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DOWN TO THE BUZZER: DOES ATHLETIC SUCCESS AFFECT ALUMNI DONATIONS?

by

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Previous research has established a connection between athletic success and alumni contributions to a university. This paper isolates the effect NCAA basketball success has on motivating alumni to contribute to schools that have Division I basketball as their dominant athletic program. Findings from fixed effects analysis of panel data on 43 universities over the period 1998-2003 suggest that NCAA basketball success has a significant positive impact on increasing alumni contributions per student and increasing alumni contributions as a percentage of total contributions.

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Down to the Buzzer: Does Athletic Success Affect Alumni Donations?

1. Introduction

The role that athletic success plays in encouraging alumni contributions is a topic that has seen repeated discussion. Colleges have become increasingly interested in spurring alumni donations partly because state funding for colleges has recently decreased dramatically. Nationwide state funding to public institutions of higher education was 44.8% of their total funding during the 1979-80 school year. A decade later, this number dropped to 36.8% and then fell even further to 32.3% in 1999-00 (Trostel 2003). Institutions are now looking to alternative sources of funding in order to mitigate this loss. When Sigleman and Carter (1979) first looked at the relationship between alumni giving and college athletics, most schools obtained only a small portion of their support from alumni. Today, alumni contributions make up a significant portion of total institutional giving. According to the Council for Aid to Education, alumni giving accounted for an average of 32.8% of total giving for the schools I sampled over the period 1998-2003. Schools such as Butler and Gonzaga place a much stronger emphasis on alumni donations which make up an average 74.6% and 77.4% of total giving respectively over this same period. Alumni donations have proven to be a strong source to mitigate the loss from state funding. If athletic success is found to have a significantly positive impact on alumni contributions, schools may be much more inclined to spend money to try to improve their athletic programs.

This paper attempts to explain the relationship between athletic success and alumni giving using a specific category of schools. The data in the study is collected only for schools that have Division I basketball as their dominant sport. These schools are

defined as ones that maintain a Division I basketball team but do not have a Division I football team. I focus on this category of schools in order to better examine the effect that basketball success alone has on alumni contributions. In their 1981 study, Brooker and Klastorin noted that the possibility exists that recent football success has the ability to compensate for basketball failures. The schools in my sample have basketball programs that are not able to be overshadowed by big-time football programs.

A significant amount of research has been done using schools that maintain big-time football and basketball programs. Of the most recent studies, all have found some indication that athletic success has a positive impact on alumni contributions, with the exception of Sigleman and Carter (1979). No study has looked specifically at schools that have Division I basketball as their dominant sport. The closest any study has come to addressing this specific question was when Brooker and Klastorin (1981) looked at a set of schools emphasizing basketball programs (usually without football programs) and small public universities. They found no significant relationship between athletic success and alumni contributions within this set of schools. I find that NCAA basketball success can have a substantial impact on alumni donations for schools with basketball as their dominant sport. These findings could motivate schools of this type to consider spending additional money in an attempt to improve their basketball programs.

2. Athletic Success and Alumni Contributions

2.1 Theory

Division I college basketball, especially the NCAA tournament, is an extremely popular event that brings in substantial amounts of money. In November of 1999, CBS

spent \$6 billion to purchase the television broadcast rights to the NCAA tournament for the next eleven years.¹ While there is money to be made, maintaining a Division I men's basketball program comes at a significant cost to the university. Each school must account for their player's tuition costs, plus costs for their facilities, insurance, coaching staff, scouting, and travel. These costs can constitute a significant part of the university budget, especially for smaller schools that employ Division I basketball as their dominant sport. A better understanding of the factors that motivate the alumni of these specific schools may warrant more aggressive spending on basketball programs if a positive, significant relationship can be proven.

Schools that have Division I basketball as their dominant sport tend to be much smaller in enrollment than schools that have both a Division I football and basketball team. The average enrollment for the 43 schools included in my sample is 9,224. Northeastern leads the pack with an average enrollment of 25,545 students over the period 1998-2003 and Davidson caps the low end with an average of 1,657 students over the same period. These schools, however, have the opportunity to reap many benefits from a successful basketball program. For example, Gonzaga has seen much recent basketball success and has experienced some major changes as a result. The school has seen about a 22 percent increase in the size of its student body since their 1999 NCAA appearance and was forced to hire 34 additional professors in order to handle this

¹ This information was obtained from an online article entitled "CBS Keeps March Madness: Network Extends NCAA Tourney Rights Until 2014". http://www.armchairqb.com/cbs_ncaa_tourney.html

drastic increase. Moreover, Gonzaga's basketball coach now earns a higher salary than their university president.²

It has been noted by Coughlin and Erikson (1984) that increased satisfaction with athletic success is reflected by attendance at a school's game. However, the question of whether alumni become motivated to make contributions because of athletic success does not have such an apparent answer. Previous studies have shown alumni donations to be motivated by the athletic success of big-time football and basketball programs (Rhoads and Gerking 2000, Baade and Sundberg 1996, Grimes and Chressanthis 1994, Coughlin and Erikson 1984 and Sigelman and Bookheimer 1983). The question as to whether the alumni of small schools with Division I basketball as their dominant sport are motivated by basketball success is one that has yet to be explored. My theory is that these alumni will be more motivated by basketball success than the alumni of schools that maintain both football and basketball teams. I base this theory on the belief that their basketball team's success and/or failure does not have the chance to be outshined or supplemented by the success and/or failure of a big-time football team.

This study takes two different approaches to examining the role college basketball success has on alumni contributions. First, a fixed effects model is used to determine the effect NCAA basketball success has on real alumni contributions per student. A second fixed effects model is then utilized to establish the role basketball success has on the amount of alumni contributions compared to all other contributions. I find that NCAA

² This information was obtained from a CNN.com article entitled "Cinderella's payday: Gonzaga has seen admissions, alumni donations rise since '99 upset victories in NCAA".
http://money.cnn.com/2003/03/14/commentary/column_sportsbiz/sportsbiz/

basketball success does have a significant effect on both motivating alumni to contribute and increasing alumni contributions as a percentage of total contributions.

2.2 Previous Research

Recently, Cunningham and Cochi-Ficano (2002) explored the potential determinants of alumni giving at the institutional level. They examined approximately 400 public and private colleges and universities over the period 1984-1998. Their findings include that an institution's average donation per alumni increases by between \$61 and \$87 for every 120 point increase in SAT score. In addition, a \$52 dollar increase per alumnus was found by an increase of \$42.70 in endowment per student. Another significant positive relationship was that a \$17 increase per alumnus resulted from the addition of two faculty members per one hundred students. Cunningham and Cochi-Ficano did not, however, find that the presence of NCAA athletics had a positive impact on alumni giving.

Data constraints have consistently been a problem hindering research exploring the relationship between athletics and alumni contributions. Despite the limitations, several studies have examined the effect that NCAA athletic programs have on motivating alumni to donate.

Sigleman and Carter (1979) first looked at 138 colleges and universities that maintained Division I intercollegiate football programs. They used data on alumni giving and NCAA football and basketball success from 1961-1977. The results of their study proved ineffective in establishing a link between athletic success and alumni giving.

Brooker and Klastorin (1981) then took advantage of a panel set that contained athletic and donation data on 58 institutions covering the period 1963 to 1971 in order to examine any possible relationships. Although fairly general, their results implied that athletic performance does influence alumni giving, but it depends on some institutional factors with the distinction between a public and private university being the most important.

Both Coughlin and Erikson (1984) and Sigelman and Bookheimer (1983) used cross-sectional data to explore this topic. Coughlin and Erikson use a sample of 56 NCAA Division I schools for the 1980-81 school year to determine the primary determinants of athletic contributions. Similarly, a study by Sigelman and Bookheimer used data on 57 major athletic programs and their 1980-81 voluntary contributions. Both studies found evidence that college athletic success positively influenced alumni giving for the 1980-81 academic year. Controlling for other factors, Coughlin and Erikson found strong empirical results suggesting that season football attendance, participation in a bowl, basketball winning percentage, and professional competition are the principal determinants of athletic contributions. However, it should be noted that such specifically earmarked contributions may substitute for unrestricted support that would otherwise occur (Baade and Sundberg 1996). Sigelman and Bookheimer concluded that success in basketball is positively correlated with increased giving, nevertheless, the results are far too modest to conclude that there was any significant connection between basketball success and contributions. With regards to football, they found with considerable confidence that the more successful the football team, the greater the outside financial support for the intercollegiate athletic program. Specifically, they concluded that for every

10 percent improvement in football success, schools in their study saw an increase of \$125,160 in outside donations to their athletic programs. These results show that, across different schools, alumni are motivated to donate by athletic success. However, both studies are unable to capture changes in alumni donations over any period of athletic success and failure.

A study done by Grimes and Chressanthis (1994) looked at the external effects of collegiate athletic success and failure over time on contributions to academics. Their study took advantage of times-series data, from Mississippi State University, that covered the 30 year period from 1962-1991. They concluded that the population of potential donors was found to affect alumni giving positively and state funding was found to impact giving negatively. In addition, they also concluded that the overall success of their athletic programs can positively influence the level of alumni giving to the institution. For every one percent increase in the overall winning percentage of their three major sports teams, Mississippi State University saw an increase in contributions of \$286,702. Third, television exposure of their school's sporting events was found to be associated with higher levels of contributions. Finally, they reported that NCAA sanctions for rules violation may negatively influence alumni donations.

Recently, more detailed panel data has been utilized in alumni contribution studies (Rhoads and Gerking 2000, Baade and Sundberg 1996). A study done by Rhoads and Gerking examined the role successful Division I football and basketball programs have in motivating alumni and other donors to make charitable educational contributions to U.S. universities. The authors applied a two-way fixed effects model to panel data covering 87 universities from 1986 to 1996. Baade and Sundberg took a slightly different

approach by using separate panel data sets for private universities, public universities, and liberal arts colleges. Their data was collected for 48 private doctorate-granting universities, 94 public doctorate-granting universities, and 167 liberal arts colleges for years 1973 to 1990. Results from Rhoads and Gerking's article indicated that year-to-year changes in athletic success have no impact on levels of giving by non-alumni. They did, however, find that alumni respond positively to football bowl wins and negatively when their school's basketball team is placed on NCAA probation. Specifically, they found that alumni contributions per student rise by 7.3% when the football team wins a bowl game. Alumni were also found to respond negatively towards NCAA probations by reducing contributions per student by 13.6%. Using averages from their sample, they concluded that a football bowl win resulted in increased alumni contributions of approximately \$858,000 and NCAA basketball probation results in a decline in alumni contributions of approximately \$1.6 million. Baade and Sundberg concluded that in both private and public universities, winning percentages did not significantly impact alumni giving, yet bowl appearances were significant in both. A bowl appearance resulted in a 54% increase in alumni giving for private universities and a 40% increase in giving for public universities. In the public sample, basketball tournament appearances had a positive impact on giving. Specifically, qualifying for the tournament resulted in an average increase in donations of \$450,000 for public schools. With regards to liberal arts colleges, better records were correlated with higher giving; however, even large improvements in winning percentages will have relatively small effects on alumni giving. A 50% increase in winning percentage only resulted in a 3.5% increase in alumni giving.

This study takes a similar approach to Rhoads and Gerking (2000) by utilizing panel data to address the issue of whether or not alumni are motivated by collegiate athletic success.³ The major difference is that this study looks at a specific category of universities that maintain a Division I basketball team but do not have a Division I football team. Unlike previous studies, I find that NCAA tournament appearances have a significant positive effect on alumni contributions.⁴

3. Empirical Analysis

3.1 Data

This study takes advantage of survey data collected by the Council for Aid to Education. The Council for Aid to Education conducts a Voluntary Support of Education Survey, which captures about 85% of the total voluntary support to colleges and universities across the United States. There are approximately 200 schools that have a Division I basketball team but do not have a Division I football program. Of these schools, the survey has complete data over my period for 43 schools. Table 1 displays schools included in my sample, with the highest and lowest dollar amounts of alumni contributions provided. Noticeably, the top 5 universities receiving the most alumni support are all members of the Ivy League conference. These schools can be expected to have higher alumni contributions since it could be expected that on average these schools have more affluent alumni. The average alumni contribution for all schools sampled over

³ Rhoads and Gerking (2000) used a single log model to explain alumni giving per student. My experiments with using a single log model did not produce any viable results.

⁴ Baade and Sundberg (1996) found basketball tournament appearances to be significant only in public schools.

my period was \$14,852,122.09. However, when the five Ivy League schools are removed the average drops to \$5,418,039.76.

[Table 1 here]

My panel includes schools that are currently members of the American East, Atlantic 10, Atlantic Sun, Big East, Big Sky, Big South, Big West, Colonial Athletic Association, Conference USA, Horizon League, Ivy League, Metro Atlantic Athletic, Missouri Valley, Northeast, Ohio Valley, Patriot League, Southern, and West Coast conference. Each school's total alumni contributions, percentage of alumni contributions compared to total contributions, endowment per student, percentage of alumni contacted who donated, expenditures per student, and enrollment data were collected for the years 1998 to 2003. All collection and expenditure data was converted to real figures (in year 2000 dollars) using the GDP deflator. Data on each school's NCAA basketball winning percentage, NCAA tournament appearances, and all time NCAA tournament appearances was also collected over the sample period. The data set analyzed forms a balanced panel with 258 observations. Complete descriptions of the data can be found in Table 2.

[Table 2 here]

3.2 Empirical Model

Regular season winning percentage, tournament appearances, all-time tournament appearances, average endowment per student, percentage of alumni contacted who make donations, and average expenditures per student are used to estimate both dependent variables. A fixed effects model is applied to the 43 universities in my panel. The model estimated is:

$$Y_{it} = \alpha + \beta_1 \text{WINNING}_{it} + \beta_2 \text{TOURNAMENT}_{it} + \beta_3 \text{ALL-TIME TOURNAMNET}_{it} + \beta_4 \text{ENDOWMENT}_{it} + \beta_5 \text{DONOR PERCENT}_{it} + \beta_6 \text{STUDENT EXPENDITURES}_{it} + \varepsilon_{it}$$

where i represents my 43 cross-sectional units, time, t , runs from 1998 to 2003, and ε_{it} is my error term. My dependent variable (Y_{it}) represents real alumni contributions per student in my first analysis and alumni giving as a percent of total giving in my second. I estimate both one and two-way fixed effects models for each dependent variable. The first model is estimated in order to capture the affect that year to year changes has on the amount of alumni giving received each year. The second empirical analysis is done in order to better understand if year-to-year changes in basketball success influences alumni more than other types of donors. Previous research has determined that alumni are more responsive than other donors to athletic success (Rhoads and Gerking 2000), but no study has looked at the donors from schools that have Division I basketball as their dominant sport.

Although constrained by data availability, the independent variables are chosen in an attempt to encapsulate essential characteristics of each school's athletic success and academic reputation. Winning enters the equation in order to capture the effect that yearly regular season records have on alumni contributions. The theory is that successful basketball teams, represented by higher winning percentages, will inspire alumni to increase their contributions.

Tournament is included to capture the effect that qualifying for the NCAA tournament has on alumni contributions. The increased publicity and free advertising that is associated with qualifying for the NCAA tournament is expected to create additional motivation towards alumni donations.

All-Time Tournament is included in order to control for schools that have a historical record of success. A school with a long time tradition of winning could be expected to see less fluctuation in year-to-year alumni contributions as a result of periodical surges in success or failure.

Endowment per student is included as a proxy for school reputation (Cunnigham and Cochi-Ficano 2002). A larger endowment per student is meant to signify a school with a stronger reputation, therefore increasing alumni contributions.

Donor percent serves as a proxy for alumni satisfaction and continual involvement with their alma mater. A higher percent of contacted alumni who make donations should help capture the proportion of alumni who feel content with their education and wish to have continual involvement with their university after graduation.

My final explanatory variable, Student Expenditures, serves as a proxy for educational quality. According to Baade and Sundberg (1996), expenditures per student are one possible measure of the quality of the educational experience students have while attending the institution, and higher expenditures per student should, to some extent, create a stronger tie between the student and the institution that results in higher levels of alumni giving. I predict that all of these variables should have a positive effect on my empirical analyses.

The impact that NCAA basketball success has on motivating alumni to contribute to their alma mater is estimated by three separate regressions for each dependent variable. The first regression is a 2-way fixed effects analysis controlling for both time and school variation. A second regression using a 1-way fixed effects analysis that controls for school specific variation is then included, as well as a 1-way fixed effects analysis that controls for time specific variation.⁵

3.4 Empirical Results

The results from the 2-way fixed effects and both 1-way fixed effects analysis (school and time specific) for real alumni giving per student and alumni giving as a percent of total giving can be found in Tables 3 and 4 respectively.⁶

[Table 3 here]

[Table 4 here]

With respect to the independent variables, the results are consistent with the previous findings (Rhoads and Gerking 2000 and Baade and Sundberg 1996) that year to year changes in regular season athletic success has no effect on alumni giving. However, my results do imply that qualifying for the NCAA tournament has a significant positive impact on both real alumni donations per student and alumni giving as a percent of total giving. With regards to real alumni giving per student, the dummy variable for qualifying

⁵ Since current donations may also depend on past performance, experimentation with lagging the athletic variables were conducted but not included because no significant relationship was found.

⁶ Standard errors have been corrected for heteroskedasticity via White (1980)

for the NCAA tournament is significant at the 1% level in all three regressions. All other independent variables proved insignificant⁷.

Using the results from the 2-way fixed effects analysis, qualifying for the NCAA tournament results in a \$673.45 increase in alumni contributions per student compared to schools that do not qualify, *ceteris paribus*. This translates into an average increase of \$6,211,640.16 per school sampled.

The fixed effects analysis of alumni giving as a percent of total giving tells a similar and slightly more complete story. In this case, there are two instances where I encounter a statistically significant relationship between my explanatory variables and alumni giving as a percent of total giving.

In my first significant relationship, the dummy variable for qualifying for the NCAA tournament proves to be significant in the 2-way fixed effects model and the 1-way fixed effects model that controls for school specific variation. Using the results from the 2-way fixed effects model, qualifying for the NCAA tournament results in a 4.72% increase in alumni giving compared to all other school donations, *ceteris paribus*.

My second significant relationship is based on the tendency for alumni to assume a larger percent of their schools donations when the average endowment per student increases. Real endowment per student is found to have a significant, positive impact on alumni giving as a percent of total giving in all three of my empirical models. An increase in the endowment per student of \$100,000 causes alumni to assume 3.18% more of total contributions to universities, *ceteris paribus*.

⁷ Qualifying for the tournament, real endowment per student, percentage of alumni contacted who make donations and student expenditures were all found to be significant in the one way fixed-effects controlling for time.

Over the last six years, the schools in my data set have reached the tournament 45 times. These results show that making the tournament results in an enormous increase in alumni contributions. Compared to Baade and Sundberg's (1996) results where the public schools sampled saw an average gain in alumni donations of \$450,000 when their basketball team made the tournament, the schools I sampled with basketball as their dominant sport saw an average gain of \$6,211,640.16 in alumni donations as a result of making the tournament. This demonstrates how significant it is when a school without a major football team makes the tournament. All previous studies that have sampled schools with major football and basketball programs have found that qualifying for the NCAA tournament is insignificant in motivation alumni to contribute. My results support my theory that basketball success, through qualifying for the tournament, influences alumni from schools with basketball as their dominant sport more than alumni from schools with both football and basketball programs. If schools that have basketball as their dominant sport can consistently qualify for the tournament, they may be able to realize enormous gains in their alumni contributions.

4. Conclusion

In both of my analyses, regular season winning percentages and historical tournament appearances are not a significant factor in motivating alumni to donate, however a current NCAA tournament appearance is in both. The results suggest that having a strong regular season or having a history of success is not as important as qualifying for the NCAA tournament in influencing alumni donations. This makes sense if you look more closely at the schools that are tested. The schools in my sample are not

able to benefit from a successful Division I football team that could possibly draw sizable crowds and television exposure, especially during a bowl game. A NCAA tournament appearance could provide a substantial boost to these school's financial situation. Not only are they able to realize increases in alumni donations, they can also benefit from free television advertising of their school's name, money received for qualifying for the tournament, increases in ticket sales, and increased opportunity for sponsorship.

According to my results, schools that maintain Division I basketball as their dominant sport should give serious thought toward taking steps to improve their basketball programs in order to increase educational contributions from alumni.

This paper has focused only on the effects of athletic success on alumni contributions for a small distinct sample of schools. The results imply that alumni donations are influenced by athletic success. The results reinforce the idea that athletic programs can have substantial positive spillover effects on their university. A symbiotic relationship between athletics and academics has already been found on many college campuses (McCormick and Tinsley 1987). With the findings that schools that maintain a Division I basketball team as the dominant sport have the ability to increase alumni contributions through athletic success, serious consideration should be given to improving or maintaining a competitive athletic program. The question as to whether alumni are motivated to donate by the athletic success of their alma maters is one that still deserves investigation. While these results cannot be generalized to all colleges and universities, this study adds strong support the theory that athletic success has the capability to motivate alumni to make academic donations.

Table 1: Average Alumni Contributions 1998-2003

Top 10 Universities		Bottom 10 Universities	
Yale University (New Haven, CT)	\$139,079,372.79	Tennessee Technological University (Cookeville, TN)	\$1,887,288.25
Princeton University (Princeton, NJ)	\$104,152,989.83	Rider University (Lawrenceville, NJ)	\$1,816,840.41
University of Pennsylvania (Philadelphia, PA)	\$95,571,907.77	Georgia State University (Atlanta, GA)	\$1,682,194.12
Columbia University (New York, NY)	\$88,165,491.74	Appalachian State University (Boone, NC)	\$1,636,835.79
Brown University (Providence, RI)	\$21,773,813.85	Loyola College in Maryland (Baltimore, MD)	\$1,502,915.94
Colgate University (Hamilton, NY)	\$16,624,245.52	Saint Francis University (Loretto, PA)	\$1,249,307.25
Bucknell University (Lewisburg, PA)	\$14,749,659.14	Univ of North Carolina at Charlotte (Charlotte, NC)	\$827,627.27
Lafayette College (Easton, PA)	\$13,226,189.81	Western Carolina University (Cullowhee, NC)	\$691,873.91
George Washington University (Washington, DC)	\$12,204,791.08	Marist College (Poughkeepsie, NY)	\$616,444.50
Davidson College (Davidson, NC)	\$11,457,221.82	North Carolina, Univ. of-Asheville (Asheville, NC)	\$219,700.71
Average for all schools sampled was \$14,852,122.09			

Source: Council for Aid to Education.

Table 2: Data Descriptions and Sources

Variable	Sample Mean (Std. Dev.)	Description	Source
Giving	1921.425 (3373.334)	Alumni giving per student in real (2000) dollars	Author's calculation using data from the Council for Aid to Education
Percent	0.328 (0.163)	Alumni giving as a percent of total giving	Council for Aid to Education
Winning	0.520 (0.167)	Overall NCAA Division I winning percentage (includes conference and non-conference games)	ESPN Sports Almanac
Tournament	0.175 (0.380)	=1 if school makes the NCAA tournament, =0 otherwise	ESPN Sports Almanac
All-Time Tournament	5.636 (5.401)	Historical Number of NCAA tournament appearances	"NCAA Tournament Facts and Numbers" http://www.tournamentfacts.com/
Endowment	92345.293 (213747.273)	Endowment per student in real (2000) dollars	Author's calculation using data from the Council for Aid to Education
Donor Percent	0.240 (0.123)	Percentage of alumni contacted who made donations	Council for Aid to Education
Student Expenditures	22520.697 (20734.408)	University expenditures per student in real (2000) dollars	Author's calculation using data from the Council for Aid to Education

Table 3: The Impact of Athletic Success on Alumni Contributions per Student

Variable	2-way Fixed effects	1-Way Fixed Effects (school)	1-Way Fixed Effects (time)
CONSTANT	554.052 (0.558)	965.408 (1.143)	-1508.832*** (-4.775)
WINNING	-627.629 (-0.996)	-570.031 (-0.918)	-263.235 (-0.501)
TOURNAMENT	673.453*** (3.104)	699.17*** (3.419)	638.636*** (2.974)
ALL-TIME TOURNAMENT	97.726 (0.767)	55.106 (0.397)	3.578 (0.221)
ENDOWMENT	0.007 (0.621)	0.007 (0.719)	0.010*** (8.930)
DONOR PERCENT	-683.515 (-0.528)	-996.254 (-1.818)	6639.657*** (8.024)
STUDENT EXPENDITURES	-0.042 (.546)	-0.053 (0.378)	0.0261** (2.432)
Adjusted R ²	.91	.91	.87
F-Statistic	48.26***	53.46***	160.00***
Sample Size	258	258	258
Breusch-Pagan Statistic	1676.054	1628.086	626.924

() - Value of t-statistic

*** - Coefficient is statistically significant for a two-tailed test with $\alpha = .01$

** - Coefficient is statistically significant for a two-tailed test with $\alpha = .05$

Standard errors were corrected for heteroskedasticity via White (1980)

Table 4: The Impact of Athletic Success on Alumni Giving as a Percent of Total Giving

Variable	2-way Fixed effects	1-Way Fixed Effects (school)	1-Way Fixed Effects (time)
CONSTANT	19.225*** (2.753)	20.677 (2.927)	13.407 (3.249)
WINNING	-1.856 (-0.324)	-1.285 (-0.229)	2.284 (0.376)
TOURNAMENT	4.722** (2.303)	4.787** (2.434)	1.686 (0.696)
ALL-TIME TOURNAMENT	-0.098 (-0.081)	-0.475 (-0.442)	-0.220 (-1.641)
ENDOWMENT	0.318* (1.797)	0.321* (1.953)	0.082** (2.120)
DONOR PERCENT	0.233 (0.930)	0.228 (0.990)	0.698*** (9.245)
STUDENT EXPENDITURES	-2.457 (-1.172)	-2.811* (-1.823)	0.338 (.890)
Adjusted R ²	.67	.67	.34
F-Ratio	10.90***	12.03***	13.05
Sample Size	258	258	258
Breusch-Pagan Statistic	178.306	161.227	23.512

() - Value of t-statistic

*** - Coefficient is statistically significant for a two-tailed test with $\alpha = .01$

** - Coefficient is statistically significant for a two-tailed test with $\alpha = .05$

* - Coefficient is statistically significant for a two-tailed test with $\alpha = .10$

Alumni Giving as a Percent of Total Giving has been scaled so that 1 = .01

Endowment has been scaled so that 1 = \$10,000

Donor Percent has been scaled so that 1 = .01

Student Expenditures has been scaled so that 1 = \$10,000

Standard errors were corrected for heteroskedasticity via White (1980)

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