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The Effect of Winning Football and League Affiliation on Academic Achievement in the SouthEastern Conference (SEC) Does Winning Football and Conference Improve Student Related Academic Indicators ?

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THE EFFECT OF WINNING FOOTBALL AND LEAGUE AFFILIATION ON ACADEMIC ACHIEVEMENT IN THE SOUTHEASTERN CONFERENCE (SEC): DOES WINNING FOOTBALL AND CONFERENCE IMPROVE STUDENT RELATED ACADEMIC INDICATORS?

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ABSTRACT

Numerous researchers have attempted to study the effect of winning football on a university's academic standing. To this point, the results have been varied and inconclusive. The answer is unclear and the research does not examine a conference as a whole in comparison to other conferences since the Bowl Championship Series (BCS)-era (1998-2012). The current study examines whether the Southeastern Conference (SEC) and the success of the conference's football teams, in terms of winning games and conference membership, improves the conference's member schools academic indicators. Using factors such as SAT scores, application rate, retention rates, and graduation rates, this study investigates the relationship between that football success and the conference's academic measures. To accomplish this purpose, this study examines successful football programs and academic achievement in the SEC using the Atlantic Coast Conference (ACC) as a constant. The research design is a secondary data design, using longitudinal data from two academic conferences in the United States from 1998-2012. The results indicate that winning and league affiliation do influence academic indicators and being in the SEC has a greater impact on retention rates and incoming SAT scores but not acceptance rates and graduation rates.

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CHAPTER 1
INTRODUCTION

College football is one of the most popular sports in America, and as the sport continues to grow and add new fans, the growth of college football steadily increases. The reasons for this popularity and growth are numerous and varied ranging from the loyalty of alumni, to people who watch for the purity of the game, and even sports gambling agencies. Since the creation of the Bowl Championship Series (BCS) in 1998, college football has become big business. Television (TV) contracts total billions of dollars with the current Southeastern Conference (SEC) contract for TV rights being worth $3 billion over 15 years and the new Pacific 12 Conference TV contact total over $3.2 billion over 12 years (Berkowitz, 2013). Athletic budgets are in the hundreds of millions of dollars (See Appendix A), and coaches' salaries are several million dollars. Although athletic revenues increase, so do expenditures and even some of the schools that generate the most revenue are still forced to take a subsidy from the university (See Appendix A). Is the cost to participate in BCS conference football worth the price?

The question of whether athletic success improves academic measures is important to answer because this information may show the relationship between a university's football team and their academic rigor. As Congressman Bill Thomas asked in his 2006 letter to NCAA president Myles Brand "How does playing major college football or men's basketball in a highly commercialized, profit-seeking, entertainment environment further the educational purpose of your member institutions?" Do

institutions believe that the increased expenditures that result in having a winning team, especially a championship caliber team, improve the academic indicators of the university? In essence, as an institutions teams' wins increase, will their academic achievement will follow suit.

Since 1998, the SEC has won eight of 14 national championships, and the six most recent (BCS all-time records, 2012; See Table 6). The championships were won by five schools: Tennessee (1998), Auburn (2010), Florida (2006, 2008), Alabama (2009, 2011, 2012), and Louisiana State University (2003, 2007). The SEC also has the most BCS bowl wins with 16 (BCS all-time records, 2012; See Appendix B). Not only are the top teams of the SEC conference strong and producing national champions, but the conference overall consistently sends seven or eight teams to post-season bowl games and is regularly rated by multiple news outlets as the best and toughest conference in college football (ESPN.com & USA Today).

This success on the field has resulted in large amounts of money coming into the SEC and the affiliated schools; and those are schools spending large amounts of money in an effort to maintain that success (Smith, 2012). The athletic reputation of the SEC and the increased revenue potential were major reason for the conference to expand to 14 teams in 2013. My research question is whether football success (defined as number of games won in a season and being in the SEC) and league affiliation (membership in the SEC), increases academic indictors in the SEC using the Atlantic Coast Conference (ACC) as a comparison group. Is the SEC's football success making the conference a better academic conference? Are the SEC's academic indicators improving at a faster

than a constant? Does the increased spending on athletics of the schools in the SEC equal a greater impact on academic predictors if they win?

By discussing the impact that winning football and league affiliation has had on the academic predictors of SEC schools, one will be able to explore and ascertain whether the cost of football is good for universities and the conference's academic profile or is winning football and league affiliation only impacting departments associated with athletics. One will also be able to discern if league affiliation and membership in a winning league has a greater impact on a school's academic predictors.

CHAPTER 2

REVIEW OF LITERATURE

Literature that relates to this topic can be divided into two categories: the effect winning has on an institution, and the variables that effect academic predictors as an indicator of academic prowess, and the defense of these predictors. This review examines previous studies that evaluate the effects of winning athletics in a variety of institutional areas as well as studies that examine variables that effect academic predictors and justify the use of these predictors. This review presents the research that has been done but does not answer the question about the impact of winning in the SEC.

2.1 Effects of Winning on an Institution,

Daughtery and Stoltar (2000) examined the monetary benefits of winning a championship by looking at the donations to the athletic program in the years following a national championship in football at every level below the Division 1 Football Bowl Subdivision (FBS). The study produced varied results; at the Division 1-AA or Football Championship Subdivision (FCS) and the Division III (D-III) level, donations increase to both the university and the athletic department. One area where donation habits varied between divisions was in the division-III level where schools saw a decrease in the number of donors that contribute, while seeing an increase in the amount of money donated; at every other level, as donations increased so the number of donors. Daughtery and Stoltar also revealed that at the Division II (D-II) level, the amount of money donated

to the school actually decreases in the years immediately following a championship. They stated this variation is the result of many factors, mainly, alumni feeling that their degree was "de-valued" because the school is turning into an athlete factory, or that the school does not need the money since they have enough to win championships. Like Tucker's (2004) study, this study showed that winning championships would lead to increased donations in most cases, but is not indicative of academic success or increased academic rankings. Neither set of researchers stated definitively that championship football helps a university or college's academic profile and rating.

Stinson and Howard (2004) studied the type of alumni and non-alumni giving to academics and athletics at institutions competing in division I Football. They explained that as universities and colleges become more dependent on private donations, examining whether an institutions athletic success can influence or increase the overall donations to the university is important to understand. They examined who donated to an institution, and why they donated. They also examined that if donors increased their gift to athletics, did the same donor decrease their donation to another non-athletic department. The authors revealed a link between donating and athletics, and identified two types of donors, alumni and non-alumni. Moreover, while both types of giving were related to athletics, both alumni and non-alumni give to colleges and universities but behave in different ways. Alumni donations remain more consistent and institution wide, while non-alumni donations are almost exclusively to athletics and fluctuate more with success. The authors did not examine the impact of football on academics; instead, it examined donations, which is one area that can influence academic indicators. This study show that athletic success can influence donations but donations to athletics stay in athletics, and

donations cannot be directly linked to academic indicators. Therefore, my study did not examine donations as part of the impact of successful football.

Wells, Southall, Stotlar, and Mundfrom, (2005) conducted another study to examine what factors influenced giving to a university. Their study was designed to pinpoint the factors that were most significant in affecting donations and attempt to establish a formula to calculate fund-raising goals. Using data gathered from a survey and from secondary sources, they developed 15 predictor variables in an effort to examine donations to athletic clubs during the 2000 fiscal year. The study used a Pearson product-moment correlation matrix and multiple linear regressions to answer the question of what factors impact giving and can the data be used to create predictive model. The results of the study showed that factors such as season ticket sales and experience of development director heavily influenced donations, but wins was not a significant indicator of donations increases. However, in the correlation matrix, appearance in a bowl was significantly related to alumni donations. This finding revealed that donations to an institution can be affected by a variety of factors, but wins in football is not a significant factor. The authors only examined donations to an institution, which does not always equate to academic funding or improvements. The study also did not examine the impact of one conference against another.

Goidel and Hamilton (2006) did another examination on the impact of championship football when they examined the public perception of a university after recent football success. The data for their study was from two statewide surveys of voting age residents in Louisiana; one after LSU won a national championship and one after a 9-win season. Their study concluded that in the public eye football success and

academic quality are connected. However, Goidel and Hamilton also concluded that less educated people are more likely to make this connection. Goidel and Hamilton concluded that football did affect academics because the public's opinion changed and therefore the schools academics could change. The study did not determine if winning a championship actually changed the academics or if this finding is just a perception that eventually could manifest in academic improvement. While their study was an examination on the impact winning had on perception, it did not include league affiliation into their analysis. The authors did not examine if winning in a certain league influenced public perception more than other leagues. Their conclusion was that regardless of whether or not football actually affects academics, the public believes the connection exists and therefore affects academics. However, the author's did not examine actual academic rankings, as the purpose of the study was to examine the change in the public's opinion about a school's academics based upon football results.

Smith (2007) examined the positive advertising that college sports generate for universities. To test these claims, he tested three measures of academic quality on entering classes for 12 years at 233 colleges at universities playing top-level football. The results showed clear effects attributable to the football program; however, the effects were linked more to a tradition success rather than current success. The study revealed that a good football tradition and football culture at the school were actually larger factors that influenced students. The study also revealed that sports' advertising was not nearly as effective as advertising non-athletic characteristics on the quality of student. This study revealed a clear link between football and improved academics, but did not

compare schools or conferences. The study did not test if the SEC was improving faster than other conferences.

2.2 Variables That Impact Academic Predictors

To improve the understanding of the effect of football success and league affiliation on academic achievement we should focus on student performance. The variables selected for this study as predictors of academic indictors at institutions were Acceptance Rates, SAT scores, retention rates and graduation rates. This section presents studies that examine variables that affect academic predictors and justify the use of these predictors. This section concludes with a brief discussion of literature that examines the impact of donations on academics, another academic ranking system that is not relevant for this study, and why I chose not to use certain academic predictors as variables.

2.3 Variables That Effect Acceptance Rates

Mixon, Trevino, and Minto (2004) in a study on the effects of successful athletics argued that winning football would yield an increase in applications and funding, therefore improve the school. Mixon et al. discussed the impact that winning football has and even referenced the "Flutie Factor." The "Flutie Factor" is the term university administrators use to explain the increase in applications that result from success on the football field. A regression analysis was used to determine how a school's SAT scores are influenced by factors including size, quality (percent of faculty with Ph.D., student/faculty ratio), and winning percentage of football team from 1990-2000. The overall conclusion from the study was that winning at football has a positive and significant impact on an institutions admissions process. Winning can increase the academics of a school because more people will apply and the institution's median SAT

score will increase, and there acceptance rate will decrease as they will accept a smaller percentage. Mixon et al. did not examine the SEC in relation to other conferences and used data that were ten years old and only SAT scores.

Pope and Pope (2009) examined the relationship between a schools sports success and the quantity and quality of their applications. Using unique data sets and an econometric design, the study exposed several links between athletics and academics. Their results revealed that athletic success did have a significant impact on the quantity of applications to a school with private schools seeing the increase of applications rates two or four times higher than public schools. The increased applications consist of all types of students, both those with high and low SAT scores. The study also revealed that schools would exploit the application increases to improve academic indicators. They can either not increase admission while admitting a smaller percentage of students or admit more students, at the same rate because of the increased applications and rise in revenue. The results from their study show what other studies have shown, that winning equals increased applications, which influence acceptance rates and quality of student. The results also indicate that the impact can be short lived and affects various student types differently. Their study also did not examine differences in conferences or the impact of league affiliation on applications and SAT scores.

McCormick and Tinsley (1987) examined the effect of athletic success on application rates and SAT scores. They collected 1971 data from approximately 150 institutions, 63 of which they counted as major athletic schools. The study used an ordinary least squares regression of SAT scores of incoming freshman on their variables (volumes in library, student/faculty ratio, age of institution, tuition cost, and endowment)

with the dummy variable for conference. Their study uncovered that sports success causes an increase in applications; therefore, athletic success one year is linked to the quality of incoming freshman in the future. They state that athletic success does not attract brighter students; instead it advertises the school and increases applications. The increase in applications allows the institution to sample from a larger population as well as increase enrollment while maintaining admissions standards. This study did examine conference impact but not a single conference, just the difference between major conferences and non-major conferences. The data from their study are now dated and some of the teams and conferences that they classified as major are no longer in the major category.

2.4 Variables That Effect Incoming SAT Scores

McCormick and Tinsley (1987) and Mixon (1995) both used SAT scores in their studies to evaluate the impact of successful athletics on academics. McCormick and Tinsley compared the average SAT scores for incoming freshman and analyzed the change over time at member conference schools. To evaluate if membership in a big-time conference had an impact on academic quality, they first compared SAT scores of incoming freshman and used a dummy variable for membership in a major conference. The results showed a positive coefficient and were significant, indicating that a school that competes in major college athletics has a higher quality undergraduate student body. They also examined the change in incoming SAT scores at the conference schools as compared with those schools' conference games winning percentage. Again, the results showed a positive coefficient and were marginally significant; indicating that athletic success is linked to academic quality. Mixon's study used the same SAT data as

McCormick and Tinsley, but the Mixon study worked to create a superior measure of athletic success by including basketball success as well. The results of the studies were similar and agreed that athletics may enhance the mission of a university.

Korbin, Patterson, Shaw, Mattern, and Barbuti (2008) studied the effect of the revised SAT score, and if the new SAT was a more accurate indicator of college performance. The study gathered data on the first year GPA of students at over 100 colleges and universities across the United States. These data were linked with the students SAT test score and then analyzed using a comparison of the single and multiple correlations of predictors (SAT Scores, and High School GPA) with First Year GPA. They showed that the new SAT did not substantially change how well the test predicts academic success in college when compared with the previous SAT format. They did reveal that the new added writing section is the most highly predictive of the three sections, but the best combination of predictors is still high school grade point average and SAT score. This study is relevant to this study as SAT scores are included from years before and after the institution of the new SAT.

2.5 Variables That Effect Retention Rates

Murtaugh, Burns, and Schuster (1999) conducted a study and found that a variety of factors and indicators impact retention rates. They examined students at Oregon State University (OSU) over a 6-year period and evaluated why people stayed or left. The study used a survival analysis to model the retention of the 8,867 undergraduate students at OSU from 1991-1996. Higher first quarter GPA, age, and non-residency were some factors that the study found were associated with student retention and attrition. Murtaugh et al.'s third objective was the most interesting for this study as they examined

specific campus programs that could increase retention. They discovered that having programs and resources such as freshman seminar and recreational/entertainment options on campus helped retain students. They developed a proportional hazards regression model to help predict the probability of a student returning to school based upon the demographic and academic factors in their study. Their study revealed that retention can be influenced by a variety of variables, but those variables can be analyzed together in an effort to predict retention. Football success and conference were not included in their research but could be included in the prediction regression so the impact of wins and league affiliation can be determined.

Lau (2003) reached the same conclusion from her study of retention rates and variables that influenced a school's ability to keep new students. She claims that the institutions and all parties associated with the institution (faculty, staff, students, and even supporters) have to work together to create an environment and community that includes the students. She examines and provides a variety of examples of both faculty and student programs and ideas that can increase retention. The institution has to provide adequate facilities and faculty for the students. The faculty has to provide programs and opportunities that connect the student to other students and to the institution. The students have to be engaged while being educated but also must make the choice to commit to their education. The study's overall finding was that regardless of campus programs or initiatives, the student has to make the choice about staying in school and returning to school. The institution, staff, and students have to commit to work together to produce a healthy academic community. While the study did not examine the impact

of football, it can be included in programs or opportunities for students to connect to the campus.

In their longitudinal study of retention rates among college freshman at various institutions, DeBerard, Spielmans, and Julka (2012), examined different social and cultural variances in an effort to predict future college success. They examined several academic and social factors such as high school GPA, smoking and drinking, and coping ability. Their study used a multiple linear regression equation predicting cumulative GPA using 10 predictors, which accounted for 56% of the variance in academic achievement while a logistic equation predicting retention rates was not significant. They showed that freshman year has the highest attrition rate, and that the choice to leave college economically affects both the student and the institution. Overall, the study revealed that first year GPA was a better indicator of college success than high school GPA, but they found no significance between any of their indicators and retention. Suggesting that retention rates may be impacted by another factor or variable and there is not one factor alone that affects students and retention rates.

Overall, all these studies examined different variables related to retention and looked for different ways to improve a school's retention rates. These studies reached the same conclusion, that retention is a school-wide ideal, and no one variable, whether social or academic, could be used to pinpoint retention. One area where the studies showed that did affect retention was implementing a new student orientation class but studies did not define the curriculum of that class. The relationship of these studies and their conclusion to my study is that many factors, including football success can affect academic predictors (including retention). Therefore, while many things can influence a

student's decision to return to school, this study will look to explain how much affect winning football can have on retention.

2.6 Variables That Effect Graduation Rates

Tucker (2004) demonstrated some of the positive attributes of winning football, and the impact winning can have on academic measures when he argued that a highly successful football team has a positive impact on graduation rates and alumni giving. While alumni donations would logically increase with football success, translating money into statistical academic data is more difficult. The alumni giving could have a direct or indirect impact on the academic rankings, but the linkage between all donations and football success is not exact. Graduation rates were another area that Tucker examined, and was difficult to link directly to football success. Using a formula that included dependent variables (graduation rate and alumni giving), and academic variables (faculty salary, age of institution, enrollment, and public or private), and athletic variables (football wins, basketball wins, bowl appearances, NCAA tournament appearances, and final Associated Press ranking), he analyzed the impact of winning on academic measures. Tucker stated that because schools have success on the field, a student who is better prepared for the social transition into college comes to the university due to a variety of factors. The primary factor is that the social transition is better and easier among new students who are football fans; and leads to less student attrition at big football schools. These results led to Tucker's conclusion that successful football does compliment academics because quality football attracts a student better prepared for the social transition into college life because they are fans of football.

Scott, Bailey, and Kienzl (2006) analyzed graduation rates at public and private institutions, trying to discern which type of university was completing their mission more effectively. Using data collected from a variety of public sources, the study used a regression analysis to focus on the evaluation of public institutions. The study revealed that while private universities graduate students at a higher rate, they do so with more resources and a different mission. They claim that with the same financial resources and focus that public schools would actually graduate students at a slightly higher rate. The study shows that public schools with less funding and with a different mission to allow higher education access to a larger segment of the population are factors that contribute to lower graduation. Therefore, public schools actually "do more" with less than private schools. As with retention rates, Scott et al. revealed that a variety of variables could affect graduation rates, including athletic success and this study will look to see how winning affects SEC graduation rates.

Eckard (2012) examined the gap between male student athletes' graduation rates and the entire student body graduation rates. The purpose of the study was to evaluate graduation rates of males at NCAA institutions using only full time students, not including the part time students that are typically included in graduation rates. Because of this "part time bias", the graduation rates for the student body are distorted since student athletes are required to be full time students. Using data collected from over 325 major football and basketball programs the study used a regression analysis to reveal that the actual graduation rate gap was over five times higher for football and over 50 percent higher for basketball. This study reveals that there are some flaws in graduation data, but

since my study is analyzing change over time, the inaccuracy of the percentages should not influence the data

Researchers have attempted to examine and answer the question about the impact of winning football on other university outcomes (including academic achievement), but none agrees on the answer. One of the ways the studies differ is in the data used for measuring academic achievement rankings; some use graduation rates (Coyne, 2012; Mixon et al., 2004), others use publication rankings, others use academic progression ratios (Thamel, 2010), and others examine the average SAT of new students and the selectivity of the college or university (Bowmen & Levin 2003; Goidel & Hamiliton, 2006). Another area of variance in the studies is what actually affects academic rankings. Does the public view increased fiscal donations because of gridiron success as a compliment to academics? Does an increase in incoming donations mean that the money will go to better the academics of an institution, or do these donations go to better the athletics department?

CHAPTER 3
PURPOSE OF STUDY

The purpose of this study is to examine the relationship between success in football and student related academic indicators and examine if winning and membership in a winning league significantly affect the SEC and the schools that make up the conference. Directly, the study will assess whether the change over time between these relationships has affected the SEC at a higher rate. Because the SEC has been the most successful football conference during the BCS era (BCS all-time records, 2012; See Appendix 2), assessing the change over time between the conference's institutions will allow me to determine any relationships between the variables. Using the ACC as the control group, I will be able to examine if league affiliation has a greater effect on academic indicators in SEC schools. The SEC and ACC share geographic location as well as the majority of their student populations comes from the same area. Determining how far the football program can realistically reach and what areas of academics the success could have a measurable impact was important in determining and developing the current study. Once I decided on how to address these concerns, I propose the following hypotheses.

I believe winning football affects acceptance rates; I also believe being in a winning conference will influence acceptance rates. Many past researchers have discovered a link between athletic success and applications and acceptance rate. Research studies have suggested (Mixon et al, 2004; Pope & Pope, 2009) that after a big

winning season, applications to an institution increase. I believe that the SEC's acceptance rates will decrease because of winning and that the SEC member schools improve more than schools in the ACC. For example, as a school has football success and wins more games, more people apply which allows the school to accept a lower percentage of applicants.

H1: Acceptance rates of SEC schools decreased faster than the acceptance rates of ACC schools during the years 1998-2012.

I believe winning football and league affiliation affects incoming freshman SAT scores and the impact in the SEC will be greater than the ACC. As with acceptance rates, as applications increase the SAT scores of freshman is expected to increase, as admissions counselors can be more selective. In the SEC, incoming freshman SAT scores should be affected more by winning than schools in the ACC.

H2: The 25th and 75th percentile SAT scores of SEC schools increased faster than those percentile SAT scores of ACC schools during the years 1998-2012.

I believe winning football and league affiliation are variables that affect retention rates and the impact in the SEC will be greater than the ACC. Based upon past studies (Murtaugh et al., 1999; Lau, 2003) a variety of factors can affect retention rate, and winning football games is one of those factors. Retention rates in the SEC will be more affected by wins than by schools in the ACC.

H3: The retention rate increased faster than the retention rates of ACC schools during the years 1998-2012.

I believe winning football and league affiliation affect graduation rates and the impact in the SEC will be greater than the ACC. Based on past research by Tucker

(2004), which implies that winning football attracts a more socially mature student, and improves graduation rates. Scott et al. (2006) state that public schools would graduate students at the same rate as private schools if equally funded. Teams in the SEC will see their graduation rates increase because of winning football and that increase will be more pronounced than in the ACC.

H4: Graduation rates of SEC schools increased faster than the graduations rates of ACC schools during the years1998-2012.

By testing these hypotheses, I examined the impact of winning football and league affiliation on academic achievement variables.

CHAPTER 4

METHODS

4.1 Research Design

The research design is a secondary data design, using longitudinal data from two academic conferences in the United States from 1998-2012. To measure the academic benefits of winning football and league affiliation, I examined two distinct areas: wins and academic predictor statistics. The sources used for the research were the individual college and university published data, as well as *US News and World Reports* (1998-2012), and America's Best Colleges and Universities *(ABCU)* report from 1998-2012. I used these secondary data sources to analyze the relationship between a school and a conference's academic measures and their success on the football field (See Table 7). Exploration of the data determined if the SEC academic indicators changed drastically, or increased at a faster rate than the other schools. The collection of the application, SAT scores, retention rates and graduation rates of the colleges and universities were from the universities official reports and the *ABCU*. The athletic budgets of every public BCS school are available from university websites and published reports. This information will include income from television contracts as well as total expenditures for the athletic department and determine if the institution subsidizes the athletic department. Gathering data from the sample universities improved accuracy and validity.

For this study, I employed a linear regression where wins per season in football, league affiliation, and interaction served as the independent variable and academic measures served as dependent variables (Acceptance Rates, SAT scores, Retention Rate, and Graduation Rate). The slope of the regression line was expected to change in academic achievement based upon football success. To assess whether the rate of change is different between the conferences, I added a product term representing the relationship between success and conference to the model. I called this variable interaction and consist of wins, conference, and the academic indicator. Calculation of the interaction statistic reveals the relationship and significance of winning in a certain conference. Because my study covers time, standard ordinary least squares (OLS) regression may not apply, as correlation may exist in the data due to the passage of time. Therefore, I used a Durbin-Watson (DW) statistic to test the residuals from the OLS regression for auto correlation. A correlational design measures two or more variables rather than manipulating one or more independent variables and subsequently measuring the dependent variable.

4.2 Instrumentation

My independent variables are winning football, with winning football defined as number of wins in a season, league affiliation, being a member of the SEC and interaction (See Appendix C. The dependent variables are acceptance rate, 25^{th} and 75^{th} percentile SAT scores for incoming freshman, retention rate, and graduation rate. Football success may affect these variables of academic indicators, and the study will look to explain how much of the variance is related to winning.

The independent variable winning football success was defined as wins per season in football. Each school's win total in football from the years 1998-2012 was collected and used as a variable to examine the effect on academic measures. For the purpose of this study, I defined league affiliation as being a member in the SEC because of the conferences history of championships and elite football programs. I am examining if conference had a significant impact on the effect of winning on academic indicators. The interaction variable measured wins per season and conference with an academic predictor and examined if winning in the SEC had a greater impact over the period as compared to a constant group. Using the review of literature and my knowledge of athletic departments, I developed the measurement of these variables using the following techniques.

The dependent variables are the academic factors that are influenced and affected by athletics. Similarly, as with the independent variables, using the review of literature and my knowledge of athletic departments, I developed the measurement of these variables using the following techniques.

Acceptance Rate (AR) is the number of applications that a school receives divided by the number of students that the university accepts. AR is the indicator of whether or not acceptance at the institution is getting more difficult. I created the variable where the number of students who apply to an institution is divided by the number of students who are accepted (AR). AR is the indicator of whether or not acceptance at the institution is getting more difficult. As seen in other studies, for example Mixon, Trevino and Minto (2004), acceptance rates are expected to increase with successful football because winning football means more applications and therefore a lower acceptance rate.

The 25th percentile SAT scores (SAT25) and 75th percentile SAT scores (SAT75) are indicators of the quality of student that the institution is admitting. I created the variable (SAT) which examined 25th and 75th percentile SAT scores of incoming freshman. While studies (Mixon, 1995; Korbin et al., 2008) have shown that SAT scores may not be an ideal indicator of college success, SAT scores are indicative of the quality of high school student being admitted. This variable (as a measure of academic achievement) is the one least affected by winning football, because the school is going to get the same caliber of student. Winning will decrease acceptance and increase retention and graduation, but the SAT scores of incoming freshman will not change drastically because of winning football games.

Retention Rate (RR) measures the percent of students who return the next year. How many of an institution's current students return for the following term? I created the variable retention rate where the number of students who return to the university after each year is divided by the total number of students who were enrolled (RR). RR is the actual rate at which people who enroll at a given institution return to that same institution. As seen in the literature review, several factors can affect retention rates, but the SEC's retention rates should be improving more rapidly than the ACC.

Graduation Rate (GR) measures the percent of people who completed their class work and graduated from an institution. I created the variable GR where the number of students who graduate within a six-year period determines Graduation Rate (GR). GR is the actual rate at which people who enroll during a certain term have graduated within six years from the first term. As an example, for every student whose first semester was fall 2006, what percent have graduated by fall 2012? As previous studies have indicated, a

variety of variables can affect graduation rates (Velez, 1985; Scott et al., 2008). As schools have become more competitive and a college degree is required for more jobs, graduation rates have increased at almost every school.

4.3 Statistical analysis

For this study, I employed a linear regression analysis. Wins per season in football served as the independent variable and the various academic measures served as dependent variables (Acceptance Rate, 25^{th} and 75^{th} Percentile incoming SAT scores, Retention Rates and Graduation Rates). The slope of the regression line was expected to change in academic achievement based upon football success. To assess whether the rate of change is different between the conferences a product term representing the relationship between success and conference was added to the model. Because of the longitudinal nature of my data, standard ordinary least squares (OLS) regression may not apply, as correlation may exist in the data due to the passage of time. Therefore, I used a Durbin-Watson (DW) statistic to test the residuals from the OLS regression for auto correlation. A satisfactory DW statistic is a number close to 2.0 and could be the result of multiple iterations of the data. A correlational design measures two or more variables rather than manipulating one or more independent variables and subsequently measuring the dependent variable.

CHAPTER 5

RESULTS

To test the first hypothesis, an examination was made of the acceptance rates within the ACC and the SEC since 1998. This number was expected to improve at SEC schools as students are applying in greater numbers to winning teams and therefore the SEC schools can be more selective. The linear regression showed some residual correlation in the data from the passing of time. Therefore, a linear regression with autoregressive (AR) errors was conducted and on the fourth iteration, the results produced a DW stat of 1.985. The adjusted R^2 for the AR test was .114, with wins, conference, and interaction all being significant indicating that approximately 11% of the variance in acceptance rates over the BCS era (1998-2012) can be explained by winning and league affiliation (See Table 5.1). The results of the AR model indicated that wins (t=3.891, p=.000) and conference (t=7.156, p=.000) and interaction with SEC (t=-4.451, p=.000) are significant (See Table 5.2). These results indicate that the Test of H1: Acceptance rates of SEC schools decreased faster than the acceptance rates of ACC schools since the inception of the BCS in 1998 was accepted and significant. That means acceptance rates are influenced by wins and conference, and the interaction variable is significant, the data do not suggest that the impact of football success is not stronger for SEC schools and in fact it suggest that ACC schools are more effected then SEC schools.

Table 5.1.
R^2 adjusted, Significance, Durbin-Watson Stat, and Predictors Related to Wins

	R2 adjusted	Significance	Durbin-Watson	Predictors
Acceptance Rate	0.114	0.000	1.985	Wins, Conference
SAT Score	0.088	0.000	2.175	Wins, Conference, Interaction
Retention Rate	0.099	0.015	1.972	Wins, Conference, Interaction
Graduation Rate	0.102	0.023	1.944	Wins, Conference

Table 5.2
AR Model Results for Acceptance Rate

	Unstandardized B	Std. Error	Standardized B	T	Significance
Wins	.952	.245	.297	3.891	.000
SEC	34.461	4.816	.382	7.156	.000
Interaction	-1.396	.314	-.358	-4.451	.000
Constant	39.096	3.836		10.192	.000

To test the second hypothesis, an examination was made of the freshman incoming SAT scores within the ACC and the SEC since 1998. This number was expected to increase at SEC schools but the increase should be the least attributed to football. The reason for the lessened impact is that as applications increase, the students still come from the same academic performance level so the change because of football would be diminished. The linear regression showed some residual correlation in the data because of the passing of time. Therefore, a linear regression with autoregressive (AR) errors was conducted and on the fourth iteration, the results produced a DW stat of 2.175. The adjusted R2 the SAT test was .088 indicating that approximately 8% or the variance

in incoming SAT scores over the BCS era (1998-2012) can be explained by winning and league affiliation (See Table 5.1). The results of the AR model indicated that wins (t=-3.530, p=.000), conference (t=-5.789, p=.000) and interaction (t=2.404, p=.017) are significant (See Table 5.3). These results indicate that the Test of H2: The 25th and 75th percentile SAT scores of SEC schools increased faster than those percentile SAT scores of ACC schools since the inception of the BCS in 1998 was accepted and significant. That means incoming SAT scores are influenced by wins and conference, and because the interaction is significant, the data suggest that the impact of football success is stronger for SEC schools but accounts for the smallest percentage of effect.

Table 5.3.
AR Model Results for Incoming 25th and 75th percentile SAT Scores.

	Unstandardized B	Std. Error	Standardized B	T	Significance
Wins	-4.409	1.249	-.274	-3.530	.000
SEC	-143.010	24.702	-.313	-5.789	.000
Interaction	3.847	1.600	.196	2.404	.017
Constant	1405.786	19.699		71.362	.000

To test the third hypothesis, an examination was made of the retention rates within the ACC and the SEC since 1998. This number was expected to increase at SEC schools as winning football encourages students to stay and to come back for the next year. The linear regression showed some residual correlation in the data from the passing of time. Therefore, a linear regression with autoregressive (AR) errors was conducted and on the sixth iteration, the results produced a DW stat of 1.972. The adjusted R^2 for the GR test was .099 indicating that approximately 10% of the variance in retention rates over the BCS era (1998-2012) can be explained by winning and league affiliation (See Table 5.1). The results of the AR model indicated that wins (t=-2.394, p=.017),

conference (t=-6.749, p=.000) and interaction were significant (t=2.432, p=.015; See Table 5.4.). These results indicate that the Test of H3: Retention rates of SEC schools increased faster than the retention rates of ACC schools since the inception of the BCS in 1998 was accepted and significant. This result suggests retention rates are influenced by wins and conference, and the interaction variable is significant, the data suggest that the impact of football success is stronger for SEC schools.

Table 5.4.
AR Model Results for Retention Rate

	Unstandardized B	Std. Error	Standardized B	T	Significance
Wins	-.160	.067	-.185	-2.394	.017
SEC	-11.498	1.704	-.344	-6.749	.000
Interaction	.208	.085	.193	2.432	.015
Constant	94.286	1.517		62.152	.000

To test the fourth hypothesis, an examination was made of the graduation rates within the ACC and the SEC since 1998. This number was expected to increase at SEC schools as students stay and get their degrees. The linear regression showed some residual correlation in the data from the passing of time. Therefore, a linear regression with autoregressive (AR) errors was conducted and on the sixth iteration, the results produced a DW stat of 1.944. The adjusted R^2 for the GR test was .102 indicating that approximately 10% of the variance in graduation rates over the BCS era (1998-2012) is explained by winning and league affiliation (See Table 5.1). The results of the AR model indicated that wins (t=-2.28, p=.023) and conference (t=-2.623, p=.000) are significant but interaction between ACC and SEC were not significant (t=1.242, p=.215; See Table 5.5). These results indicate that the Test of H4: Graduation rates of SEC schools increased faster than the graduations rates of ACC schools since the inception of the BCS

in 1998, was accepted but the interaction variable was not significant. That finding indicates graduation rates are influenced by wins and conference, however, because the interaction is not significant, the data do not suggest that the impact of football success is not stronger for SEC schools.

Table 5.5.
AR Model Results for Graduation Rate

	Unstandardized B	Std. Error	Standardized B	T	Significance
Wins	-.319	.140	-.176	-2.277	.023
SEC	-21.968	3.508	-.334	-6.263	.000
Interaction	.228	.184	.099	1.242	.215
Constant	85.218	3.042		28.017	.000

Overall, the data showed that wins do affect acceptance rates, SAT scores, retention rates and graduation rates. The study also showed that league affiliation does affect academic predictors as well. The interaction variable examines the slope between wins, league affiliation and academic achievement and can indicate if the effect is stronger on the SEC than the ACC. For all the dependent variables except graduation rate, the interaction was significant and positive suggesting that wins has a stronger effect on the SEC. For graduation rates, the interaction was still positive but not significant; suggesting that wins do not have a greater effect on the SEC than the ACC, but wins still affects graduation rates. Of note is that all of the adjusted R^2 values ranged from .088-.114 indicating that wins each season predicted about 10% of the variance in academic indicators.

CHAPTER 6

DISCUSSION

Two of my hypotheses were accepted, one was not accepted and the other was not significant. For SAT scores and retention rates, the interaction variable was significant indicating that the academic predictor was more affected by wins and league affiliation in the SEC. Acceptance rates were more affected by wins and league affiliation in the ACC, and the interaction variable was not significant in the graduation rate test. Although not all of my hypotheses were accepted, the overall implications of the study indicate that both winning and league affiliation are variables that influence academic predictors, and being affiliated with a winning league can affect academic predictors. Winning football games and conference membership do influence academic measures and both can have a positive effect on the conference's member institutions academic predictors.

For acceptance rates, my results were similar to previous studies (McCormick & Tinsley, 1987; Mixon et al, 2004; Pope & Pope, 2009), in that winning has an impact on academic predictors. I found similar results in that winning football effected acceptance rate, just the impact was actually greater for ACC schools. This result for the schools in the ACC could be because traditionally they are higher caliber schools with lower acceptance rates. Therefore, as winning effects applications and the number of students accepted, the ACC will experience a greater impact.

For incoming SAT scores, my results were similar to past studies (Mixon, 1995; Korbin et al., 2008) in that winning influences the SAT scores of incoming freshman. My results also showed that conference had an impact on incoming SAT scores as well. I discovered that the schools in the SEC were affected by winning, and their incoming SAT scores experienced a greater impact. This result stems from the idea that as more people apply, the school can accept an applicant with a higher SAT score and not accept some of the students with lower SAT scores.

For retention rates, my results were almost identical to past researchers (DeBerard et al, 2012; Murtaugh et al., 1999), in that winning has a significant impact on retention rates. The data also showed that winning has a greater impact on retention rates in the SEC than in the ACC. As past studies have also shown, a variety of factors impact retention rates. Winning football and league affiliation had a slight impact on retention. Thus, an institution can use this variable to increase and to encourage retention. Winning football or conference alignment can be one of the many elements in a campus wide campaign to keep students connected to the institution.

For graduation rates, my results were similar to past studies (Scott et al, 2005; Tucker, 2004) in that winning has an effect on graduation rates. The data did not indicate that the impact on the SEC was significantly different, and therefore, the winning impacts graduation rates similarly in the SEC as in the ACC.

This study revealed that positive effects exist to winning and that conference affiliation does matter in regards to the impact of those wins. Winning is potentially going to have an impact on a school's academic indicators, but this analysis reveals that certain conferences could be more impacted by winning than other conferences and being

in certain conference can increase the influence. This study shows that in regards to the impact league affiliation has on academic indicators, being in the SEC is better than being in the ACC regardless of wins or losses. This study revealed that the cost of top-level college football can have positive benefits on institutions academic measures and can be a tool the university uses to enhance the student body and achieve their mission.

Additionally, this investigation also illustrated a reason that schools choose to go through conference realignment to become members of a more prestigious league. Through conference membership institutions reap financial and potential academic benefits. Joining a more prestigious BCS conference or moving from a non-BCS conference into an automatic qualifier BCS conference can reach beyond the athletic department

6.1 Limitations

An inherent limitation to the research is that all the data are secondary. One example was with SAT scores, some schools reported ACT scores to the ABCU report. Therefore, for consistency, I converted ACT data into a SAT score. Another limitation of using secondary data is that the schools report the data to the ABCU and report the best numbers they can. Since the majority of the data came from the sample universities, a positive bias is expected. Colleges and universities desire the best possible public image so these institutions may inflate application rates and graduation rates to better represent the school. No universal system to rank colleges and universities is available, but this method should be a valid and comparable among the institutions.

The major limitation to the research is the link between athletics and academics. The direct link between winning football games influencing academic predictors is

unknown, and my data revealed approximately 10% of the variance. Therefore, while winning and league affiliation can influence academic measures the impact is not great.

Another limitation of the research is the conference realignment that happened during the time of 1998-2012. The SEC had 12 member institutions in 1998, and 2012 Missouri and Texas A&M joined to bring the total to 14. The ACC had nine teams in 1998, and in 2004, Miami and Virginia Tech joined with Boston College joining a year later to bring the total number of conference schools to 12.

6.2 Future Research

Areas for further research would include expanding the study to include all schools in the BCS and compare the SEC to the other five BCS conferences. The data could also be examined not using conferences, but just examining wins and comparing them to academic indicators. Additional academic indicator data could also be included in the study such as student faculty ratio, endowment, or library size; which are other popular academic indicators. By expanding the data to every school in the BCS, one could examine if the increased impact of winning in the SEC holds true for all the other conferences. One could also examine if the difference between a BCS school and a non-automatic qualifying school was significant. Does winning affect teams in the BCS AQ schools more than schools in the Mid-American Conference (MAC) or Mountain West Conference (MWC).

Another area of future research would be to adjust winning from wins in a season to winning a National Championship or playing in a BCS bowl. This research would allow one to separate the conference as a whole and see if winning a National Championship has a significantly higher impact than just winning games, and examine if

a National Championship has a greater impact on academic predictors than playing in a BCS bowl.

Though donations were not directly investigated in this study, a variety of factors not related to football can affect alumni giving. Personal, economic, or social factors can influence alum's decision to give and the athletic department's successes may not factor into the decision at all. More research needs to be done to examine the direct impact of donations to an institution.

Some administrators overly attribute factors of academic success to football, while the influence of football in other areas is minimized in an effort to reduce the impact. However, comparing each school and conference to each other gives an accurate example of how the SEC relates to the ACC, and how the SEC has changed over the BCS era.

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APPENDIX A

CONFERENCE OVERALL BCS RECORDS AND CHAMPIONSHIPS

Table A.1: Conference Overall BCS records and Championships

Conference	Winning Percentage	Championships
Mountain West	.750 (3-1)	0
SEC	.696(16-7)	8
Western Athletic	.667 (2-1)	0
Pac 12	.611 (11-7)	1
Big East	.500 (7-7)	1
Big Ten	.480 (12-13)	1
Big 12	.474 (9-10)	2
ACC	.133 (2-13)	1
Independents	.000 (0-3)	0

(BCS all-time records, 2012)

APPENDIX B

2005 & 12 ATHLETIC DEPT. REVENUES, PERCENT INCREASE AND SUBSIDY

Table B.1: 2005 & 2012 SEC Athletic Dept. Revenues, Percent Increase and 2012 Subsidy

School	2005 Athletic Revenue	2012 Athletic Revenue	Percent Increase	2012 Subsidy
Alabama	$62,287,192	$124,899,945	201%	$5,461,200
Arkansas	$47,322459	$99,757,482	211%	$1,949,180
Auburn	$57,395,152	$105,951,251	185%	$4,216,608
Florida	$77,742,484	$120,772,106	155%	$4,356,457
Georgia	$68,787,384	$91,670,613	133%	$3,243,812
Kentucky	$54,536,426	$88,373,452	162%	$827,172
LSU	$60,937,676	$114,787,786	188%	$0
Mississippi St	$25,502,594	$69,828,880	274%	$4,000,000
Mississippi	$28,721,832	$51,858,993	181%	$2,166,216
Missouri	$46,812,603	$50,719,665	108%	$1,935,944
South Carolina	$46,280,330	$87,608,652	189%	$2,338,268
Texas A&M	$64,180,453	$119,702,222	187%	$5,200,000
Tennessee	$71,295,394	$102,884,286	144%	$1,000,000
Vanderbilt	$38,962,349	$56,836,373	143%	$NA

APPENDIX C

WINS PER SEASON SEC & ACC 1998-2012

Table C.1: Wins per season 1998-2012

	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
Alabama	7	10	3	7	10	4	6	10	6	7	12	14	10	12	13
Arkansas	9	8	6	6	9	9	5	4	10	8	5	8	10	11	4
Auburn	3	5	9	7	9	8	13	9	11	9	5	8	14	8	3
Florida	10	9	10	10	8	8	7	9	13	9	13	13	8	7	11
Georgia	9	8	8	8	13	11	10	10	9	11	10	8	6	10	12
Kentucky	7	6	2	2	7	4	2	3	8	8	7	7	6	5	2
LSU	4	3	8	10	8	13	9	11	11	12	8	9	11	13	10
Mississippi St	8	10	8	3	3	2	3	3	3	8	4	5	9	7	8
Mississippi	7	8	7	7	7	10	4	3	4	3	9	9	4	2	7
Missouri	8	4	3	4	5	8	5	7	8	12	10	8	10	8	5
South Carolina	1	0	8	9	5	5	6	7	8	6	7	7	9	11	11
Texas A&M	11	8	7	8	6	4	7	5	9	7	4	6	9	7	11
Tennessee	13	9	8	11	8	10	10	5	9	10	5	7	6	5	5
Vanderbilt	2	5	3	2	2	2	2	5	4	5	7	2	2	6	
Boston College	4	8	7	8	9	8	9	9	10	11	9	8	7	4	2
Clemson	3	6	9	7	7	9	6	8	8	9	7	9	6	10	11
Duke	4	3	0	0	2	4	2	1	0	1	4	5	3	3	6
North Carolina	7	3	6	8	3	2	6	5	3	4	8	8	8	7	8
NC State	7	6	8	7	11	8	5	7	3	5	6	5	9	8	7
Wake Forest	3	7	2	6	7	5	4	4	11	9	8	5	3	6	5
Miami	9	9	11	12	12	11	9	9	7	5	7	9	7	6	7
Maryland	3	5	5	10	11	10	5	5	9	6	8	2	9	2	4
Florida State	11	12	11	8	9	10	9	8	7	7	9	7	10	9	12
Virginia	9	7	6	5	9	8	8	7	5	9	5	3	4	8	4
Virginia Tech	9	11	8	10	8	10	11	10	11	10	10	11	11	11	7
Georgia Tech	10	8	9	8	7	7	7	7	9	7	9	11	6	8	7