

The Financial Determinants of College Football

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Mitchell Adams
University of Central Florida

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THE FINANCIAL DETERMINANTS OF COLLEGE FOOTBALL

by

MITCHELL E. ADAMS

A thesis submitted in partial fulfillment of the requirements
For the Honors in the Major Program in Finance
In the College of Business Administration
And in The Burnett Honors College
At the University of Central Florida
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Thesis Chair: Dr. Charles Schnitzlein

Abstract

There is a certain tradition, pageantry, rivalry, and glory in college football. It is well known that college football can be a big time money maker and sometimes covers the costs of other athletic teams within a school. However, it is also recognized that many college football programs lose money or struggle to break even. Thus, there is tremendous variability that exists in the amount of resources a school may have and the outcomes in athletic success, while there is not always a one to one correspondence between the two. The purpose of this study is to examine and analyze the quantifiable determinants of success, considering both financial and non-financial variables. The pressure to win, and do so immediately; brand; and outdo other schools in the facility “arm’s race” has reached unprecedented levels.

Dedication

To Mom, Dad, Meredith, and Ross, for believing in me and supporting me in everything I do.

To my best friends Maxx, Alex, and Spencer, I would not be where I am today without you guys.

Acknowledgements

I wish to express my appreciation and thanks to my Thesis Chair Dr. Chuck Schnitzlein, for all of your patience and direction, and whom without, this study would not have been possible.

Thank you for sharing in my vision. I would also like to thank my committee members Dr. Melissa Frye and Professor Scott Bukstein for doing me the honor of serving on my committee and helping me throughout this process. I am truly grateful for all of your input and availability, and for being given the opportunity to participate in the Honors-in-the-Major program here at the University of Central Florida. Go Knights!

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Background

There are one hundred-twenty five colleges and universities that compete at the Division I Football Bowl Subdivision (FBS) level, the highest level in collegiate sports. Some of these programs have been in existence for one hundred years, while others have recently become Division I FBS within the last year.

In order to qualify as a Division I program, a school must field at least fourteen teams with the following requirements: There can either be seven men's and seven women's teams, or six men's and eight women's teams. At least two of the sports for both men and women are required to be team sports, and each sports season (Fall, Winter, and Spring) must be represented by both men's and women's sports as well. In addition, there are scholarship requirements a school must be able to fund.

College football programs are allowed to have eighty-five scholarship players on a given roster, and can sign up to twenty-five scholarship players per year. Further, "Since football has no female equivalent, offering the maximum 85 FBS football scholarships can force schools to add women's teams and scholarships to meet Title IX balance requirements" (The Daily Journal). College football has become so big and popular that it drives what schools are doing to gain popularity, attract top athletic talent, and allocate their resources. Elson Floyd, President of Washington State University, once stated "Like it or not, football serves as the front door to institutions, with the exception of the Ivy League. The reputation of a school is predicated on athletics. Football is first. Basketball is second. If you have a successful football program, it will support all other revenue and non-revenue sports" (Benedict and Keteyian). This mentality is widespread and higher education institutions are willing to operate football programs as loss

leaders, with losses typically in the millions. This is the value placed on football, even at a time of severe budget cuts. It is perceived as an endeavor that is worth it.

Methodology

This study employs nine seasons of college football data from 2003-2011, and tested the significance of the variables (listed in each hypothesis) via multiple regression. Regression measures the significance of the relationship between a dependent variable and an independent variable, or regressor. I report and utilize in significance tests cluster-robust t-statistics which explicitly account for the autocorrelation in the residuals due to multiple years of observations on each university (Petersen). The following is a list and definition of the variables used in this study:

- Average Stars per Recruit
 - o The average number of stars per recruit indicates the quality of players a school is bringing in for a given recruiting class. This proxy was obtained from Rivals.com.
- Number of Commits
 - o Total number of players committed to a program each year according to Rivals.com
- Strength of Schedule
 - o Strength of schedule metric is from the Congrove Computer Rankings and indicates how tough a school's opponents were as of year-end. Lower numbers indicate tougher schedules.
- Wins and Losses
 - o Each football program's record for each year of this study from jhowell.net.
- Total Expenses
 - o How much a school spent on their entire football program for the year according

to the Department of Education Equity in Athletics.

- Total Revenues
 - How much a school's football program made according to the Department of Education Equity in Athletics.
- Graduation Rates
 - Graduation success rates (GSR) from ncaa.org show the percentage of student-athletes who enrolled in a given school and received a degree. GSR is measured in six year cohorts.
- Preseason and End-of-Year Ranking
 - Rankings are according to the AP Poll Top 25. The AP Poll was used instead of BCS rankings, as BCS rankings are not out until the middle of the season. In the data, ranking was used as a binary variable where 1= ranked in the top 25 and 0=outside of the top 25 or unranked.
- Conference Titles
 - The teams that won their conference each year were given a 1. All others were given a 0. It is an inherently binary variable: either a school won its conference in a given year or they did not. Results are from collegefootballpoll.com.
- National Titles
 - This factor is inherently binary variable: either a school won the BCS National Championship (receiving a 1) or they did not (receiving a 0). Results are from collegefootballpoll.com.

- School Endowment
 - Endowments are money or assets donated to a school, which in turn the school invests to increase the value. Due to the restrictions on amounts that can be spent from endowment funds, some schools have a more substantial sum to use than others. These funds can help support many things such as academic programs, research grants, professorships, and other expenses. The endowment funds were broken down into five dummy variable categories. A school was considered to have a high endowment fund if it was at least one billion dollars, which was assigned a 1; assigned a 2 for medium-high if at least \$750 million, but less than one billion; assigned a 3 for medium if in the \$500 million to \$750 million range; assigned a 4, considered medium-low, if less than \$500 million but greater than \$250 million; and assigned a 5 for low if less than \$250 million.
- Conference Rank
 - The college football conferences were ranked according to The USA Today's Sagarin ratings.

Programs left out of this study include:

- The United States Military Academy, United States Air Force Academy, United States Naval Academy, and University of Maryland could not be used due to lack of information regarding revenues and expenses from the Department of Education Equity in Athletics.
- Florida Atlantic University and Florida International University were not Division I FBS

long enough and had some missing recruiting data.

- University of South Alabama, Texas State University, University of Texas- San Antonio, Old Dominion University, Western Kentucky University, and University of Massachusetts Amherst were either not Division I FBS during the time period analyzed or were not an FBS member for a long enough period of time.

Hypothesis One: Spending more leads to a higher win total

An obvious metric of success for a college football program is winning national championships. However, with the small number of observations for national champions, and the slim odds of being talented enough to win a title (let alone play for one), I believe that success at the Division I FBS level can be achieved without championships. Virginia Tech would be a good example of a school with a successful program even though they have never won a title. The “Hokies” have had nine double digit win seasons since 2002 (which implies a winning percentage of over 75%), been consistently ranked in the AP Poll Top 25, and won four conference titles since 2004. I am confident most college football programs would be pleased to attain the level of on-field success of a Virginia Tech. It would be logical to think a school with more resources invested in its football program would translate into consistent, sustained success, bearing in mind that teams do have an off year every now and then.

A regression was run to test which factors most significantly impact wins, using data compiled for the seasons from 2003 through 2011. The independent variables tested include: Total Expenses, Average Stars per Recruit, Number of Commits per season, Strength of Schedule, and Conference Rank.

Of these five variables, three were found statistically significant with t-statistics over 1.96 at a 95% confidence level: Total Expenses (4.66), Average Stars per Recruit (6.55), and Strength of Schedule (4.42).

Total Expenses has a positive impact on wins per season. The estimated coefficient shows that in the model an increase in \$9.6 million of expenses is associated with an additional win. The coefficient on Average Stars per Recruit is 2.4. Thus, for every total average star added

to a program's recruiting class, their expected win total would go up by 2.4. This makes sense as better teams have better players, and naturally will win more games, supporting the old adage "Players play, coaches coach". For Strength of Schedule, the estimated coefficient is 0.022 indicating, holding other factors constant, the stronger a team's schedule the lower the level of expected wins. For example, other things equal, the fifty-fifth toughest schedule would result in an additional win relative to the tenth toughest schedule ($45 \times 0.022 = 0.99$).

As expected, spending more leads to winning more; though its direct effect is small in magnitude. It should be noted the R-squared of this model was 0.24. This indicates the data does not fit the model well and there are additional factors not accounted for in the model that help determine on-field success. Nonetheless, a link exists between Wins and higher Total Expenses, higher Average Stars per Recruit, and a weaker Strength of Schedule.

Hypothesis Two: You have to spend money to make money

If a school is spending more, thereby improving their record, one would presume the school would in turn generate more revenue, and thus be more profitable. The idea behind this model was to find the factor(s) that most significantly affects profits. There are traditional, storied college football powers with large budgets; however, this does not imply a lesser program cannot be financially healthy. Many schools subsidize their football teams with money from student fees and school funds.

Again, the data used was from the 2003 through 2011 seasons. The independent variables used to regress on profits were: Average Stars per Recruit, Wins, Total Expenses, Preseason and End-of-Year Ranking, Conference Titles, Strength of Schedule, and Conference Rank.

Variables found to be statistically significant were Average Stars per Recruit (4.63), Total Expenses (4.79), End-of-Year Ranking (2.49), Conference Titles (-3.29), Strength of Schedule (2.40), and Conference Rank (-3.65).

These results imply that the Average Stars per Recruit and Total Expenses have a positive association with profits. The same can be said for being ranked at the end of the season, which is associated with a high win total. If a team is ranked at the end of the season, then clearly they exhibited success on the field by winning. As a result, better profits can be expected. On the other hand, it seems counterintuitive that winning the conference title has a negative effect on profits. This result may be explained by the cost of playing in the conference championship. For example, it was reported in February 2013 it became known that Florida State reported a loss of \$478,954.20 for their trip to the 2012 Atlantic Coast Conference (ACC) title game; a game they won which earned them an automatic berth to the Orange Bowl. The majority of FSU's loss

came from unsold tickets as result of the ACC making each division winner responsible 10,000 tickets. Combine that with, according to sources, an unappealing opponent and location, and you have a recipe for a big loss. "...Florida State sold just 2,033 tickets, according to Warchant.com, and the stadium was less than half full for the game..." (Schwab, Frank). However, in order to make it to a national championship game, barring the two exceptions where teams did not win their conference, it is necessary for teams to win their conference. Therefore, reaching the conference title game is a necessary cost in order to have the possible opportunity to play a bowl game on a big stage.

Strength of Schedule has a coefficient that adds \$495,611.4 to profits. This implies weaker schedules are associated with greater profits. Further, Conference Rank has a coefficient of -\$61,191.89, which demonstrates the disadvantage of being in a lower level conference. There is no easy way for schools participating in weaker conferences to increase profitability. "It's a caste system" (Woolsey, Matt). Maybe it is more like an oligopoly, but the issue for Non-AQ schools is the league revenue sharing/distribution mainly related to television contracts that AQ schools benefit from. "The power of television contracts has driven the recent fever of conference switching, as colleges forsake geographic loyalties in pursuit of more lucrative deals" (Miller, Eder, and Sandomir). Note, the recent conference realignment which led to the death of football in the WAC. According to University of Florida President Bernie Machen, the growth of college football is because of ESPN. Today, ESPN controls the scheduling, programming, and financing to a large number of games. In the 1980s, before ESPN had as much influence as today, they were able to convince lower level teams to play on Thursday nights; then Friday nights; and now, sometimes even Tuesdays and Wednesdays. An example of this is Boise State,

a disadvantaged member of the “caste system” that is college football. While there are many things Boise State is not, five years into Boise State’s time as a Division I FBS football program they struck a deal to play mid-week games on national television with ESPN. “To the extent that Bronco Nation is defined by people outside our area and our blue field, it’s ESPN’s coverage over recent years that allowed this to happen,’ Boise State’s president, Bob Kustra, said” (Miller, Eder, and Sandomir). Since 2000, Boise State has been the winningest program in college football.

Hypothesis Three: Average Stars per Recruit depends on Total Expenses

Nick Saban once said to former University of Alabama athletic director Mal Moore “You need to understand one thing, I’m not worth a damn without players” (Benedict and Keteyian).

Total Number of Commits, Wins, Strength of Schedule, Total Revenues, Total Expenses, Graduation Rates, Preseason and End-of-Year Rank, Conference Title, National Title, and Conference Rank from 2003-2011 were regressed on Average Stars per Recruit. Seven of these independent variables registered as statistically significant: Wins (2.61), Strength of Schedule (-3.67), Total Revenues (5.88), Total Expenses (2.69), Graduation Rates (-2.24), Preseason Rank (4.66), and Conference Rank (-4.35).

The association between Wins and Average Stars per Recruit is intuitive, but the effect of its coefficient 0.0134 is large. Holding everything constant, wins alone can make a big difference in Average Stars per Recruit. For example, a ten win team will add 0.134 to its Average Stars per Recruit whereas a one win team will add just 0.0134.

As expected, Total Expenses was related to recruiting, although Total Revenues is even more significant. The evidence supports the current practices of using more resources to develop a better football program.

Graduation Rates have a negative effect of -0.061 on Average Stars per Recruit. This denotes that schools with higher Graduation Rates, holding other variables constant, have a lower Average Stars per Recruit.

Additionally, being ranked in the preseason is highly correlated with recruiting. This variable adds 0.23 to the Average Stars per Recruit. Preseason Rankings help generate hype for teams, in the form of expected on-field success.

Lastly, Strength of Schedule and Conference Rank both have a negative effect on recruiting. This signifies that the weaker the schedule and the less prestigious a given school's conference, the lower their Average Stars per Recruit will be.

Still, there are unquantifiable factors not present in this model, such as the role of hostesses, big time boosters, and cheating. There is no telling what the true effects are of any of these factors. Every school has hostesses aiding in the recruiting process and showing players around. Yet, there have been some instances where hostesses have made a difference in recruit's college decisions. At Tennessee, Lacey Pearl Earps was nicknamed "The Closer" for her aptitude at getting top recruits to commit to the Volunteers. For example, she got the number one recruit in the country, Bryce Brown, to commit to Tennessee. The 2009 recruiting class that Brown was in had a very high Average Stars per Recruit of 3.62 and was ranked as the number ten class in the country. Bryce Brown told then head coach, Lane Kiffin, "Coach, all I want to do is hang out with Lacey" (Benedict and Keteyian).

In Oklahoma State University's case, they have the backing of big time booster T. Boone Pickens. From 2003-2008 Pickens donated \$248 million to athletics at OSU. Pickens' donations have helped OSU build and maintain new athletic facilities, a way to help them keep up in the college football "arms race". "Your facilities say a lot about what's important to you. When you bring young people and prospective student-athletes onto campus, you want them to feel like what they are coming to our university to do is important to our university" (Jessop). One person (T. Boone Pickens) gives Oklahoma State an edge that most schools do not have with many donors.

Winning has become so important that corruption has likely increased. It is difficult to determine how far or deep it runs today in college football or how it affects recruits decisions. In 1979, Eric Dickerson was the number one recruit in the country. According to an ESPN 30 for 30 documentary, during Dickerson's recruitment his mother was shown a briefcase of fifty thousand dollars cash, among other things from Texas A&M. He was even gifted a car, though he never mentioned who really gave it to him, and this was just one of the schools recruiting him. Despite all of this, Dickerson ended up playing for Southern Methodist University. These types of things were happening back in 1979, and has likely increased as the amount of money on college football has increased.

Hypothesis Four: No football or resource related variable affects GSR

The regression testing used for this model covered data from the 2004-2011 seasons. Conference Rank, School Endowment, Average Stars per Recruit, Number of Commits, Strength of Schedule, Wins, Total Revenues, Total Expenses, Preseason and End-of-Year Rank, Conference Titles, and National Titles were regressed on Graduation Success Rate (GSR). Conference Rank (2.80), Wins (11.53), Total Revenues (-2.79), Total Expenses (3.23), and Preseason Rank (-2.15) were found to be statistically significant in relation to football players earning their degrees.

The evidence suggests that being better at football, a higher conference rank and being ranked in the preseason, are associated with lower graduation rates. However, the recurring events of wins, total revenues, and total expenses have no direct effect on whether student-athletes graduate. The results for these three variables may be spurious relationships.

On the whole, these variables really have nothing to do with academics. GSR depends on intangibles like the academic rigor of the school or the attitude of the coaching staff or the maturity of the individual players. For example, when Mike Leach took the job at Texas Tech, the “Red Raiders” graduation rates were among the lowest in the country. Leach earned his Law Degree at Pepperdine and “had no interest in a football culture that ignored the importance of academics” (Benedict and Keteyian). He also implemented his “Three Queen Mothers rules”, which are: no stealing, no hitting women, and no smoking pot. The 2004-2009 GSR data available for the last six years of Leach’s tenure as Head Coach at Texas Tech shows the average graduation rate was 73.67%. That is above the new four year record high average of 71% this year (2013). Another example is Brigham Young’s Head Coach, Bronco Mendenhall. When

Mendenhall took over in 2004, he created a five-point mission statement that established a clear set of expectations for his players. The first three points were: help develop each BYU player spiritually, help each BYU player grow intellectually, and develop character in each player.

“Some of his assistants thought he was crazy. ‘Nobody is going to come here,’ one of them said” (Benedict and Keteyian). In 2004 BYU’s GSR was 40%. By 2011 it was 63%. Furthermore, they enjoyed five double-digit win seasons in that span.

Conclusion

In regard to Hypotheses One, Two, and Three, it is evident that many of these variables are endogenous, which is defined as “A factor in a causal model or causal system whose value is determined by the states of other variables in the system” (Little, Daniel). In each of the models, Total Expenses and Average Stars per Recruit proved significant as did Conference Rank and Strength of Schedule. These are variables contingent upon each other and are also key variables associated with storied, traditional programs. Generally, the best teams play in better conferences, thereby playing better team’s week in and week out; they recruit the best high school players in the country; and they have the bigger budgets.

There are different implications to these results depending upon where a program ranks in the world of college football. For smaller programs trying to grow, similar to any new business, it takes time and patience. College football can be very profitable. However, for many programs, they may be stuck at the level they entered. So why get into college football? In an interview with PBS’s Jeffrey Brown, Armen Keteyian, co-author of *The System*, stated “Football has reached far beyond the field of play. It's really now become an extension of the school, a brand, a way to market the school. And schools are willing to, in large measures, you know, fund these programs as loss leaders if, in fact, they can make it to the big stage.”

Based on the analysis done, the following are factors I believe to be true. Hypothesis One shows that spending more may make sense for the established and successful programs, but one more win each year is probably not worth the extra spending for lower level programs.

Hypothesis Two demonstrates that winning is tied to profits, though in an indirect manner.

Average Stars per Recruit and Total Expenses were significant to both wins and profits. Also,

End-of-Year Rank was connected to financial success. Teams that end the year in the final rankings enjoyed on-field success. Further, weaker schedules are associated with both wins and profits. This is contrary to the current practices of many lower level teams in recent years. Many teams have scheduled sure losses to highly established programs for a few hundred thousand dollars, helping them with their expenses for the year. Additionally, despite the fact that Hypothesis Three shows a negative effect of weak competition on recruiting, Wins has a significant effect. The coefficient on Strength of Schedule is much lower than Wins, -0.002 versus 0.0345, respectively. For example, this means that a ten win season with the eightieth toughest schedule will net 0.1802 more for Average Stars per Recruit in a given year. I believe the research demonstrates that a lower level program should take a long term approach to build a winning brand. In essence, take the Boise State approach to building up a program. Schedule weak opponents to rack up wins and play as many week night games as possible to get on ESPN for exposure. Unfortunately this approach will likely be at the expense of student-athletes academic performance.

Nonetheless, there are many other unquantifiable factors that help determine performance in college football that could not be accounted for in this study. These factors range from things like unknown cheating to boosters to a program's hostesses. "No matter the look of the palace or the size of the budget... the lifeblood of every college football program was the players" (Benedict and Keteyian).

Appendix: Regression Tables

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```
. regress Wins Total_Expenses Average_Stars_per_Recruit Number_of_Commits Strength_of_Schedule Conference_Rank, vce(cluster UNIV)
```

```
Linear regression                               Number of obs =   1017
                                                F(   5,   112) =   45.57
                                                Prob > F       =   0.0000
                                                R-squared      =   0.2363
                                                Root MSE      =   2.635
```

(Std. Err. adjusted for 113 clusters in UNIV)

| Wins | Robust | | t | P> t | [95% Conf. Interval] | |
|---------------------------|-----------|-----------|-------|-------|----------------------|----------|
| | Coef. | Std. Err. | | | | |
| Total_Expenses | 1.09e-07 | 2.33e-08 | 4.66 | 0.000 | 6.24e-08 | 1.55e-07 |
| Average_Stars_per_Recruit | 2.400347 | .3663765 | 6.55 | 0.000 | 1.674419 | 3.126275 |
| Number_of_Commits | .0042193 | .0161124 | 0.26 | 0.794 | -.0277053 | .036144 |
| Strength_of_Schedule | .0223486 | .0050519 | 4.42 | 0.000 | .012339 | .0323583 |
| Conference_Rank | -.0228763 | .0451117 | -0.51 | 0.613 | -.1122594 | .0665068 |
| _cons | -2.224514 | 1.138183 | -1.95 | 0.053 | -4.479677 | .0306488 |

```
. regress Profits Average_Stars_per_Recruit Wins Total_Expenses Binary_Preseason_Rank Binary_End_of_Year_Rank Conference_Title Conference_Rank
> Strength_of_Schedule, vce(cluster UNIV)
```

```
Linear regression                               Number of obs =   1017
                                                F(   8,   112) =   23.51
                                                Prob > F       =   0.0000
                                                R-squared      =   0.5984
                                                Root MSE      =   8.1e+06
```

(Std. Err. adjusted for 113 clusters in UNIV)

| Profits | Robust | | t | P> t | [95% Conf. Interval] | |
|---------------------------|-----------|-----------|-------|-------|----------------------|-----------|
| | Coef. | Std. Err. | | | | |
| Average_Stars_per_Recruit | 1.07e+07 | 2305569 | 4.63 | 0.000 | 6107610 | 1.52e+07 |
| Wins | 145488.6 | 96979.98 | 1.50 | 0.136 | -46664.81 | 337642 |
| Total_Expenses | .5391072 | .112455 | 4.79 | 0.000 | .316292 | .7619225 |
| Binary_Preseason_Rank | 2149017 | 1359797 | 1.58 | 0.117 | -545246.7 | 4843281 |
| Binary_End_of_Year_Rank | 2127696 | 854631.4 | 2.49 | 0.014 | 434353.4 | 3821038 |
| Conference_Title | -3641771 | 1105433 | -3.29 | 0.001 | -5832044 | -1451498 |
| Conference_Rank | 492534.1 | 205326.8 | 2.40 | 0.018 | 85705.38 | 899362.9 |
| Strength_of_Schedule | -61289.39 | 16769.8 | -3.65 | 0.000 | -94516.59 | -28062.18 |
| _cons | -2.70e+07 | 6113276 | -4.42 | 0.000 | -3.91e+07 | -1.49e+07 |

```
. regress Average_Stars_per_Recruit Number_of_Commits Wins Strength_of_Schedule Total_Revenues Total_Expenses Graduation_Rates Binary_Preseason_Rank Binary_End_of_Year_Rank National_Title Conference_Title Conference_Rank, vce(cluster UNIV)
```

```
Linear regression                               Number of obs =    890
                                                F( 11,   111) = 134.38
                                                Prob > F      = 0.0000
                                                R-squared    = 0.7479
                                                Root MSE    = .2675
```

(Std. Err. adjusted for 112 clusters in UNIV)

| Average_Stars_per_Rec~t | Robust | | t | P> t | [95% Conf. Interval] | |
|-------------------------|-----------|-----------|-------|-------|----------------------|-----------|
| | Coef. | Std. Err. | | | | |
| Number_of_Commits | -.0006565 | .0019279 | -0.34 | 0.734 | -.0044768 | .0031638 |
| Wins | .0134479 | .0051596 | 2.61 | 0.010 | .0032239 | .023672 |
| Strength_of_Schedule | -.0020648 | .0005631 | -3.67 | 0.000 | -.0031806 | -.000949 |
| Total_Revenues | 1.04e-08 | 1.77e-09 | 5.88 | 0.000 | 6.90e-09 | 1.39e-08 |
| Total_Expenses | 1.22e-08 | 4.53e-09 | 2.69 | 0.008 | 3.21e-09 | 2.12e-08 |
| Graduation_Rates | -.0607101 | .0271289 | -2.24 | 0.027 | -.1144678 | -.0069524 |
| Binary_Preseason_Rank | .2284789 | .0490171 | 4.66 | 0.000 | .1313483 | .3256095 |
| Binary_End_of_Year_Rank | .0173269 | .0366585 | 0.47 | 0.637 | -.0553143 | .0899681 |
| National_Title | .109399 | .1124088 | 0.97 | 0.333 | -.1133465 | .3321446 |
| Conference_Title | -.0158169 | .0360133 | -0.44 | 0.661 | -.0871797 | .0555459 |
| Conference_Rank | -.0214045 | .0049222 | -4.35 | 0.000 | -.0311582 | -.0116507 |
| _cons | 2.447106 | .0886714 | 27.60 | 0.000 | 2.271398 | 2.622815 |

```
. regress Graduation_Rates Conference_Rank Dummy_Variable_Endowment_Funds Average_Stars_per_Recruit Number_of_Commits Wins Strength_of_Schedule Total_Revenues Total_Expenses Binary_Preseason_Rank Binary_End_of_Year_Rank National_Title Conference_Title, vce(cluster UNIV)
```

```
Linear regression                               Number of obs =    895
                                                F( 11,   111) = .
                                                Prob > F      = .
                                                R-squared    = 0.3047
                                                Root MSE    = .26785
```

(Std. Err. adjusted for 112 clusters in UNIV)

| Graduation_Rates | Robust | | t | P> t | [95% Conf. Interval] | |
|--------------------------------|-----------|-----------|-------|-------|----------------------|-----------|
| | Coef. | Std. Err. | | | | |
| Conference_Rank | .0075492 | .0026993 | 2.80 | 0.006 | .0022003 | .0128982 |
| Dummy_Variable_Endowment_Funds | -.0130031 | .0073849 | -1.76 | 0.081 | -.0276368 | .0016305 |
| Average_Stars_per_Recruit | -.0011687 | .0252952 | -0.05 | 0.963 | -.0512928 | .0489554 |
| Number_of_Commits | .0006384 | .0018016 | 0.35 | 0.724 | -.0029317 | .0042084 |
| Wins | 8.46e-08 | 7.34e-09 | 11.53 | 0.000 | 7.01e-08 | 9.92e-08 |
| Strength_of_Schedule | .0001114 | .0004659 | 0.24 | 0.812 | -.0008119 | .0010346 |
| Total_Revenues | -3.13e-09 | 1.12e-09 | -2.79 | 0.006 | -5.36e-09 | -9.07e-10 |
| Total_Expenses | 1.25e-08 | 3.88e-09 | 3.23 | 0.002 | 4.83e-09 | 2.02e-08 |
| Binary_Preseason_Rank | -.030606 | .0142579 | -2.15 | 0.034 | -.0588591 | -.0023529 |
| Binary_End_of_Year_Rank | -.0151696 | .0125218 | -1.21 | 0.228 | -.0399825 | .0096432 |
| National_Title | -.0712373 | .0451982 | -1.58 | 0.118 | -.1608006 | .018326 |
| Conference_Title | -.0157745 | .0178092 | -0.89 | 0.378 | -.0510645 | .0195155 |
| _cons | .5566715 | .0686804 | 8.11 | 0.000 | .4205768 | .6927662 |

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