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# THE IMPACT OF ANTITRUST LAWSUITS AGAINST THE NCAA ON THE COMPETITIVE BALANCE OF DIVISION I FOOTBALL

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# ABSTRACT

The National Collegiate Athletics Association (NCAA) serves as the governing body of collegiate athletic programs to ensure successful integration of sports into higher education and most importantly, fair competition (NCAA, 2016). This premise is related to the development and existence of antitrust legislation in the competitive market, which attempted to standardize the pursuit of fair competition through just business practices. From an economics perspective, these laws ensure the deconcentration of economic power to allow for the opportunity for economic equality among market participants. This thesis explores the impact of recent antitrust legislation and infractions against schools alleged to have manipulated competitive balance within the NCAA, specifically focusing on how a large antitrust lawsuit against the governing body affects the performance of major Football Bowl Subdivision (FBS) schools at the Division I level.

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# Chapter 1 INTRODUCTION

## HISTORY OF THE NCAA AND ITS ROLE AS THE GOVERNING BODY

The establishment of the National Collegiate Athletics Association (NCAA) started as an initiative to combat cheating among schools, primarily by limiting the unfair advantages afforded to select schools because of their available resources (Smith, 2000). Smith goes on to argue that before the existence of the governing body, collegiate sports experienced a need for regulation in the face of potential commercialization of athletic programs, the pressure to produce winning records and the need for fair and physically safe environments for competition. The author notes the various factors that were present in the realm of collegiate athletics that started a movement towards regulation, including the introduction of faculty supervision, the creation of regional conferences, and the eventual establishment of a national body for standardizing sports programs in 1906. The NCAA did not initially oversee the competitive nature of its members, but rather the association defined the rules of play for each sport. Smith argues the role of the NCAA changed in the 1920's as collegiate athletics became a more influential component of higher education and public interest grew drastically as programs became more successful. This increase in popularity led to increased shifts toward commercialization, which indicated a need for the NCAA to act as a legislative entity instead of just an overhead organization.

Regulation of college sports experienced many phases because of a centralized need to increase the integrity of the programs. Smith continues by stating that despite the NCAA's effort to keep up with its growing branches, it could not pace its legislation with the expansive growth

in public interest and participation in collegiate athletics in the 1930's that would eventually lead to increased commercialization of all aspects of participation. Commercialization grew from the infatuation with amateur athletes that win games, posing them as celebrity-like figures within their communities. Winning programs are the product of talented athletes, indicating that a program's ability to recruit is the basis for its ability to succeed. This pressure led coaches to become increasingly creative in their tactics for recruiting top athletes in their sport, which led to coaches utilizing unfair practices. This growing concern forced the NCAA to define itself as an organization promoting fair competition. Throughout the 1940's and 1950's, the NCAA tested various standards of regulation, such as the Sanity Code for recruiting, which limited the unjust advantages exploited by specific teams (Smith, 2000). Through trial and error, the NCAA enacted various policies and expanded its enforcement capacity as it developed policies that were applicable to the issues facing members of collegiate athletics, effectively transforming the organization into an economic cartel (Eckard, 1998).

This period was incredibly definitive for the NCAA, as it became a respected governing body with true enforcement powers over its participants, allowing for the successful monitoring of collegiate athletics. The newly enacted measures of the NCAA for regulation of player recruitment, eligibility and compensation would cause member schools to experience consequences from the NCAA if violated. The growth in professional enforcement of member schools and athletes allowed the NCAA to continuously evaluate their governance and overall existence on a micro-scale, being a forceful cartel as the only employer of college athletes (Eckard, 1998). This more formally defined structure helped the NCAA extend its stature of a market controller as it began to more fiercely focus on generating profits, primarily through the negotiation of revenue sharing on its own behalf (Smith, 2000). The increased interest in

collegiate athletics resulted in increased demand for viewing the contests, giving the NCAA power to negotiate television broadcasts as a revenue source. The NCAA moved forward in profit expansion; while beneficial to the governing body, this led to the appearance new opposition: alleged claims of abuse of power over its member institutions (Smith, 2000). The appeal of watching amateur competitions only grew throughout the 1960's and 1970's, while the NCAA's power over its members expanded, despite members challenging the NCAA's authority as members and third-parties felt the cartel structure benefited only the overall governance and not the individual members generating profit through their participation.

## ANTITRUST ENFORCEMENT WITHIN THE NCAA

The coexistence between the NCAA and the member schools can be viewed as an economic market with the cartel-like NCAA being the sole employer (monopsony) of amateur athletes and the participating colleges acting as firms generating the supply side of output. The entire basis of the NCAA and collegiate sports existing under its supervision consists of the need to enforce standards of amateurism and ensure competitive balance within divisions. Competitive balance, ideally, mirrors the economic model of perfect competition: it consists of uncertainty of outcomes, meaning that there is equal opportunity given to each participant to succeed in each individual season (Rodriguez and Shooshtari, 2014). Theoretically, all schools should have the same resources to succeed because of the standardization of the NCAA, both in conference play and national standings, and there are no defined leaders or powerhouse programs from year-to-year. Equal opportunity is indicative of competitive balance, which is an evaluative tool for

measuring the impact on fan demand for a particular sport or program, as well as efficacy of current policies (Fort, 2003). Balance beneficial for multiple reasons, the primary one being that greater uncertainty of outcomes in sports is a component of greater public interest for the competition. Additionally, equal opportunity for successful performance from year-to-year would allow for competitive balance in terms of recruiting new athletes to college football programs and negates the justification of cheating or violating compliance standards to obtain player commitments.

The NCAA was progressive in defining its governing power over its members while also developing its professional face of profit-maximization. Competitive balance is beneficial to the NCAA in multiple ways, as it maintains public interest in the contests because of the lack of predictable outcomes, which in turn keeps negotiating power in favor of the side of the NCAA (Rodriguez and Shooshtari, 2014). Domination by one team or a group of teams from year to year indicates a lack of competitive balance; whether it be the same teams winning and losing within a conference or within the national league, decreased competitive balance can cause less interest in the NCAA, ultimately diminishing profits (Rodriguez, Shooshtari, 2014). It is in the best interest of both the NCAA and its members to maintain fair governance of amateur athletics to obtain optimization, however, this was not the established base set forth by the cartel operations of the NCAA, leaving it subject to the scrutiny of antitrust legislation.

At the foundation of its establishment, antitrust laws serve to protect markets from restrictions of competition, primarily in regards to promoting equal opportunity. The first major piece of antitrust legislation was the Sherman Antitrust Act, enacted in 1890 and established to limit mergers forming to raise prices and hurt consumers within a competitive market, while also limiting the ability of other firms to enter (Sherman Antitrust Act). Antitrust legislation

eventually became relevant and applicable to sports organizations, particularly those involving professional athletes. With the exception of Major League Baseball (MLB), professional leagues were under the close monitor of antitrust standards. Because there was not a need for regulation of college sports in its earliest years, the NCAA had not been subject to antitrust challenges until the late 1950's, mostly because it viewed its programs as exempt from the prohibitions set forth in the Sherman Act (Scully, 1985). The NCAA was first on the defense against antitrust legislation in 1955 when implicated by *International Boxing Club v. United States*, where the Supreme Court decided that "there was nothing in the nature of a sports organization itself to merit an exemption" from the Sherman Act (Scully, 1985). The NCAA was able to avoid immediate effects because of its classification as a non-profit, self-regulating body of amateur competition, rather than being a commercialized representative of professional sports, however this decision was the first step towards the antitrust prosecution of the organization overseeing collegiate athletics (Scully, 1985). This defense weakened substantially, however, due to the increasing applicability of antitrust laws to situations other than simply maximizing profit; the legislation began to take shape in any anticompetitive scenario across varying markets, making it clear to the NCAA that many of its policies were in violation of promoting fair and just competition (Scully, 1985).

## ANTITRUST LAWSUITS AGAINST THE NCAA, 1984 AND 2015

### *NCAA v. BOARD OF REGENTS OF THE UNIVERSITY OF OKLAHOMA, 1984*

A primary source of revenue for the NCAA came from television broadcasts in part because of the increased viewership of select games (Smith, 2000). With the magnitude of

influence that Division I college football holds within society, it can be said that one of the largest components of the NCAA's role is to optimize both the regulation and profit opportunities that come with its largest product. Although seemingly normal of a regulatory body to negotiate these agreements on behalf of members, the cartel structure of the NCAA placed limits upon outputs of the participating colleges, therefore limiting competitive balance because schools were unable to negotiate potential profits on their own behalf (Eckard, 1998). The NCAA fixed prices within the broadcast deals between member schools, making all games equal in value and neglecting the weight placed upon factors such as rivalries, recruiting classes, and timing within a season. The purpose of this regulation was to counter claims that an increase in the number of televised games would decrease in-stadium attendance; the NCAA sought to negotiate a set number of broadcasts to balance this conflict and this is where antitrust policies become applicable to the governing body of college athletics.

Many member schools, particularly the Universities of Oklahoma and Georgia were dissatisfied with their representation by the NCAA in the broadcast negotiations, leading them to form the College Football Association (CFA) in 1979 with the goal of increasing their role in the determination of broadcast policy. The CFA attempted to confirm a television contract separate from the one negotiated by the NCAA, resulting in the NCAA threatening to impose sanctions on the registered sports of each member institution (Scully, 1985). The CFA did not back down from the NCAA and the University of Georgia and The University of Oklahoma filed suit against the governing body, claiming the television plan negotiated on their behalf was anticompetitive because it fixed prices to limit outputs, in this case profits from selling broadcast rights, therefore violating the Sherman Act (Scully 1985). The United States District Court sided in favor of the CFA and concluded that the NCAA was operating as a cartel, consequently

committing per se violations of the Sherman Act by fixing prices for the broadcasts to limit production of its members (Scully, 1985). In an attempt to preserve desired policy, the NCAA appealed the case to the United States Court of Appeals for the Ninth Circuit, however they were unsuccessful as the ruling of the district court was upheld; the court stated that the NCAA was in violation of antitrust standards because its actions were illegal controls, even when consulted with the rule of reason test (Scully, 1985). In a seven-to-two decision, the Supreme Court affirmed all previous decisions in this case and invalidated the television broadcast deal negotiated by the NCAA on behalf of its members due to the presence of horizontal restraints (*NCAA v. Board of Regents of Oklahoma*). While the unreasonable restraints of trade were not necessarily concrete, the NCAA committed per se violations of the Sherman Act, leading to the Supreme Court siding in favor of the Board of Regents of the University of Oklahoma.

***O'Bannon v. NCAA,* 2015**

In 1984, the NCAA was found in violation of antirust legislation and was therefore put on the defensive against its member schools. Its anticompetitive restraints were again brought into question in 2009, where the NCAA found itself in another antitrust suit, this time in relation to the supply side of the market. Edward O'Bannon, star player on the 1991-1995 UCLA Men's Basketball teams, filed suit against the NCAA for using his image and likeness in DVDs, photos, stock footage, and video games without his consent (*O'Bannon v. NCAA – Class Action Complaint*). O'Bannon filed suit to represent not only himself, but other Division I basketball and football players that were in the same situation. Because the NCAA was selling these products for profit, O'Bannon argued that he was deprived of just compensation and that the governing body was in violation of Section 1 of the Sherman Act for restricting trade in the act

of obtaining profit from his image by not allowing or providing compensation to O'Bannon and other student-athletes (*O'Bannon v. NCAA*).

Since its establishment, the NCAA has sought to ensure that collegiate programs are comprised of amateur student-athletes. When brought to the United States District Court of the Northern District of California, O'Bannon was successful in his suit against the NCAA when tried in 2014, as the decision stated that the NCAA's rules of amateurism are not exempt from antitrust, especially when the limitations of trade occurs after the student-athlete has graduated (*O'Bannon v. NCAA*). The precedent set in 1984 established that the NCAA does not have the power to make decisions that lead to price, trade, and compensation limitations of its members without their consultation or ability to negotiate was confirmed by the district court. The district court ruled that the NCAA's compensation standards prove anticompetitive in the college education market and that there are alternative means of compensation for student-athletes, such as scholarships for the full-cost of four-year tuition or cash up to $5,000 per year for usage of their likeness in marketing material (*O'Bannon v. NCAA*).

The NCAA took this decision to the United States Court of Appeals for the Ninth Circuit where the NCAA was again unsuccessful against O'Bannon (*O'Bannon v. NCAA)*. This decision was confirmed by a majority in a two-to-one decision in 2015, only reversing that student-athletes have the ability to garner up to $5,000 compensation within a single year of academic enrollment and athletic participation from the NCAA. The Court confirmed that the NCAA is a price-fixing cartel in the market for college education because it does not allow its members to recruit athletes by offering more than the value of a four-year education, thus not allowing the price of college to be as low as possible for potential student-athletes (*O'Bannon v. NCAA*). The counter-argument of the NCAA is that the restriction of compensation is a measure of

maintaining competitive balance within particular sports, as it creates an environment that is not biased towards schools with larger resources. Both the district court and the United States Court of Appeals for the Ninth Circuit acknowledged the value of promoting competitive balance within the NCAA, but ultimately noted that any equalizing effect of the compensation rules was negated by the allowance of members to spend unlimited budgets on other aspects of their sports programs, such as coaches' salaries and facilities. This indicated to the courts that the NCAA was operating as a price-fixing cartel that was not improving competitive balance by restricting compensation of its athletes. Although both sides again appealed, The United States Supreme Court chose not to hear *O'Bannon v. NCAA*, confirming the decision of the United States Court of Appeals for the Ninth Circuit and resulting in a legal loss for the NCAA.

# Chapter 2 METHODOLOGY

Three different empirical measures are utilized in this paper to identify the presence of competitive balance within Division I college football, the effectiveness of the NCAA's policies and governance and the expectations for the future standings of conferences and the league as a whole during the time period surrounding *O'Bannon v. NCAA.* Variance testing is used in the two forms of one-way ANOVA and comparative evaluation. By analyzing variance in winning percentage, a holistic view of the performance of individual programs and conferences is gained through the most general indicator of success in sports, wins and losses. Winning percentage involves numerous factors, but it is the statistic that indicates the presence of competitive balance or imbalance within the time period. Additionally, a probit regression model is used to incorporate the factors that go into producing a winning program: budget, previous final ranking, conference affiliation and year. This testing is illustrative of the weight of particular factors that contribute to wins and losses, as well as create the platform for identifying which areas a program should focus on if they want to increase their success.

## VARIANCE TESTING

This paper replicates a portion of the model developed by Carroll and Humphreys (2014). The premise of this paper is that there is a pre-existing cartel relationship between the NCAA and its member schools because of the price-fixing behavior of the governing body, framing it as a principal-agent relationship. This model defines imperfect agency behavior as overregulation of the NCAA. Imperfect agency behavior was the premise of the suit brought forth by the

College Football Association schools in pursuit of obtaining rights to negotiate television broadcasts of their games in 1984. The impact of the Supreme Court's decision has been empirically tested by analyzing trends in winning percentages to support the assumption that the NCAA is acting as a cartel with imperfect agency behavior throughout the collegiate athletic programs of its members (Carroll and Humphreys, 2014).

Data was collected from seven years prior to the 1984 decision and seven years post; this sample period was chosen because it is a large enough sample size to measure the overall impact and conference composition was relatively stable. While there are multiple ways to measure competitive balance, Carroll and Humphreys argue that winning percentage is the "most common indicator of competitive balance in sports." The authors note that dissecting this metric into the average margin of victory of each win is indicative of shifts in competitive balance after an antitrust lawsuit.

Carroll and Humphreys argue that *NCAA v. Board of Regents of the University of Oklahoma* had no true effect of improving competitive balance, indicating that the identification of overregulation by the NCAA and efforts to correct it do not improve competitive balance within the sport. When looking solely at winning percentages, there is support of overregulation of the NCAA. Overall, competitive balance improved in some conferences, but not in others, signaling that conference variability is a contributing factor of imbalance. The evidence of individual outcome of games indicates that competitive balance improved after the 1984 decision, as the margins of victory shrunk to illustrate more competitive, fair games within NCAA Division I football.

In this paper, I apply a modified portion of the Carroll and Humphreys model for measuring competitive balance: variance testing of winning percentages by one-way ANOVA.

An ANOVA test identifies whether a statistically significant difference among means exists between groups; this allows for an evaluation of the competitive balance within the conferences in the years prior and immediately after the lawsuit to identify possible impact. This model combines the winning percentages from each of the Power 5 conferences[1] and tests for a significant difference among the teams throughout the time period, indicating a level of competitive balance within the sample of college football teams.

Additionally, I calculate the variance in winning percentage of each team within the Power 5 conferences to determine the possible presence or absence of competitive imbalance within each conference; the balance of each conference illustrates the issues at hand for the entirety of Division I Football, so this is one way to effectively determine whether an equal opportunity of success exists for member schools. The variance is calculated from the winning percentages over the entire time period of the sample to gain insight into how the individual teams performed within the conferences to determine. A small variance is indicative of steady team performance, whereas a high variance indicates inconsistent results throughout the years. Static rankings and performance within a conference imply unbalanced competition, as the teams are maintaining consistent winning percentages, rankings or overall stature from year to year. This shows that schools with lower levels of success are not improving, while teams with winning records, playoff bids, and championships are maintaining stable success throughout the time period. This is a factor of competitive balance, as the conferences do not reset after each season or create the environment for a completely equal chance of success for each team.

[1] The Power 5 Conferences are Atlantic Coast Conference (ACC), Big 12, Big Ten, Pac-12, Southeastern Conference (SEC)

I selected variance in winning percentage because it gives a comprehensive view of individual team and conference performance, both year-to-year and throughout entire time periods before, during, and after the antitrust lawsuit. It is important to note that this statistical analysis does not include factors such as budget allotted by each school to staff salaries, compliance departments, or program development. Additionally, it is nearly impossible to account for the predicted impact of a recruiting class due to the nature of sports, indicating that truly equivalent starting points each season is unattainable within college football because human talent and error cannot be perfectly quantified, even if past performance records and evaluations are available.

## PROBIT REGRESSION

In addition to variance testing of winning percentages, I use a probit regression to account for the impact that factors such as conference affiliation, budget, year and past ranking of an individual team have on a football team's success from year-to-year. These variables contribute to winning percentage and are therefore weighted in the above variance testing, however, this probit model will allow for the exact influence to be calculated over the time period of 2007 to 2016. The following equation was used to demonstrate the weighted effect of each of the factors on the likelihood of being ranked at the end of the current season:

$$\boldsymbol{RankedTY = \beta_1 + \beta_2 RankedLY + \beta_3 lnBudget + \beta_{3-6} Conference + \beta_i Year_i}$$

*RankedTY* captures whether a particular team was ranked within the top thirty in the final Associated Press Poll Rankings from 2007 to 2016, based on the following variables. *RankedLY* is a dichotomous variable for whether the individual program was ranked within the top thirty for

the final Associated Press Poll rankings in the previous season. Conference affiliation is accounted for with four $Conference_i$ variables. Within this model, the Big Ten Conference is used as the base conference, meaning that the coefficients generated for each of the controls reflect the advantage of conference affiliations relative to the Big Ten. Due to the variance of budgets across years and conferences, the *Budget* variable is coded as the log of each budget (*logBudget)*, allowing for the interpretation of the coefficients to reflect percentage changes in budgets, not just additional dollars removed or added each year. These *Budget* values represent the overall expenditure of a University on their football program, including operating, academic, salary, travel and supplies expenses (Equity in Athletics). Finally, each year for this time period (2007-2016) was coded in the vector $Year_i$ to evaluate whether a particular year, specifically those most directly impacted by the antitrust lawsuits, had a larger effect on the likelihood of a school to be ranked in the final poll.

While being ranked within the top thirty in the Final Associated Press Poll of the season designates a team as a top program, there can be various levels of competitive balance within the top thirty, meaning that there can be greater opportunity at the bottom of the rankings than within the top ten. To account for the varying level of balance within the overall rankings, I further expanded the probit regression by dissecting the final rankings within the Final AP Poll to reflect the likelihood of being ranked in the top ten (*T10TY*), top twenty (*T20TY*), and top thirty (*T30TY*). The variables referring to ranking in the preceding season is matched with the dependent variable of being ranked in the current season, such that being ranked in the top ten this year in conditional upon being ranked in the top ten last year. This is true for all cases tested in this model, from overall ranking to the designations of top ten, top twenty, and top thirty.

# Chapter 3 DATA ANALYSIS

## ANOVA THROUGH STATA

Data for the Power 5 conferences from seven years prior to the 2014 case of *O'Bannon v. NCAA* was collected from the NCAA, with completed 2015 and 2016 data included for the generation of a predicted impact for the coming years. While conference composition was relatively stable during this period, changes in conference affiliation in this sample period were controlled for by including the entirety of the team's data in their current conference's sample.

Being that competitive balance measures the consistency of which teams win games, three separate ANOVA tests were performed for the Power 5 conferences as one unit to model the impact of a prominent lawsuit against the NCAA on competitive balance on Division I college football as a whole. The first test was for the time period of 2007-2014 to represent the period leading up to the lawsuit. The second test was for the time period of 2015-2016 to gauge if there were any immediate effects within Division I college football after the United States Court of Appeals for the Ninth Circuit confirmed the decision made by the district court in O'Bannon's favor in 2015. Because of the recent nature of *O'Bannon v. NCAA*, limited data is available to measure the impact of the antitrust lawsuit; however, the analysis of the seasons that closely followed the decision indicate the immediate reaction of conferences and the division to NCAA adjustments. This analysis can be used to compose the expected effect on competitive balance of the lawsuit. Additionally, I performed an ANOVA on the entire time period as a whole to represent the overall balance within the sport, to give insight into whether a two-year period of legal turmoil for the NCAA offsets the balance of its programs.

**Table 1. Pre-O'Bannon v. NCAA Decision: ANOVA – (2007-2014)**

| 2007- 2014 ANOVA - Winning Percentage to Year | Partial SS | df | MS | F | Prob > F |
|---|---|---|---|---|---|
| Source | | | | | |
| Model | 0.0085 | 7 | 0.0012 | 0.03 | 1 |
| Year | 0.0085 | 7 | 0.0012 | 0.03 | 1 |
| Residual | 22.0216 | 504 | 0.0436 | | |
| Total | 22.0301 | 511 | 0.0431 | | |
| Number of Obs = 512 | | | | | |
| Root MSE = 0.20903 | | | | | |
| R-Squared = 0.0004 | | | | | |
| Adj R-Squared = -0.0135 | | | | | |

**Table 2. Post-O'Bannon v. NCAA Decision: ANOVA – (2015-2016)**

| 2015- 2016 ANOVA - Winning Percentage to Year | Partial SS | df | MS | F | Prob > F |
|---|---|---|---|---|---|
| Source | | | | | |
| Model | 0.0026 | 1 | 0.0026 | 0.06 | 0.8083 |
| Year | 0.0026 | 1 | 0.0026 | 0.06 | 0.8083 |
| Residual | 5.6000 | 125 | 0.0448 | | |
| Total | 5.6026 | 126 | 0.0444 | | |
| Number of Obs = 127 | | | | | |
| Root MSE = 0.211661 | | | | | |
| R-Squared = 0.0005 | | | | | |
| Adj R-Squared = -0.0075 | | | | | |

**Table 3. Overall Time Period: ANOVA – (2007-2016)**

| 2007- 2016 ANOVA - Winning Percentage to Year | Partial SS | df | MS | F | Prob > F |
|---|---|---|---|---|---|
| Source | | | | | |
| Model | 0.0205 | 9 | 0.0022 | 0.05 | 1 |
| Year | 0.0205 | 9 | 0.0022 | 0.05 | 1 |
| Residual | 27.6216 | 630 | 0.0438 | | |
| Total | 27.6422 | 639 | 0.0432 | | |
| Number of Obs = 640 | | | | | |
| Root MSE = 0.209389 | | | | | |
| R-Squared = 0.0007 | | | | | |
| Adj R-Squared = -0.0135 | | | | | |

The ANOVA tests in each period show that during this time period, there was no significant change in the variance in winning percentage throughout the antitrust allegations, trial, and decision. This indicates that this antitrust lawsuit against the NCAA did not have any impact on the competitive balance of college football, even with the governing body being the losing defendant in this case. Empirically, lawsuits that cause the NCAA to adjust its policies and overall governance do not trickle down to affect the competitive balance within the conferences of college football. This shows that the NCAA, while sometimes damaging its own reputation, can continue to execute its mission without significant changes to its internal processes. However, the courts found that the NCAA's justification for price-fixing was in violation of the Sherman Act because it did not negate the other variables of competitive balance, the ruling for the NCAA to adjust its compensation rules may not improve balance within the programs. This sample of post-decision winning percentages is small with only two years, so it is possible that the effects of this case have not yet been fully initiated. However, *NCAA v. Board of Regents of the University of Oklahoma* proved similar in that it did not have a measurable effect on competitive balance, signifying the impact that this decision will most likely have.

## COMPARATIVE VARIANCE

The Power 5 conferences are a sample of Division I college football programs with defined presence and resources for continued compliance with the NCAA. Collecting overall winning percentage for comparison from within the teams of these five conferences is useful in understanding the nature of each division, as well as Division I Football holistically, and how balanced the conferences are within themselves. For each of the Power 5 conferences, I compiled

the winning percentages of each team for each season from 2007-2016 and then calculated each team's variance throughout the time period. Tables 1 through 3 show that while the margins are small between the variance values, these calculations are representative of the level competitive balance within each conference, indicating the overall balance present Division I football as a whole within the NCAA.

The results comparing variances within the Power 5 conferences were not surprising in that the most well-known powerhouse teams have the smallest variance in winning percentage over this span of time. This indicates that the level of competition within each of the conferences is relatively unbalanced to some degree because throughout the time period, the same teams remain at the top of the conference rankings in terms of winning percentage while the same teams remain at the bottom. Additionally, it is to be noted that this time period extends longer than four years, meaning that a particular recruiting class does not have a comprehensive effect on the winning percentages. During this time, multiple recruiting class were filtered through each team, giving a better sample of how these programs operate over extended time periods within NCAA regulations. This variance analysis indicates that there is not an equal opportunity at the start of each season for teams to climb to the top, therefore allowing the larger, most-recognizable power programs to remain at the top of their conference.

## PROBIT REGRESSION

As expected, this test identified the weight of particular factors that contribute to a team's success and overall, competitive balance of conferences and the division as a whole. Table 5 breaks down the data into four groups for evaluation: *RankedTY* indicating that a program simply

appears within the final Associated Press poll at the end of the season, then *Top 10*, *Top 20*, and *Top 30* subsequently to further segment the rankings and determine the likelihood of reappearing a specific levels within the final rankings. As a basis for analysis, statistical summary of the data is provided in Table 4.

**Table 4. Summary of Variable Data**

| Variable | Mean | Std. Dev. | Minimum | Maximum |
|---|---|---|---|---|
| RankedTY | 0.3859 | 0.4872 | 0.0 | 1.0 |
| RankedLY | 0.3859 | 0.4872 | 0.0 | 1.0 |
| ACC | 0.2188 | 0.4137 | 0.0 | 1.0 |
| SEC | 0.2188 | 0.4137 | 0.0 | 1.0 |
| Big12 | 0.1563 | 0.3634 | 0.0 | 1.0 |
| Pac12 | 0.1875 | 0.3906 | 0.0 | 1.0 |
| Budget | 21,130,037.3 | 7,563,340 | 4,765,737 | 62,252,389 |
| logBudget | 16.8071 | 0.3433 | 15.3769 | 17.9467 |
| $Year_i$ | 0.1 | 0.3002 | 0.0 | 1.0 |

Note: 640 observations of each variable.

**Table 5. Probit Regression of Rankings**

| | RankedTY | Top 10 | Top 20 | Top 30 |
|---|---|---|---|---|
| Constant | -23.6595 (3.9120)*** | -36.46075 (5.287661)*** | -21.7727 (3.9638)*** | -20.0997 (3.7202)*** |
| Previous Ranking (LY, T10, T20, T30) | 0.8005 (0.1149)*** | 0.5048 (0.1732)** | 0.6141 (0.1254)*** | .6785 (0.1125)*** |
| logBudget | 1.3354 (0.2277)*** | 2.0422 (0.3049)*** | 1.2132 (0.2299)*** | 1.1305 (0.2164)*** |
| ACC | 0.0215 (0.1699) | -0.15198 (0.2362) | -0.1146 (0.1844) | -0.0333 (0.1675) |
| SEC | 0.1502 (0.1641) | -0.0777 (0.2066) | 0.1154 (0.1697) | 0.0763 (0.1609) |
| Big 12 | 0.4014 (0.1827) | 0.3448 (0.2272) | 0.4451 (0.1820) | 0.3989 (0.1798) |
| Pac 12 | 0.2499 (0.1740) | 0.3616 (0.2199)* | 0.2900 (0.1820) | 0.2357 (0.1716) |

Note: Time period is controlled for by the variable $Year_i$ representing 2007-2016. The standard error is presented with each coefficient. Big Ten is the base conference.
***p < .01, **p < 0.05, * p < 0.10

Table 5 presents the output generate from the probit regression test. The largest coefficient exists with the factor of budget, showing that the amount of funding and resources invested into a program is the strongest determinant of success in terms of final rankings. While this output provides insight into the situation of factors impacting final rankings, these coefficients cannot be utilized for interpretation of direct effect; an analysis of marginal effects of regressors from the probit model must be used to determine the impact of the variables on the outcome. Table 6 presents the marginal effects of each variable for interpretation.

**Table 6. Marginal Effects of Variables on Final Ranking**

| | **RankedTY** | **Top 10** | **Top 20** | **Top 30** |
|---|---|---|---|---|
| Previous Ranking (LY, T10, T20, T30) | 0.2528 (0.0319)*** | 0.0879 (0.0297)*** | 0.1742 (0.0337)*** | 0.2229 (0.0337)*** |
| logBudget | 0.4216 (0.0666)*** | 0.3556 (0.0504)*** | 0.3441 (0.0615)*** | 0.3715 (0.0668)*** |
| ACC | 0.0068 (0.0537) | -0.0265 (0.0411) | -0.0325 (0.0523) | -0.0109 (0.0550) |
| SEC | 0.0474 (0.0517) | -0.0135 (0.0359) | 0.0327 (0.0481) | 0.0251 (0.0528) |
| Big 12 | 0.1267 (0.0571)** | 0.0600 (0.0394) | 0.1263 (0.0525)** | 0.1311 (0.0584)** |
| Pac 12 | 0.0789 (0.0547) | 0.0629 (0.0381)* | 0.0823 (0.0514) | 0.0775 (0.0562) |

Note: Time period is controlled for by the variable $Year_i$ representing 2007-2016. The standard error is presented with each coefficient. Big Ten is the base conference.
***p < .01, **p < 0.05, * p < 0.10

The marginal analysis of the probit model provides coefficients that indicate the increased or decreased likelihood of being ranked in the final Associated Press poll. For instance, a 10% increase in budget will increase the likelihood of being ranked in the current season by 32 to 42 percentage point increase, indicating that increasing football program expenditure is a significant factor in determining success of a program. This output shows that an increase in

budget most greatly increases a team's likelihood of being ranked in the current season. Additionally, whether a program was ranked in the year immediately before the current season weights the second heaviest; being ranked in the season prior increases the likelihood of being ranked in the current season by 8%-25%, depending on the segmentation of the ranking. Most of the Power 5 conference binary variables proved insignificant in the probit regression and overall did not indicate a weighted impact on the ranking of a team in the current year.

The significant output is illustrative of the competitive imbalance that exists within Division I football today. Being that the previous rank has such a high coefficient and serves as a strong indicator of where the program will finish in the current season, it can be stated that there is significant imbalance within the NCAA since 2007. For competitive balance to exist, these coefficients would need to be incredibly low or insignificant, for that would mean that a previous season does not directly carry over into the previous one and each team would have an equal opportunity to contend for the top ranking. As expected, this is not true because the same teams exist within the designations of Top 10, Top 20, and Top 30 from year-to-year.

It is interesting to note, however, that while the entirety of the Top 30 ranking is imbalanced, there are varying levels of entry/re-entry for teams within the specific tiers broken down above. For instance, it is more likely for the same teams to remain within the overall ranking if they were ranked within the Top 10 in the previous season, as opposed to the Top 20 or Top 30. This shows that that the teams that succeed to the top of the division rarely see unsuccessful seasons because they generally fluctuate within the Top 30 teams. Due to the factor of individual player and recruiting class performance, exceptions to this claim exist, conversely, competitive imbalance is prominent within the rankings of Division I football.

# Chapter 4 CONCLUSION

The lack of competitive balance is a never-ending cycle because the consistency of past stature of a Division I football program impacts its ability to grow in the future. The more successful teams are, the more likely they are to gain the best recruiting classes the next year, obtain additional funding, and garner more public demand, establishing an easier path to success than the lower teams that are procuring lower-level talent with fewer resources.

This is indicative of the unquantifiable factor of evaluating a team's starting point at the beginning of the season, as each program's incoming recruiting class and team composition are different from their opponents. While the implication of varying athlete talent exists, overall competitive balance within college football is still attainable through NCAA governance and regulation of programs. The variance testing of winning percentages indicates that while the NCAA is allowing for anticompetitive standards of operation within its conferences, corrective measures, such as an antitrust lawsuit, do not actually improve the balance within collegiate athletic conferences and leagues. This is true because the post-lawsuit policies enacted by the NCAA, such as increased compliance standards or adjustments to principles of amateurism have not increased balance within the league.

The data shows that NCAA losses in antitrust lawsuits do not fulfill the corrective measure's goal of generating competitive stability in college football; however, despite this shortcoming, the NCAA still continues to operate as a profit-generating entity. In each case, the basis for the NCAA's defense is that it promotes fair competition for amateur athletes; while this has been found to be legally untrue in each case, the governing body continues to function after financing the penalty set forth by the courts.

Conference leaders across the country in Division I football appear unaffected by the antitrust lawsuits, as they have the ability to easily adjust to new policies set forth by the NCAA after it is forced to take action to correct its behavior that has been ruled anticompetitive by the courts. Because of reputable success, these football programs continue to grow as the NCAA enacts legal change. Compared to these top-tier programs, lower-level schools that already experience a disadvantage at the start of each new season are further pushed down the ranks, as they do not have the ability and resources to adjust to the new policies and requirements of the NCAA established after the court's ruling. Conferences remain unbalanced because of the unequal opportunities available to members and the gap between the power and smaller football programs continues to grow. Antitrust lawsuits against the NCAA have yet to show improvement of competitive balance within Division I college football and the conferences continue to segregate levels of success among teams.

# APPENDIX

## Table 7. ACC Individual Winning Percentage Variance (2007-2016)

| ACC – School | Variance | Average Winning Percentage |
|---|---|---|
| Miami | 0.0098 | 0.5729 |
| Virginia Tech | 0.0120 | 0.6784 |
| Pittsburgh | 0.0133 | 0.5647 |
| North Carolina | 0.0148 | 0.5784 |
| North Carolina State | 0.0160 | 0.5082 |
| Louisville | 0.0202 | 0.5963 |
| Florida State | 0.0227 | 0.7498 |
| Wake Forest | 0.0246 | 0.4224 |
| Syracuse | 0.0247 | 0.3851 |
| Clemson | 0.0253 | 0.7376 |
| Georgia Tech | 0.0270 | 0.5859 |
| Virginia | 0.0298 | 0.3724 |
| Boston College | 0.0358 | 0.4946 |
| Duke | 0.0429 | 0.4149 |

## Table 8. Big 12 Individual Winning Percentage Variance (2007-2016)

| Big 12 - School | Variance | Average Winning Percentage |
|---|---|---|
| Oklahoma | 0.0088 | 0.7806 |
| Oklahoma State | 0.0158 | 0.7151 |
| Iowa State | 0.0181 | 0.3213 |
| West Virginia | 0.0220 | 0.6484 |
| Kansas State | 0.0228 | 0.5948 |
| Texas Tech | 0.0239 | 0.5780 |
| Texas | 0.0403 | 0.6256 |
| Baylor | 0.0498 | 0.5837 |
| TCU | 0.0519 | 0.7332 |
| Kansas | 0.0755 | 0.3122 |

**Table 9. Big Ten Individual Winning Percentage Variance (2007-2016)**

| Big Ten - School | Variance | Average Winning Percentage |
|---|---|---|
| Wisconsin | 0.0100 | 0.7235 |
| Nebraska | 0.0123 | 0.6481 |
| Penn State | 0.0151 | 0.6726 |
| Indiana | 0.0166 | 0.3628 |
| Northwestern | 0.0179 | 0.5717 |
| Ohio State | 0.0218 | 0.8405 |
| Iowa | 0.0247 | 0.6149 |
| Illinois | 0.0256 | 0.4064 |
| Purdue | 0.0275 | 0.3448 |
| Rutgers | 0.0314 | 0.4986 |
| Maryland | 0.0342 | 0.4224 |
| Michigan | 0.0356 | 0.5851 |
| Minnesota | 0.0372 | 0.4429 |
| Michigan State | 0.0480 | 0.6744 |

**Table 10. PAC-12 Individual Winning Percentage Variance (2007-2016)**

| Pac 12 - School | Variance | Average Winning Percentage |
|---|---|---|
| USC | 0.0155 | 0.7193 |
| Arizona | 0.0214 | 0.5250 |
| Arizona State | 0.0252 | 0.5458 |
| UCLA | 0.0294 | 0.5224 |
| Utah | 0.0298 | 0.6832 |
| Oregon | 0.0302 | 0.7671 |
| Colorado | 0.0315 | 0.3382 |
| California | 0.0339 | 0.4582 |
| Oregon State | 0.0374 | 0.4813 |
| Stanford | 0.0401 | 0.7018 |
| Washington State | 0.0407 | 0.3423 |
| Washington | 0.0520 | 0.4997 |

**Table 11. SEC Individual Winning Percentage Variance (2007-2016)**

| SEC - School | Variance | Average Winning Percentage |
|---|---|---|
| LSU | 0.0111 | 0.7509 |
| Georgia | 0.0154 | 0.7031 |
| Tennessee | 0.0157 | 0.5304 |
| Alabama | 0.0173 | 0.8558 |
| Texas A&M | 0.0180 | 0.6176 |
| Mississippi State | 0.0185 | 0.5671 |
| Kentucky | 0.0232 | 0.4276 |
| Arkansas | 0.0336 | 0.5536 |
| Florida | 0.0366 | 0.7025 |
| Vanderbilt | 0.0366 | 0.418 |
| Missouri | 0.0369 | 0.6380 |
| South Carolina | 0.0384 | 0.6007 |
| Auburn | 0.0434 | 0.6214 |
| Ole Miss | 0.0447 | 0.5165 |

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# Academic Vita of Kirsten Reilly

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Education:
Major(s): Economics and Advertising
Honors: Economics

Thesis: The Impact of Antitrust Lawsuits Against the NCAA on the Competitive Balance of College Football

Thesis Supervisor: Dr. Jadrian Wooten

Work Experience:

**Penn State Men's Basketball** October 2014-Present
*Office Assistant* University Park, PA

- Organize incoming files, documents and components of recruiting visits in accordance to NCAA Division I Compliance standards of amateurism
- Write and format newsletters for alumni and donor contacts to increase engagement with the program
- Plan and execute logistics for team, alumni and staff meetings and events

**RealTime Media** May 2017 - August 2017
*Project Management Intern* Conshohocken, PA

- Provided support for Project Managers through logistical promotion planning, prize fulfillment and winner outreach
- Assisted in managing player support issues by responding with quick and helpful service to consumers participating in contests and sweepstakes
- Summarized digital and social metrics to provide reports to clients

Volunteer Experience:

**Movin' On – Penn State's Annual Music Festival** April 2017-Present
*Director of Sponsorship* University Park, PA

- Identify areas of need for Movin' On in regards to sponsorship and in-kind donations
- Manage co-branding efforts between Movin' On and corporate sponsorships
- Establish long-lasting, productive relationships that ensure the future of one of the top 5 largest student-run music festivals in the country
- Oversee the efforts of a team of five Sponsorship Coordinators to facilitate communication with donors to cultivate monetary sponsorships and in-kind donations

**Penn State Dance Marathon – THON** April 2016-April 2017
*Company Relations Coordinator* University Park, PA

- Established and maintained small business and corporate relationships throughout the fundraising window that culminated in over $10million raised for THON 2017
- Assisted the Director of Development with benefiting and solicitation strategies
- Analyzed donor retention strategies for long-term growth of the organization
- Served as Head of Company Relations team of three, ensuring proper donor outreach

**Penn State Dance Marathon – THON** April 2015-March 2016
*Public Relations Athletic Marketing Captain* University Park, PA

- Planned and executed athletic events that served as fundraisers and awareness events for THON, raising over $40,000 for the world's largest student-run philanthropy
- Facilitated the partnership between Penn State Athletics and THON through co-branding and event planning while working with media outlets to promote each event