correlation between athletic success and total giving ($r = 0.02$; $n = 22$; $p = .93$) or giving specifically earmarked for the athletic fund ($r = 0.06$; $n = 22$; $p = .79$). After controlling for NCAA tournament appearance, a non-significant correlation was identified between winning percentage and total fund giving ($r = 0.09$; $n = 22$; $p = .71$). Additionally, an inspection of the zero-order correlation ($r = 0.02$; $p = .93$) suggested that controlling for attendance at the NCAA men's basketball tournament had an impact on the strength of the relationship between these two variables; however, it was not statistically significant. Regarding athletic fund giving after controlling for NCAA tournament appearance, a positive and non-significant correlation was identified between the variables ($r = 0.25$; $n = 22$; $p = .26$). Additionally, an inspection of the zero-order correlation ($r = 0.06$; $p = .79$) suggested that controlling for attendance at the NCAA men's basketball tournament had some effect on the strength of the relationship between these two

variables, albeit non-significant. Table II shows the partial and zero-order correlations regarding donor activity after controlling for NCAA tournament attendance.

TABLE II
 PARTIAL VS. ZERO ORDER CORRELATIONS: CONTROLLING FOR NCAA
 TOURNAMENT ATTENDANCE

	Partial Correlation	Zero Order Correlation
Total Fund & Athletic Giving	0.54	0.54
Total Fund & Winning %	0.09	0.02
Athletic Fund & Winning %	0.25	0.06

The results indicate that there was no significant relationship between the winning percentage of the men's basketball team and giving to either the general fund or the athletic fund, even after controlling for attendance at the NCAA men's basketball tournament.

V. DISCUSSION

On the whole, the results of this study do not indicate statistically significant correlations between winning percentage and the dependent variables, even after controlling for NCAA tournament appearance, which suggests that, for this mid-major university, the costs of athletic spending may be incommensurate with its potential benefits. With regard to the first research question, there was not enough evidence to suggest that winning percentage is significantly correlated with number of applicants. However, after controlling for attendance at the NCAA men's basketball tournament, the results of a zero-order correlation indicated a significant effect of the moderating variable on the correlation between winning percentage and quantity of applicants. Therefore, an increase in winning percentage may lead to an increase in total applications to the university, if a trip to the NCAA tournament is also achieved, but an increase in winning percentage is not an indicator of increase in quantity of applications in isolation. This may be explained by the fact that an NCAA tournament appearance generally correlates with an increase in media exposure and national attention, and thereby functions as a marketing tool to attract applicants to the university.

Regarding the relationship between athletic success and enrollment figures, the results do not indicate a significant correlation between the two variables. The results of the zero-order correlation suggested that controlling for attendance at the NCAA men's basketball tournament had an inverse effect on the strength of the relationship between the two variables. Interestingly, the relationship between the total number of applicants enrolled and the winning percentage of the basketball team is stronger—albeit non-significant—without the influence of NCAA tournament attendance. This indicates that, while the initial effect of an NCAA tournament appearance does have a beneficial effect in terms of attracting applicants, it does not correlate with an increase in actual enrollment. Differentiating between applications and enrollment constitutes a significant contribution of this study, and future research should likewise continue to assess for this differentiation and relay relevant information to budgetary policymakers.

The results also indicate a non-significant partial correlation between winning percentage and average SAT scores of applicants, and that controlling for attendance at the NCAA tournament had an inverse effect on the strength of the relationship between the two variables. The relationship between average SAT scores of students admitted to the university and the winning percentage of the basketball team is weakened in years in which the men's basketball team makes the NCAA men's basketball tournament, suggesting that students with slightly lower overall SAT scores are more likely to apply to the university in years when the winning percentage of the men's basketball team is higher, and the relationship is slightly stronger in years when the basketball team makes the NCAA tournament.

Regarding donor giving, the results indicate virtually no correlation between winning percentage and charitable giving, either to the university general fund or the discretionary fund earmarked for athletics spending. The NCAA tournament attendance moderating variable did not have a significant effect on this correlation.

While this study was thorough in its examination of secondary data over a 22-year period, it is limited in the sense that its results are specific to the Anonymous University setting. While some previous studies have included sample sizes of over 200 universities [5], it is recommended that future researchers apply this study's methods to a conference-wide data set. Conference affiliations tend to group universities by their commitment to athletics and conferences tend to include universities similar in size, regionally close in proximity, and potentially grouped according to private/public identifications; therefore, the findings of such a study could help administrators make conference-wide funding allocations effectively.

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