

College of the Holy Cross

Athletically Related Aid and Collegiate Athletic Program Success

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Abstract:

Spending in collegiate athletics has been continuously rising in what some would describe as an “arms race.” A key expenditure of these collegiate athletic programs is in the form of scholarships they grant to student athletes. Little research has been done on how this athletically related aid impacts athletic program success in the NCAA. Using multiple ordinary least squared regressions to examine the relationship between athletic aid and NACDA Directors’ Cup points for Division I and II institutions, this paper answers how athletically related aid impacts program success, both in terms of dollars spent and estimated number of scholarships granted. The paper finds inconclusive results for Division I due to the high collinearity of financial variables, supporting the presence of the “arms race”, but finds that in Division II athletically related aid has a strong and positive relationship with program success.

Introduction:

During the early years of collegiate athletics, coaches looked for ways to bring in the best players for their teams. Underhanded payments or potential job promises were primary tactics used until 1935 when the SEC broke from the pack by formally legalizing athletic scholarships. Although the NCAA and many schools originally opposed the practice and viewed scholarships as unethical, by 1951 the NCAA was forced to allow athletic scholarships and recruiting (Staples 2008). Since then, athletic scholarships have been maintained as a key factor in recruiting and building collegiate athletic programs. A current full scholarship, or an athletic grant in aid, covers the full cost of attendance defined to be "tuition and fees, room and board, books, and other expenses related to attendance at the institution" (NCAA.org). Not all athletes receive full scholarships. All sports except for Division 1 FBS football, Division I basketball, and Division I women's gymnastics, volleyball, and tennis, may give out partial scholarships at any amount, up to the value of a full scholarship per individual. Providing and distributing this aid allows these institutions to bring in more and better athletes, yet there has been little work examining the relationship between collegiate athletic success and aid granted to student athletes. This paper seeks to fill this gap by examining the relationship of athletic aid and athletic program success in both NCAA Division I and Division II.

This study will seek to fill the gap in the literature by aiming to answer empirically the question, "How does athletically related student aid impact the overall success of a College or University's athletic program?" Seeking to confirm what common logic would suggest, that increasing athletic aid given to student-athletes is correlated to having a more successful athletic

program, this study sheds light on the strength of this relationship. By comparing institutions' athletic success to the amount of athletic aid granted the study will examine how much additional success a program could expect when giving out additional scholarships or awards.

Where and how an institution spends its money is certainly an important decision which can result in significant changes for a school. Numerous works have studied what factors influence an institution's ability to attract and retain students or bring in alumni donations. To bring students into the school, Fenske and Boyd (1971) and Blau (1974) found that financial aid and the variety of academic programs are important factors. Ryan (2004) and Gansemer-Topf and Schuh (2006) found that school investment in academic support and instruction result in higher retention and graduation rates. Bruggink and Siddiqui (1995), Leslie and Ramey (1988), Olsen, Smith, and Wunnava (1989) showed that alumni were more likely to donate to larger institutions or those with greater prestige. With so many significant factors impacting the institution, the question of where athletics fit into an institution's budgeting certainly rises. Luckily, numerous works have set out what benefits strong athletic programs can bring an institution.

Many works, such as Murphy and Trandel (1994), McEvoy (2005) and Pope and Pope (2014), have shown evidence of the "Flutie Effect" where athletic success leads to more undergraduate applications and interest from potential students. Athletic success does not just translate into more applications but an improvement in the quality of applicants. Mixon, Trevino, and Minto (2004), Tucker (2005), and McCormick and Tinsley (1987) all show that success on the football field correlated with higher SAT scores for incoming freshman at universities. Success on the field can also mean an increase for a school's endowment as George and Klastorin (1981), Baade and Sundberg (1996), and Rhoads and Gerking (2000) showed with

evidence suggesting that successful teams, especially in relation to bowl game and NCAA tournament appearances, were a significant positive factor in determining alumni giving. With all these potential benefits, it is clear why schools would seek to build successful athletic programs.

The question becomes what can institutions do to develop successful programs. This has also been the focus of numerous studies. The general consensus has been that financial support is indeed an efficient way to develop successful programs, with higher athletic expenditures being linked to more successful programs. To little surprise, there is also consensus that the skill level of an institution's athletes drive their success. Bergman and Logan (2014), Langelett (2003), and Borghesi (2017) all show institution's which acquire higher level recruits and hold higher recruit ranking scores are regularly more successful. Where research is lacking is in linking the financial aspect with its direct relationship to the athlete's themselves.

Bradbury and Pitts (2015) linked marginal aid to recruit ranking, finding that as institutions increased athletes' cost of attendance allowances, additional aid above the traditional tuition, room and board, they increased the likelihood of having a highly ranked recruiting class in football. These results suggest that more aid provided to athletes attracts better athletes to institutions. While these results support the theory that increasing athletic aid should also increase program success, it must be noted that this additional aid granted is a relatively small part of the total athletic aid a program grants. As well, the value of aid granted at institutions may vary widely based on the cost of attendance of the institutions. The value of a full scholarship at one school could be twice as much in its dollar amount compared to another, but they both provide the institution with one additional athlete. Examining aid in terms of scholarships granted would be a useful way to control for the variances in cost of attendance across institutions. Unfortunately, most institutions do not provide the number of scholarship they grant

to their athletes. It is possible to create an estimated number of scholarships, which can be used to measure the impact of granting additional aid at the value of a standardized scholarship. Such a scholarship equivalency allows for an estimation of how an additional scholarship should impact success and serves as a control for cost of attendance variance. For this study, such an estimate was developed and used along with the dollar amount of aid granted.

The study relies on multiple ordinary least squared regressions with various financial variables and institutional controls to estimate athletic aid's impact on overall athletic program success, measured by Director's Cup Points. It does so by examining the impact of athletic aid by the dollar amount reported, as well as through an estimated number of scholarships granted by institutions. The study confirms that increases in total athletic expenditure bring higher levels of program success as shown by previous works. It finds inconclusive results for Division I due to the high correlation of the financial variables, suggesting there is accuracy to the claims of an athletic "arms race." In Division II, where correlation of variables was much lower, athletic aid was shown to be strongly related with a program's success. Finally, examining the results by the rankings of institution's programs, it was found that unlike top tier institutions, the success of lower ranking institutions was not strongly correlated to monetary factors, raising questions of competitive equity across the NCAA.

Literature Review:

The literature on how athletic aid impacts an institution's athletic program's success is limited but, there are numerous works which aim to examine the key factors determining on-field success for university programs. Liten et. al (2003) and Orszag and Orszag (2005) both examined how total football expenditures impacted winning percentages in Division I and Division II schools, respectively. Both studies found no statistically significant correlation with

institutional football expenditures and winning percentages. Orszag and Israel (2009) expanded their research to include men's basketball programs. The study estimated that a one-million-dollar increase in football expenditures increased a team's winning percentage by 1.8 percentage points and the likelihood of finishing a season in the AP Top 25 poll by 5 percent. It found no significant correlations for men's basketball.

Other studies broadened their scope to examine the success of collegiate athletic programs as a whole by using the National Association of Directors of Collegiate Athletics (NACDA) Directors' Cup as a measure of an institution's overall success. Won and Chelladurai (2016), for example, looked at 324 competing institutions across the 2003-2004 season analyzing various tangible and intangible resources. The paper found that tangible resources including total athletic expenditure had a statistically significant and positive correlation with Directors' Cup points. Lawrence et al. (2009) looked at 400 institutions amongst NCAA Divisions I, II, and III as well as the National Association of Intercollegiate Athletics (NAIA) over the 2006-2007 season. Using a stepwise regression analysis with nineteen variables, they found total athletic expenditure to be statistically significant in Division I and total expenditure for women's teams to be statistically significant amongst all leagues. The study did examine athletically related student aid, but it was only entered into the NAIA regression and was found to be statistically significant and positive. Katz et. al (2015) chose to focus their analysis on Division III collegiate sports. They found total athletic expenditures, enrollment, and average incoming student GPA to be positively correlated to Directors' Cup points. Jones (2013) examined the changes in athletic expenditures for 330 Division I football programs over the 2008-2010 seasons and attempted to improve upon the work before it by considering more factors for omitted variable bias including the changing of subdivisions as well as the number of sports offered by an institution. The study

found that athletic spending was significantly and positively correlated to Directors' Cup points. Freeman and Osborne (2012) also examined additional variables by providing an analysis of Directors' Cup points and athletic expenditure which breaks down the various categories that make up total expenditures including average head coach's salary, average assistant coach's salary, recruiting expenses, and total operating (game day) expenses. They also include the total expenditure and operating expenditure per athletic participant and the number of varsity sports offered by an institution. The study found that all of the variables were statistically significant and positively correlated to Directors' Cup score.

More recently, Beaudin (2018) examined athletic expenditures, number of teams, number of athletes, university enrollment, tuition, and admission rates with respect to Directors' Cup points. Further, it examined each of these variables in total for men and women, and then examined the impact by sport. The study found that expenditures were significantly correlated to Directors' Cup points. Examining by sport, it also suggested that athletic funds spent in the smaller sports, such as women's field hockey, were more efficient in generating Directors' Cup points.

Finally, as previously mentioned, Bradbury and Pitts (2015) examined how increasing the marginal aid granted to athletes impacted Division I Football recruiting rankings. Using an NCAA rule change in 2015, which allowed institutions more leeway in determining individual athlete's cost of attendance, the study found institutions with higher cost of attendance allowances, aid on top of traditional tuition, room and board, were likely to have higher recruiting ranking. Suggesting that a positive relationship between higher levels of athletic aid and program success exists. This paper will seek to further examine this relationship, by directly

linking athletic aid to a measure of program success, the Directors' Cup points, and modeling off of the previous research which examined athletic expenditures and program success.

Data:

The key aspect of this study is to measure the changes in athletic program success. To do so, it will rely on Director's Cup points to serve as that measure. The Directors' Cup is an award given out to the athletic director of the best all-around athletic program by the National Association of Directors of Collegiate Athletics (NACDA). Each NCAA Division has their own Directors' Cup award and rankings. The Cup was instituted to honor broad-based programs which maintain success in numerous sports. Participating institutions are awarded points based on the performances of a predetermined number of men's and women's sports. The points of an institutions top men's and women's teams are cumulated to an overall score and the institution with the highest score in their division wins the award. The format of the Directors' Cup makes it an adequate measure of overall athletic success and easily convertible for statistical analysis, making it clear why so many previous studies have relied on it. The NACDA website has records of all the results of the Directors' Cups since its inception in 1993-94 for NCAA Division I and 1995-96 for all other divisions and leagues (NCADA.com). From the NACDA website the results for the NCAA Division I and II Directors' Cups were collected for the years from 2010 to 2016. Over the course of those seven seasons 347 Division I institutions and 310 Division II institutions received Directors' Cup points.

While well suited for the analysis Directors' Cup points are by no means a perfect measure of program success. The scoring system grants 100 points to a team that places first place in their sport and grants a minimum of five points to a team which competes and places below 65th place. The points awarded for placing elsewhere change based on the number of

teams which compete in the sport. This means that some sports are weighed more than others, based on the perceived difficulty due to more competition. The Directors' Cup cumulates the scores of an institutions top 10 men's and top 10 women's teams in Division I and the top 7 of each gender in Division II. Teams at an institution which score points below the top 10 or 7 in their respective division are not included in the final scores reported by the NACDA which means the success of some teams may not be included. The issue of lost points only affects the top programs, as on average Division I schools only support about 15 teams, below the 20 team maximum available for scoring. In Division II, the average sits around the maximum number of scorable teams at 14. It is not until examining institutions ranked in the top 15 of Division I, that the average number of teams exceeds the maximum twenty threshold, and only by one team. In Division II, the average number of teams rises one above the 14 maximum at about the top fifty but does not rise much further when looking at more subsets of the top teams. This suggests that not many teams are having their points nullified and considering the institutions losing out on these points are already high ranking, the difference in the points not counted is relatively small compared to their already impressive scores. Despite its imperfections, Directors' Cup points still serve as a measure that is easy to gather, analyze, and has been used in numerous other studies.

To determine how athletic aid and other financial factors impact an institution's Directors' Cup points, data will be collected from the Equity in Athletic Disclosure Act (EADA) database website from the Department of Education. Under the EADA, the information regarding athletics expenditures and revenues is required to be reported annually by any institution that receives Title IV funding (EADA). Due to being self-reported, some have pressed concerns about the accuracy of the EADA, but the work of Jones (2013) examined the EADA information by comparing it to the USA Today's expenditure list for FBS schools. A correlation

of .989 was found between the two data sets indicating that the two are strongly linked and eliminating the concern with regards to accuracy.

The EADA database provides the information for the key independent variable of athletically related aid, as well as numerous other variables including athletic revenue, average head coach's salary, average assistant coach's salary, recruiting expenses, total operating (game day) expenses, other expenses, the number of athletes, the size of the student body and the number of teams. These values are also adjusted to reflect only the sports which are eligible to receive Directors' Cup points. Sports such as sailing, table tennis, weightlifting, and archery are not scored by the NACDA and the expense and revenue variables account for this. The only variable this cannot be done for is athletic aid, as the EADA does not gather this data by sport. Still, these less considered sports are found as funded programs few and far between amongst collegiate institutions, and the aid granted through them is likely not large enough to generate a significant impact on the results. All dollar values will also be converted to a 2014 real standard value to compensate for inflation.

Finally, data from The Integrated Postsecondary Education Data System (IPEDS) will be used to round out the remaining information with other characteristics of the school and to help further analyze the impact of athletic aid. The IPEDS gathers information from every higher education institution that participates in the federal student financial aid programs as required by the Higher Education Act of 1965. The institutions must "report data on enrollments, program completions, graduation rates, faculty and staff, finances, institutional prices, and student financial aid" (IPEDS). IPEDS was used to collect the average cost of attendance for first-year, full-time, out-of-state, students at an institution. These cost of attendance values will be used to account for the school's cost and create a scholarship equivalency.

Of the schools who received Directors' Cup points between 2010 and 2016 seasons, 343 Division I and 289 Division II institutions had a complete set of usable data across the three data sets. Data for schools may have been missing for numerous reasons, including special classifications as with the military academies (although the nature of these institutions is likely a reason for their exclusion), due to institutions which are private and do not receive any federal funding (as is the case with many of the missing Division II institutions), or institutions which simply had incomplete data sets (such as Kennesaw State and Utah Valley). As well, Ivy League schools were dropped from the Division I data, as they appear to be a special case. They offer zero athletic scholarships and give out no athletic aid of any kind, but remain highly competitive due to their history and reputation. In total, across the seven years, this leaves 1,952 observations for Division I institutions and 1,648 observations for Division II institutions to be used in the regression model.

Methodology/Summary Statistics:

The aim of this study is to isolate the impact of athletically related student aid on collegiate athletic program success, building upon previous works examining the impact of athletic expenditures on athletic success. To do so Directors' Cup points will be the chosen measure for program success and will serve as the key dependent variable in multiple OLS regressions of data across NCAA Division I and Division II.

The key independent variable to be examined in the regressions is the total athletic aid granted by institutions. Other financial expenditure factors of collegiate programs will be included as variables in the regressions, including the program's total athletic expenses, operating expenses and the previous year's revenue and recruiting expenses. The remaining expenses or other expenses will also be included, calculated from the total expense less the

athletic aid granted, operating expenditure, and the current year's recruiting expenditure (a factor which should not impact current performance).

Institutional factors will also be included as control variables in the regression analysis. The variables include the size of a school's undergraduate body, the number of funded athletic teams, the number of athletes, and the average salaries of men's teams and women's teams head and assistant coaches. Summary statistics of the variables are shown below for both Division I and II in **Tables 1 and 2**.

Table 1: Summary Statistics of Variables for Division I Institutions

Variables	Observations	Mean	Std. Deviation	Min	Max
Points	1952	232.53	291.16	5	1550.25
Total Athletic Aid (Millions of \$)	1952	7.02	3.85	0.20	24.24
Lagged Revenue (Millions of \$)	1952	35.34	32.47	3.74	179.60
Operating Expenses (Millions of \$)	1952	4.37	4.03	0.17	22.92
Lagged Recruiting Expenses (Millions of \$)	1952	0.57	0.50	0.002	3.46
Other Expenses (Millions of \$)	1952	23.98	24.79	1.89	147.43
Number of Teams	1952	15.65	3.45	10	32
Total Number of Athletes	1952	423	141	135	1050
Total Number of Undergraduates	1952	12711	8662	943	50394
Avg. Male HC Salary	1952	318501	337139	25993	2204561
Avg. Women HC Salary	1952	101529	62647	17317	398774
Avg. Male AC Salary	1952	90897	70792	10474	424119
Avg. Women AC Salary	1952	42811	20106	8246	248182

Table 2: Summary Statistics of Variables for Division II Institutions

Variables	Observations	Mean	Std. Deviation	Min	Max
Points	1648	201.87	168.98	5	1070
Total Athletic Aid (Millions of \$)	1648	2.07	1.20	0.26	8.71
Lagged Revenue (Millions of \$)	1648	5.50	2.44	0.93	18.14
Operating Expenses (Millions of \$)	1648	0.75	0.39	0.04	3.19
Lagged Recruiting Expenses (Millions of \$)	1648	0.06	0.04	0	0.25
Other Expenses (Millions of \$)	1648	2.86	1.48	0.39	10.10
Number of Teams	1648	13.76	3.34	6	25
Total Number of Athletes	1648	331	127	64	1355
Total Number of Undergraduates	1648	4118	3712	375	27386
Avg. Male HC Salary	1648	48592	20076	6014	174262
Avg. Women HC Salary	1648	38757	15773	6315	102929
Avg. Male AC Salary	1648	20621	11458	0	67287
Avg. Women AC Salary	1648	14986	9484	0	61436

Including fixed effects for years and schools, to account for variation across the two, with the other variables results in the following model:

$$Y_{it} = \beta_0 + \beta_1 X1_{it} + \beta_2 X2_{it} + \beta_3 X3_{it} + \beta_4 X4_{it} + \beta_5 X5_{it} + \beta_6 X6_{it} + \beta_7 X7_{it} + \beta_8 X8_{it} + \beta_9 X9_{it} + \beta_{10} y_{it} + FE_{it} + \varepsilon_{it}$$

Y = Directors' Cup Points, X1 = Athletically Related Student Aid, X2 = Lagged Revenue, X3 = Operating Expenses
 X4 = Remaining Expenses, X5 = Lagged Recruiting Expenses, X6 = Total Undergraduates
 X7 = Number of Teams, X8 = Number of Athletes, X9 = Avg. Coaching Salaries
 y = year dummies, FE = Fixed School Effects, ε = Error

Preliminary regressions will be run initially utilizing total athletic expenditure as the key dependent variable in place of variables X1-X4. This will serve as a check and further confirmation of previous work showing the positive relationship between athletic expenses and Directors' Cup points. Two models will be run for both the Division I and Division II data, one holding fixed school effects and one which does not. Both regressions will rely on the institutional control variables selected and will include year dummies.

This study will also run full model regressions using the estimated number of scholarships from institutions as the key dependent variable. The scholarship equivalency variable is calculated from the total athletic aid an institution gives out divided by the institution's on campus, first year, out of state, cost of attendance, collected from IPEDS. There are various cost of attendance estimates available, the on campus first year out of state cost of attendance was chosen based on the assumption that most athletes would find themselves in situations most similar to this scenario. Athletes are likely to be on campus students from out of state who are subjected to all of the school's amenities. As well, all incoming first year student athletes would likely fall under this category and would have faced this value in their decision making.

While this scholarship equivalency is not an accurate estimate of the number of full ride scholarships an institution gives out, it still provides worthwhile insight. It can provide an a rough estimate of the effects of one additional scholarship. It can also serve as a control for the relative cost of aid across institutions. Institutions' cost of attendance vary wildly. **Table 3** shows that from 2010 and 2016 in Division I, the minimum cost of attendance was \$16,340 and the maximum was \$71,375, while the average scholarship equivalency was about 166. **Table 4** shows that in Division II, the range of costs was from \$15,701 and \$67,110 with an average scholarship equivalency of about 59. Schools that give out a similar number of scholarships may be granting very different dollar amounts of aid as a result, and such a measure can control for such situations.

Table 3: Cost of Attendance and Scholarship Equivalency Statistics Division I

Variables	Observations	Mean	Std. Deviation	Min	Max
Scholarship Equivalency	1952	165.78	70.23	4.09	441.32
First Year Out of State COA	1952	40883.33	11069.41	16340	71375

Table 4: Cost of Attendance and Scholarship Equivalency Statistics Division II

Variables	Observations	Mean	Std. Deviation	Min	Max
Scholarship Equivalency	1648	58.58	27.24	4.80	166.23
First Year Out of State COA	1648	34360.43	9059.25	15701	67110

Due to the nature of spending in collegiate athletics, it is likely that the various financial factors will be highly correlated with one another, as programs which spend highly in one area would be more likely to spend highly in other areas as well. Additionally, the revenue a program takes in would very likely be included in the programs spending in the next season, making it intricately linked to the other facets of spending. For this reason, the correlation between these financial variables of institutions athletics programs were checked for both Division I and Division II.

As shown in **Table 5**, Division I expense factors and lagged revenue are all intricately linked to one another with athletic aid's relation to the other factors ranging from 0.69 to 0.75, and lagged revenue being related to lagged recruiting expense, operating expense, and remaining expenses at 0.91, 0.89, and 0.98 respectively.

Table 5: Correlation of Financial Variables for Division I Institutions

Variables	Aid	Lagged Revenue	Lagged Recruiting Expense	Operating Expense	Other Expenses
Athletic Aid	1				
Lagged Revenue	0.7508	1			
Lagged Recruiting Expense	0.7244	0.9147	1		
Operating Expense	0.6946	0.8852	0.8311	1	
Other Expenses	0.6937	0.9804	0.9019	0.8462	1

Table 6: Correlation of Financial Variables for Division II Institutions

Variables	Aid	Lagged Revenue	Lagged Recruiting Expense	Operating Expense	Other Expenses
Athletic Aid	1				
Lagged Revenue	0.4565	1			
Lagged Recruiting Expense	0.3345	0.4917	1		
Operating Expense	0.3895	0.5516	0.6404	1	
Other Expenses	0.2305	0.6018	0.5598	0.6324	1

Table 6 shows that in Division II these relationships are not as strong, signaling the differences of a lesser funded league. This in itself may suggest that these institutions must take a more thoughtful approach to their spending, picking and choosing where expenses go, as opposed to the larger Division I programs who can spend highly in all areas. In Division II, it appears that athletic aid does not have a strong relationship to revenue or expenditure factors. It is most strongly linked to lagged revenue with a correlation of 0.46 but has a correlation of less than 0.4 with all of the expense factors. The remaining factors still appear to be somewhat linked with lagged revenue, lagged recruiting expenses, operating expenses, and the remaining expenses all holding correlations with one another between 0.5 and 0.65.

The strong correlation between the variables runs the risk of multicollinearity in the regression, which could affect the results. To ensure the accuracy of the results it may be necessary to combine these other independent variables in an additional regression, to ensure that

the relationship between athletically related aid and Directors' Cup points holds. This will be done by creating a net expenses variable. It will take the sum of the three non-aid expense factors and then subtract out the lagged revenue. The lagged revenue is subtracted from the expense variable as these gained funds from the previous year were likely incorporated into those various expense factors. This variable will indicate how any spending above gained revenue impacts Directors' Cup points but most importantly serves as a check for the relationship to athletic aid. An additional regression will also be run using net other expenses by subtracting lagged revenue from only other expenses and keeping operating expenses and lagged recruiting expenses in the regression to further solidify the results.

Preliminary Results:

Preliminary results suggest that the positive relationship between athletic aid and Directors' Cup points holds true. **Graphs 1-4** show a visual representation of this relationship for both Division I and II. This trend is clearly stronger amongst those institutions who find themselves to be top competitors, as in the lower tier there appears to be a large cluster of institutions. In response to this clustering of lower performing teams, regressions were run examining a breakdown of the variables' impacts on Directors' Cup points for institution's ranked in the top 100, middle 100, and bottom 100 in a given year. The graphs also highlight how using the scholarship equivalency can control for cost of attendance, creating a steeper slope and lowering the range along the x-axis.

In simple preliminary regressions of athletic aid and scholarship equivalency on Directors' Cup points respectively, the positive relationship is apparent for both variables across both leagues.

Table 7: Simple Regression Athletic Aid and Scholarship Equivalency on Director's Cup Points

Variable	Division I Aid	Division II Aid	Division I Scholarship	Division II Scholarship
Athletic Aid	50.75 (1.27)	47.22 (3.27)		
Scholarship Equivalency			2.87 (0.07)	2.46 (0.14)
Constant	-123.81 (10.17)	104.12 (7.82)	-243.7 (12.19)	57.96 (9.07)

Table 7 shows a relatively strong and positive relationship between athletic aid and Directors' Cup points, suggesting that in Division 1 and Division II an increase of \$1 million dollars in aid would result in 50.75 and 47.22 additional cup points. Looking at the scholarship equivalency factor, this positive relationship remains, unsurprisingly to a much lesser extent with an additional scholarship worth of aid bringing 2.87 additional cup points in Division I and 2.46 additional cup points in Division II. These results would suggest that twenty scholarships have a similar impact on Directors' Cup points as \$1 million dollars in aid. Based on the mean cost of attendance for both Division I and II institutions twenty scholarships would be worth considerably less than \$1 million dollars, showing that holding for the variances in cost of attendance highlight the strength of the relationship between aid and success.

These simple results do not provide an accurate measure of the true relationship between the variables, as there are certainly multiple other factors which determine a program's success. They do help to highlight that on some level the expected relationship between athletic aid and program success appears to be present. Such insight can serve as a so called "smell test" in examining the following results, to help determine what results serve as reliable answers and which may be impacted by multicollinearity. A "smell test" of this type is necessary in a situation where the variables are highly correlated and the tools necessary to separate such an

impact are not at hand. These are just a few things to consider in examining the following results from the study.

Results:

Examining the initial regression analysis relying on total athletic expenditure as the key dependent variable with respect to Directors' Cup points, the conclusions of previous works are reaffirmed, as seen in **Table 8**. With a set of institutional control variables, total athletic expenditure is shown to be correlated at the highest level ($p < 0.1$) with Directors' Cup points in both Division I and Division II, with fixed school effects and without. In Division I the non-fixed effects model estimates \$1 million additional spent on athletic expenses would result in additional 7.78 Directors' Cup points, which is reduced to a 1.06 point increase in the fixed effects model. In Division II, the suggested relationship appears to be stronger, with \$1 million dollar increases in athletic expenses bringing estimated score increases of 40.63 and 21.73 points. It would seem likely that additional spending would go farther in a league where funding is lower across the competitors. With the confirmation of the relationship between athletic expenses and Directors' Cup points confirmed amongst this data set, it becomes adequate to move towards examining the desired factor of athletic aid.

Division I

Results for the regression of athletically related aid and its relation to Directors' Cup points are shown in **Table 9**. The results include a regression for all included Division I institutions across all seven years, as well as broken down by rankings. Amongst all institutions,

other expenses and the number of teams competing for an institution were significant at the highest level ($p < 0.01$) and held a positive relationship with Directors' Cup points. Operating expenses also held a positive relationship with points at a 10 percent significance level ($p < 0.1$).

Concerns about the correlation of the variables do arise within these results though. Although not significant, both athletic aid, lagged revenue and lagged recruiting expenses hold negative coefficients. The concerns carry over in the examination of the institutions who ranked in the top 100.

Examining only institutions who ranked in the top 100 in a given year, the number of teams remains significant, although now at the 5 percent level ($p < 0.05$), with the relationship more than doubling when compared to the results from all of Division I. Concerning though is that athletic aid retains its negative relationship with Directors' Cup points and is now significant at the 10 percent level. This may be a sign of the interference due to high correlation from the expenditure and revenue variables.

Examining the mid and bottom tier institutions aid's negative relationship holds although not on a significant level. In the mid-tier lagged revenue flips to a positive relationship significant at the 10 percent level. Aside from lagged revenue, the regression results for the lower tiers match the messy scatter plot images, with almost no significant variables with any meaningful relationship. These models also have low adjusted R^2 values of 0.18 for the mid-tier model and 0.11 for the bottom tier, which are significantly lower values than for the full model and top tier model, at 0.95 and 0.91 respectively.

The trends from the first series of regressions carry on when athletic aid is replaced by the scholarship equivalence variable, as shown in **Table 10**. The coefficient and significances levels are all nearly identical across the two regressions with only minor changes in the values of

the coefficients occurring. The only noteworthy change is that scholarship equivalence does not hold a significant relationship in the top-tier model, although it maintains its negative relationship across all of the regressions run.

Attempting to account for the potential intercorrelation of the expenditure variables and lagged revenue, multiple regressions were run using net expenses and net other expenses, subtracting the lagged revenue from the institutions' expenses, although these cannot remove the correlation of athletic aid with these variables. The results of these regressions for Division I as a whole and for the top tier can be found in **Tables 11 and 12**, the lower tiers continued to hold few significant values across all models. These regressions have similar results, with net expenses or net other expenses appearing to take on the significance of other expenses at the 5 percent level and with a smaller positive relationship. Across all the models an institution's number of teams remained significant at the highest level with similarly sized relationships. Athletic aid and scholarships maintain negative relationships with Directors' Cup points across all models as well. It should also be noted that across all the models various coaches' salaries held significance in the models, but the coefficients were always nearly equal to zero.

The consistency across the models which defy the preliminary results and logical expectations suggest the high correlation of the variables is generating a significant impact. Lacking the tools to account for such collinearity there is not much that can be done but to consider these factors when interpreting the results. With that in mind what can be drawn from the Division I results suggest that the number of teams an institution supports and athletic spending not directly linked to student-athletes are the most likely to lead to a higher Directors' Cup score. The lack of results for the mid and bottom-ranked institutions may also highlight that for institutions at a lower level of success is not strongly linked to monetary factors.

Division II

The results in Division II held both similarities and differences to those of Division I as can be seen in **Table 13**, examining athletic aid and its impact on Directors' Cup points. In this analysis athletic aid had a strong positive relationship with Directors' Cup points at the highest level of significance. Across all Division II institutions, an increase of \$1 million worth of athletic aid is estimated to result in an increase of 39.48 Directors' Cup points. Among the top ranked institutions, the same increase was estimated to result in 48.69 additional points, a number similar to the value of the initial simple regression shown in the preliminary results. Operating expenses were also found to be significant at the highest level across all Division II institutions with an increase of \$1 million leading to an estimated 52.19 higher score. The full model and top tier model had adjusted R² values of 0.81 and 0.78 respectively, lower than those found in Division I. Similar to the results in Division I, the mid and bottom tiered models had few significant variables and very low adjusted R² values.

The relationships hold when athletic aid is replaced for scholarship equivalencies as shown in **Table 14**. Here one additional scholarship worth of aid generates an estimated 1.49 more Directors' Cup points in the full Division II model and 1.79 more points in the top tier model. An interesting result of the aid and scholarship models is that in both cases lagged revenue holds a negative relationship with Directors' Cup points at the 5 percent level. While it appears high correlation does not affect athletic aid, it may be impacting expenditure and revenue variables.

Regressions using the net expenses and net other expenses variables were run, with their results in **Tables 15 and 16**, to attempt to account for the possible correlation between these variables and to ensure it did not impact the results for athletic aid and scholarships. In all cases,

the significance of both aid and scholarship equivalencies stayed at the highest levels with the relationship rising by a few points for aid and a few fractions of a point for scholarships in the net expenses model. In the net other expenses model, the full Division II results maintained relatively the same for aid and scholarships but rose a similar amount for the top tier results. Net other expenses were significant at the highest level for the full Division 2 scholarship model, and at the 10 percent level for the top tier scholarship model, with estimates around 6 points gained for \$1 million spent above the previous year's revenue. In the aid models, net other expenses was only significant in the full Division II model at the 5 percent level estimated to bring an additional 5.27 points for every million spent over revenue. Operating expenses maintained its relationship at the highest significance in the full Division II models when the net other expenses variable was used. Net expenses held no significance in any model examining athletic aid as the key independent variable, but held the highest level of significance in the full Division II scholarship model and significance at the 10 percent level for the top tier scholarship model. The estimated impacts for \$1 million increase in net expenses were an additional 7.72 points for the full model and 6.35 for the top tier model.

Conclusion:

With athletic expenditures rising across competing institutions in the U.S. and debates over how institutions spend their funds, it is ever more important to decipher where the most efficient place is for an athletic program to spend its money. While a school can spend millions of dollars on hiring the best coaching staffs and building the nicest facilities, at the end of the day the performance of these programs relies on the student-athletes themselves. As such, it would make sense for these institutions to focus their investments on the players. Providing additional scholarships or increasing aid granted, within the confines of NCAA rules, appears to be sound

reasoning for attracting higher quality athletic talent. This study sought to build off the previous works examining athletic expenditures and program success by analyzing empirically the relationship between athletic granted student aid and program success to answer the question, does greater aid lead to more successful programs? Using data from both Division I and Division II institutions, with various other control variables, and utilizing the Directors' Cup points as a measure of program success, the study finds inconclusive results in Division I but suggests such a relationship exists in Division II.

The financial factors in Division I were highly correlated to one another, and it appears likely that the regression analyses were impacted as a result. This would explain athletic aid's consistent negative relationship with Directors' Cup points. While the high correlation does create a problem in generating a meaningful and accurate analysis of athletic aid on program success, it does provide some insight. In Division I, institutions are spending large amounts in all areas. With the high correlations between athletic aid, operating expenses, lagged recruiting expenses, other expenses, and lagged revenue, the image of the athletics "arms race" in Division I becomes clearer. In response, it seems appropriate to turn to the lesser funded league in Division II where the correlations between such variables appear to be much smaller and more controllable.

In Division II, the strongest and most consistent route to success found by this study is through additional athletic aid. In all regressions run for the full set of Division II institutions and the top tier of Division II institutions, athletic aid was found to have a significant relationship to program success. An increase in aid of \$1 million was estimated to increase Directors' Cup points by about 40 points for the all Division II institutions and 50 points for top-ranking institutions. This would be enough points to move a team ranked near the bottom of the top 100

up fifteen to twenty ranks in the competition. The same relationship held true for scholarship equivalency with one scholarship worth of aid bringing an additional 1.4 to 1.9 points depending on whether an institution was in the top tier or not. This would mean that about 26 to 28 scholarships would result in similar point increases as \$1 million in aid. Based on the average cost of attendance in Division II, these scholarship levels would be worth just below \$1 million in aid, marking that the aid in terms of dollars or scholarships bear fairly similar relationships.

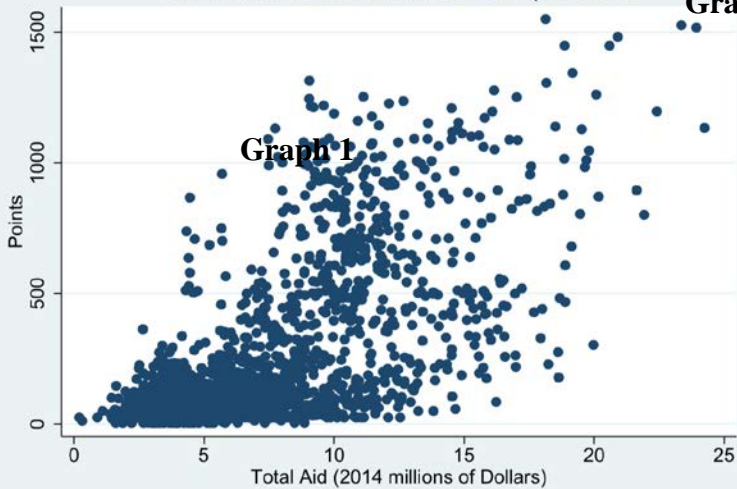
Across both divisions, the models for the mid-ranked and bottom-ranked institutions appeared to be poor fits with few significant values. Such results, when compared to the top ranking models, may mean that the top tier was often driving the results for the all institutions models. It is not incredibly surprising, given the large number and variety of lower level institutions trying to compete. The scatter plots in **Graph 1-4** appear to highlight this issue best with the lower left being a large clump, which nearly appears random. If such is the case, it could mean that there is very little that low performing institutions can do monetarily to increase athletic success, at least nothing examined by this study. This raises the questions of how much competitive equity there is in collegiate athletics. The schools at the bottom appear to have no opportunity to improve while those at the top have opportunities to grow stronger, furthering the gap in the level of competition.

Finally, while this work has sought to further the expanding literature on athletic expenditures and program success, there is certainly room for improvement and further studies. The issues of the correlations of the various expense and revenue variables was certainly a limitation of this study, but one which there is likely a potential solution for. As well, the Directors' Cup points is not a perfect measure of success, with a max of only twenty of an institutions competing teams scores being counted, there may be points left out on the field, even

if they are only a few. Aside from factors such as championships and win percentages, “non-success” measures may provide useful insights. One such measure may be an institution's incoming recruit class ranking, a likely indicator of future success. As well, the key independent variable cannot be broken down by sport and the study is forced to make rough estimates of scholarship values. If such data is or ever becomes available, it would certainly be invaluable for various studies, from athletic expenditures, recruit school choice, and athlete pay. Finally, while this study sought to use numerous controls, there very well may be more controls or variables of interest. There are certainly numerous directions for future studies and with rising costs of athletic expenditures, ever changing league structures, and debates over student-athlete wages all are certainly important.

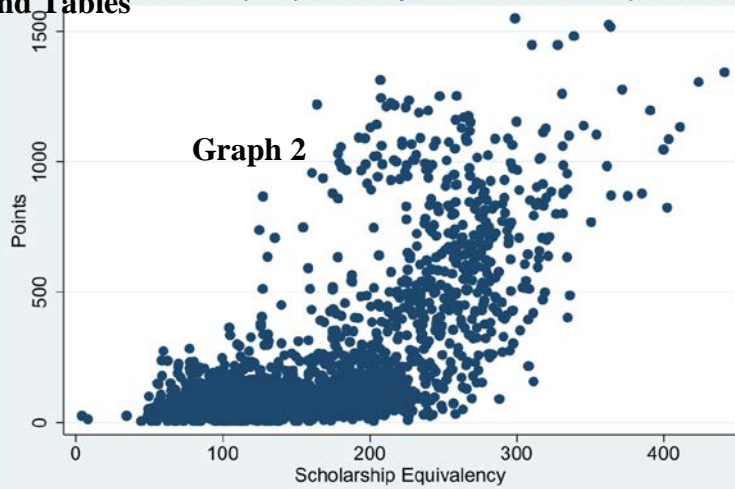
Graphs and Tables

D1 Total Aid and Director's Cup Points



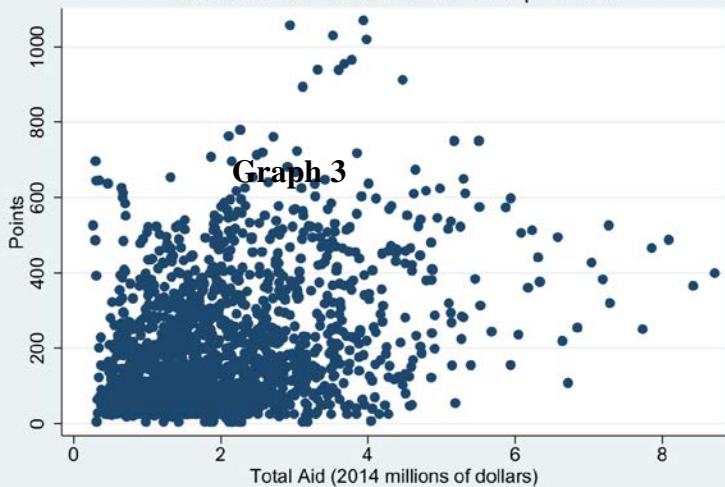
Graph 1

D1 Scholarship Equivalency and Director's Cup Points



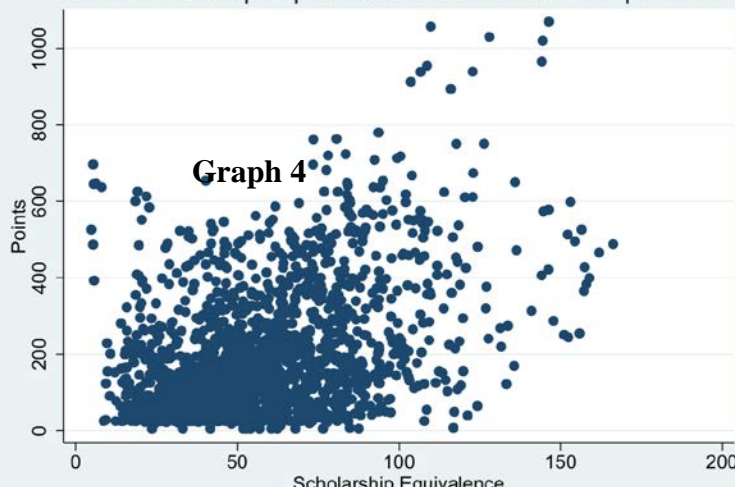
Graph 2

D2 Total Aid and Directors Cup Points



Graph 3

D2 Scholarship Equivalence and Directors Cup Points



Graph 4

Table 8: Regressions of Total Athletic Expenditure on Directors Cup Points

Variables	D1	D1 FE	D2	D2 FE
Total Athletic Expenditure (Million of Dollars)	7.78*** -0.30	1.06*** -0.40	40.63*** (2.01)	21.73*** (3.21)
Number of Teams	11.05*** (1.49)	6.44** (2.62)	-4.13*** (1.46)	3.90* (2.23)
Total Athletes	-0.07* (0.04)	0.01 (0.06)	0.12*** (0.04)	0.00 (0.07)
Total Undergraduates	-6.94E-04 (~0.00)	-2.53E-03 (~0.00)	0.01*** (~0.00)	0.004 (~0.00)
Constant	-214.85*** (19.85)	-68.48 (73.69)	-15.51 (19.71)	13.39 (47.04)
Salaries Included	Y*	Y*	Y*	Y
Fixed School Effects	Y	N	Y	N
Year Dummies	Y	Y	Y	Y
Adjusted R-Squared	0.81	0.95	0.45	0.80
Number of Observations	1952	1952	1648	1648

*Significant at the 10% level **Significant at the 5% level ***Significant at the 1% level

Table 9: Regression of Division I Athletic Aid Expenditures on Director's Cup Points

Variables (Millions of Dollars)	All D1	Top 100	Mid 100	Bottom 100
Aid	-1.84 (2.68)	-10.34* (5.82)	-4.04 (3.18)	-0.25 (1.45)
Lagged Revenue	-0.28 (0.45)	-0.21 (0.75)	1.35* (0.71)	0.59 (0.66)
Other Expenses	1.6*** (0.49)	1.18 (0.83)	-0.96 (0.80)	0.51 (0.74)
Operating Expenses	2.23* (1.30)	3.06 (2.84)	0.21 (2.34)	1.96 (1.83)
Lagged Recruiting Expenses	-25.4 (15.55)	-22.79 (27.27)	-23.4 (19.77)	21.04 (18.78)
Number of Teams	7.18*** (2.65)	18.91** (8.74)	1.89 (2.24)	0.89 (1.23)
Total Athletes	0.01 (0.06)	0.13 (0.14)	0.002 (0.06)	-0.04 (0.03)
Total Undergraduates	-2.01E-03 (~0.00)	1.00E-03 (~0.00)	1.00E-03 (~0.00)	-1.00E-03 (~0.00)
Avg. Men HC Salary	2.93E-05 (~0.00)	2.74E-05 (~0.00)	2.10E-06 (~0.00)	-3.92E-05 (~0.00)
Avg. Women HC Salary	5.38E-04*** (~0.00)	5.54E-04*** (~0.00)	1.47E-04 (~0.00)	-2.46E-06 (~0.00)
Avg. Men AC Salary	-8.38E-05 (~0.00)	-1.53E-04 (~0.00)	3.18E-04** (~0.00)	-1.32E-04 (~0.00)
Avg. Women AC Salary	-1.97E-04 (~0.00)	5.28E-05 (~0.00)	-3.02E-04 (~0.00)	1.19E-04 (~0.00)
Constant	-74.27 (73.76)	277.92 (212.68)	77.42* (43.61)	20.82 (23.67)
Fixed School Effects	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y
Adjusted R-Squared	0.95	0.91	0.19	0.10
Number of Observations	1952	640	684	628

*Significant at the 10% level **Significant at the 5% level ***Significant at the 1% level

Table 10: Regression of Division I Scholarship Equivalencies on Director's Cup Points

Variables (Millions of Dollars)	All D1	Top 100	Mid 100	Bottom 100
Scholarships	-0.11 (0.12)	-0.46 (0.30)	-0.11 (0.13)	-0.02 (0.06)
Lagged Revenue	-0.30 (0.44)	-0.27 (0.75)	1.25* (0.70)	0.61 (0.64)
Other Expenses	1.59*** (0.49)	1.14 (0.83)	-0.99 (0.8)	0.47 (0.74)
Operating Expenses	2.22* (1.3)	2.88 (2.84)	0.23 (2.37)	1.94 (1.83)
Lagged Recruiting Expenses	-25.34 (15.50)	-23.53 (27.29)	-23.68 (19.98)	21.34 (18.73)
Number of Teams	7.28*** (2.65)	18.4** (8.75)	1.76 (2.25)	0.92 (1.23)
Constant	-63.76 (73.83)	314.36 (206.51)	80.59* -45.67	22.46 -23.46
Total Undergraduates Included	Y	Y	Y	Y
Total Athletes Included	Y	Y	Y	Y
Salaries Included	Y	Y	Y	Y
Fixed School Effects	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y
Adjusted R-Squared	0.95	0.91	0.1841	0.11
Number of Observations	1952	640	684	628

*Significant at the 10% level **Significant at the 5% level ***Significant at the 1% level

Table 11: Regression of Division I Athletic Aid and Scholarships on Director's Cup Points with Net Expenses

Variables (Millions of Dollars)	All D1 Aid	Top 100 Aid	All D1 Schoarships	Top 100 Scholarships
Aid	-0.57 (2.53)	-9.62* (5.70)		
Scholarship Equivalency			-0.09 (0.12)	-0.45 (0.30)
Net Expenses	0.85** (0.39)	0.61 (0.62)	0.83** (0.38)	0.63 (0.62)
Number of Teams	7.39*** (2.64)	19.36** (8.62)	7.60*** (2.64)	18.71** (8.62)
Constant	-78.14 (73.63)	326.41 (206.25)	-72.24 (74.01)	358.29* (212.51)
Total Undergraduates Included	Y	Y	Y	Y
Total Athletes Included	Y	Y	Y	Y
Salaries Included	Y	Y	Y	Y
Fixed School Effects	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y
Adjusted R-Squared	0.95	0.91	0.95	0.91
Number of Observations	1952	640	1952	640

*Significant at the 10% level **Significant at the 5% level ***Significant at the 1% level

Table 12: Regression of Division I Athletic Aid and Scholarships on Director's Cup Points with Net Other Expenses

Variables (Millions of Dollars)	All D1 Aid	Top 100 Aid	All D1 Scholarship	Top 100 Scholarship
Aid	-0.41 (2.62)	-9.60* (5.77)		
Scholarship Equivalency			-0.08 (0.12)	-0.44 (0.30)
Net Other Expenses	0.85* (0.39)	0.63 (0.62)	0.83** (0.38)	0.65 (0.62)
Operating Expenses	2.12 (1.3)	3.09 (2.84)	2.17* (1.3)	2.92 (2.84)
Lagged Recruiting Expenses	-15.30 (15.03)	-19.37 (27.05)	-14.38 (14.86)	-20.33 (27.04)
Number of Teams	7.44*** (2.65)	19.57** (8.72)	7.64*** (2.65)	19.02** (8.73)
Constant	-81.03 (73.83)	328.23 (206.51)	-74.94 (74.33)	358.98* (212.74)
Total Undergraduates Included	Y	Y	Y	Y
Total Athletes Included	Y	Y	Y	Y
Salaries Included	Y	Y	Y	Y
Fixed School Effects	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y
Adjusted R-Squared	0.95	0.91	0.95	0.91
Number of Observations	1952	640	1952	640

*Significant at the 10% level **Significant at the 5% level ***Significant at the 1% level

Table 13: Regression of Division II Athletic Aid Expenditures on Director's Cup Points

Variables (Millions of Dollars)	All D2	Top 100	Mid 100	Bottom 100
Aid	39.48*** (7.42)	48.69*** (13.90)	-4.53 (7.59)	0.80 (6.31)
Lagged Revenue	-4.59 (3.06)	-10.71** (5.43)	-2.52 (2.97)	1.88 (2.37)
Other Expenses	6.47 (4.38)	-3.12 (6.58)	-7.53 (5.22)	-4.62 (4.10)
Operating Expenses	52.19*** (15.10)	37.94 (25.49)	18.80 (14.91)	10.41 (13.81)
Lagged Recruiting Expenses	31.71 (128.59)	-179.6 (217.89)	219.00* (131.42)	74.22 (83.09)
Number of Teams	3.03 (2.22)	2.21 (4.79)	-0.35 (2.08)	1.52 (1.25)
Total Athletes	-0.07 (0.07)	-0.02 (0.14)	0.01 (0.07)	-0.03 (0.04)
Total Undergraduates	4.57E-03 (~0.00)	0.01* (~0.00)	-0.01* (~0.00)	-0.01 (~0.00)
Avg. Men HC Salary	1.35E-04 (~0.00)	1.54E-04 (~0.00)	2.91E-05 (~0.00)	2.48E-05 (~0.00)
Avg. Women HC Salary	-5.86E-05 (~0.00)	-1.65E-05 (~0.00)	-5.48E-05 (~0.00)	3.26E-04 (~0.00)
Avg. Men AC Salary	-4.15E-05 (~0.00)	3.79E-04 (~0.00)	8.74E-05 (~0.00)	-3.12E-04 (~0.00)
Avg. Women AC Salary	1.34E-04 (~0.00)	2.83E-04 (0.001)	9.74E-05 (~0.00)	2.83E-04 (~0.00)
Constant	30.31 (58.26)	76.59 (107.13)	219.11*** (58.46)	29.08 (34.41)
Fixed School Effects	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y
Adjusted R-Squared	0.81	0.78	0.20	0.14
Number of Observations	1648	666	662	320

*Significant at the 10% level **Significant at the 5% level ***Significant at the 1% level

Table 14: Regression of Division II Scholarship Equivalencies on Director's Cup Points

Variables (Millions of Dollars)	All D2	Top 100	Mid 100	Bottom 100
Scholarships	1.49*** (0.30)	1.79*** (0.59)	-0.1 (0.28)	-0.16 (0.21)
Lagged Revenue	-6.78** (2.96)	-13.26** (5.27)	-2.2 (2.90)	1.86 (2.36)
Other Expenses	5.38 (4.39)	-4.38 (6.62)	-7.41 (5.22)	-4.68 (4.08)
Operating Expenses	48.88*** (15.21)	29.56 (26.12)	18.56 (14.91)	11.98 (13.82)
Lagged Recruiting Expenses	5.38 (129.38)	-199.17 (219.82)	218.01 (132.09)	82.07 (83.17)
Number of Teams	3.05 (2.22)	3.34 (4.79)	-0.46 (2.08)	1.63 (1.26)
Constant	38.36 (58.12)	74.97 (109.24)	214.69*** -57.42	37.2 -35.47
Total Undergraduates Included	Y	Y*	Y*	Y
Total Athletes Included	Y	Y	Y	Y
Salaries Included	Y	Y	Y	Y
Fixed School Effects	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y
Adjusted R-Squared	0.81	0.69	0.20	0.14
Number of Observations	1648	666	662	320

*Significant at the 10% level **Significant at the 5% level ***Significant at the 1% level

Table 15: Regression of Division II Athletic Aid and Scholarships on Director's Cup Points with Net Expenses

Variables (Millions of Dollars)	All D2 Aid	Top 100 Aid	All D2 Scholarship	Top 100 Scholarship
Aid	41.04*** (7.28)	52.96*** (13.51)		
Scholarship Equivalency			1.61*** (0.29)	1.94*** (0.57)
Net Expenses	6.96 (2.09)	5.57 (3.56)	7.72*** (2.05)	6.35* (3.57)
Number of Teams	3.21 (2.22)	2.55 (4.78)	3.07 (2.22)	3.73 (4.79)
Constant	72.47 (52.64)	39.36 (96.55)	63.69 (53.12)	14.58 (100.26)
Total Undergraduates Included	Y*	Y*	Y*	Y*
Total Athletes Included	Y	Y	Y	Y
Salaries Included	Y	Y	Y	Y
Fixed School Effects	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y
Adjusted R-Squared	0.81	0.69	0.81	0.69
Number of Observations	1648	666	1648	666

*Significant at the 10% level **Significant at the 5% level ***Significant at the 1% level

Table 16: Regression of Division II Athletic Aid and Scholarships on Director's Cup Points with Net Other Expenses

Variables (Millions of Dollars)	All D2 Aid	Top 100 Aid	All D2 Scholarship	Top 100 Scholarship
Aid	39.08*** (7.31)	52.79*** (13.63)		
Scholarship Equivalency			1.49*** (0.29)	1.90*** (0.59)
Net Other Expenses	5.27** (2.16)	4.86 (3.67)	6.29*** (2.12)	6.07* (3.65)
Operating Expenses	51.94*** (15.07)	39.20 (25.5)	49.1*** (15.18)	31.13 (26.18)
Lagged Recruiting Expenses	30.78 (128.51)	-154.35 (217.46)	6.26 (129.28)	-163.58 (219.59)
Number of Teams	3.07 (2.21)	2.34 (4.79)	3.02 (2.22)	3.62 (4.80)
Constant	37.18228 (53.94)	13.42 (98.14)	33.50 (54.30)	-3.086 (101.38)
Total Undergraduates Included	Y	Y*	Y	Y
Total Athletes Included	Y	Y	Y	Y*
Salaries Included	Y	Y	Y	Y
Fixed School Effects	Y	Y	Y	Y
Year Dummies	Y	Y	Y	Y
Adjusted R-Squared	0.81	0.69	0.81	0.69
Number of Observations	1648	666	1648	666

*Significant at the 10% level **Significant at the 5% level ***Significant at the 1% level

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