

AN ANALYSIS OF NATIONAL COLLEGIATE ATHLETIC ASSOCIATION (NCAA) FOOTBALL
ENFORCEMENT ACTIONS FROM 1990 TO 2011

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ABSTRACT

NICHOLAS J. FULTON: An Analysis of National Collegiate Athletic Association (NCAA Football Enforcement Actions from 1990 to 2011
(Under the direction of Dr. Richard Southall)

This paper serves to update previous research conducted analyzing the cartel behavior of the National Collegiate Athletic Association (NCAA). A cartel agreement in which the Association attempts to maximize profits for its members by regulating input prices and restricting output has evolved throughout the NCAA's existence. A cartel maintains its feasibility only when the expected costs of violating the cartel agreement remain greater than expected benefits of violation. Using data from 1950 to the 1980's, previous research found the NCAA relied upon observable variables like winning percentage variability to detect violations of cartel regulations. This results in a redistributive effect that has benefited consistent winners while placing teams who experience rapid increased achievement at a disadvantage. Drastic changes have occurred on the college sport landscape recently; this study provides a much needed update to previous research by contemporizing the data corresponding to previously studied variables.

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CHAPTER I

INTRODUCTION

The National Collegiate Athletic Association (NCAA) is an organization comprised of more than a thousand institutions of higher learning across the United States. The NCAA “oversees 89 championships in 23 sports” in which over 400,000 student-athletes compete during their time enrolled at these institutions. “Founded more than one hundred years ago as a way to protect student-athletes, the NCAA continues to implement that principle with increased emphasis on both athletics and academic excellence” (About the NCAA, 2012). The NCAA’s member institutions agree on rules that will regulate not only actual gameplay, length of seasons and how to determine a champion, but also who is eligible to play, for how long and what types of standards they will uphold while they are playing (Smith, 2011).

The NCAA has also developed into big-time business. In 2010 it signed a 14-year media contract with Turner & CBS to broadcast the Men’s Basketball National Championship Tournament worth over \$10.8 billion (O’Toole, 2010). With these types of revenues, and the amount of attention that the “Sports Industry” sports industry attracts, the NCAA is often the subject of analysis from economists and academicians. With just a preliminary search, it does not take long to notice that several of these researchers have long agreed that the NCAA operates as a cartel (Fleisher, Goff, & Tollison, 1992; Kahn, 2007; Zimbalist, 1999).

When evaluated as a business, the NCAA – just like any other business – has inputs and outputs. The primary outputs are the widely recognized product: the games. The inputs are the resources that the NCAA needs to put forth “the games:” players and coaches. Perhaps most prominently, Fleisher, Goff & Tollison’s 1992 work purports that the restrictions that the NCAA

places on the both their output and the price paid for their inputs triggers cartel status. Cartel agreements allow for a group of firms to achieve profit maximization by colluding to place restrictions on output and input prices rather than allowing for the market to dictate these levels (Stigler, 1964). These regulations designed to circumvent market forces also result in significant challenges to the sustainability of the organization – or cartel - as a whole (Levenstein & Suslow, 2006). Outputs or inputs are being restricted by a governing body and in-turn incentives firms to cheat in order to increase profitability. Look no further than another prominent – albeit significantly different – cartel for evidence of cheating by firms; the Organization of Petroleum Exporting Countries (OPEC) has experienced significant cheating on cartel agreements (Koch & Leonard, 1978). Because of this “built-in” incentive to cheat, cartels attempt to use proper enforcement and monitoring to reduce cheating and in turn reduce cartel volatility (Fleisher, Shughart, Tollison, & Goff, 1988).

To prevent cheating amongst its members, the NCAA has established an enforcement division to oversee investigations into suspected rules violations (Fleisher et al., 1988). Previous studies assessing enforcement in the sport of football have shown that the NCAA’s enforcement division seems to rely on probabilistic and observable variables when determining which schools may be violators. If the school is found to have actually violated a rule, they receive penalties from the NCAA -the most standard of which is probation.

In just the past several months, several NCAA institutions have been implicated in football rules violations. These violations harm the academic and athletic reputations of these institutions, as well as that of the NCAA. They also have an effect on a school’s athletic department “bottom-line.” Football generates the most money of any NCAA sanctioned sport (Grant, Leadley, & Zygmunt, 2008) and revenue is what continues to drive the competitiveness and a win-at-any-cost mentality amongst some athletic departments as they – and their conferences – vie for the biggest slice of the financial “pie.” This is a mentality that also often results in schools ending up just where they do not want to be...on probation.

Statement of Purpose

The purpose of this study was to construct a model to evaluate which factors were most important contributors to the likelihood that an institution would be in a NCAA probationary status and update previous research conducted on this topic.

Research Question

RQ1. What variables explain the likelihood of an institution's probationary status for the sport of football for institutions in the Football Bowl Subdivision (FBS)?

Definition of Terms

Automatic BCS Qualifiers – Institutions of the six conferences that send their conference champion to play in a BCS bowl at the conclusion of the season (Grant et al., 2008, p.99).

Bowl Championship Series (BCS) – Five football games that occur after the completion of the NCAA Division I Football FBS season. Included in these games are the conference champions of the Atlantic Coast, Big 12, Big East, Big Ten, Pacific-10 and the Southeastern Conferences (Grant et al., 2008, p.99)

Collusion – Action between firms in a marketplace to cooperate rather than compete (Grant et al., 2008, p.70).

Cartel – An organization of firms which makes agreements concerning such matters as prices, outputs, market areas, the use and construction of productive capacity , and advertising expenditures (Koch, 1973, 136)

Committee on Infractions - Each NCAA division has its own Committee on Infractions. The committees are independent groups that assess penalties against schools and individuals who break

NCAA rules. The Division I Committee on Infractions is comprised of 10 members (NCAA Manual, 2012).

Football Bowl Subdivision (FBS) – A grouping of Division I Football teams that finish their season with a select number of schools playing in Bowl Games. This grouping of teams is considered to be the “top tier” of NCAA Division I Football (Grant et al., 2008, p.99).

Football Championship Subdivision (FCS) – A grouping of Division I Football teams that finish their season with an NCAA sanctioned championship. This grouping of teams frequently is considered to be the “secondary tier” of Division I Football (Grant et al., 2008, p.99).

Major Violation – A major infraction is any violation that is not considered secondary. Major infractions usually provide an extensive recruiting or competitive advantage. Alleged major infractions are investigated by enforcement staff and can lead to severe penalties against the school and involved individuals (NCAA Manual, 2012).

Monopsony – A market situation in which there is only one buyer (Oxford Dictionary, 2012).

Monopoly- A company or group having exclusive control over a commodity or service (Oxford Dictionary, 2012).

National Collegiate Athletic Association (NCAA) – Voluntary membership organization of colleges and universities that participate in intercollegiate athletics. The NCAA develops and maintains rules and regulations governing the athletic programs and activities of its member institutions (Eckard, 1998, 347).

*NCAA Enforcement*_- A staff of approximately 30 specialists based in Indianapolis that works to resolve infractions cases, deter future violators and ensures a level playing field for all NCAA student-athletes (NCAA.org).

Probation – An Enforcement penalty that includes a periodic in-person monitoring system, written institutional reports, and institutional affirmation that current athletics policies and procedures will conform to all requirements of NCAA regulations (NCAA Manual, 2012).

Secondary Violation – A violation that is isolated or inadvertent in nature, provides or is intended to provide only a minimal recruiting, competitive, or other advantage and does not include any significant recruiting inducement or extra benefit. Multiple secondary violations by a member institution may collectively be considered a major violation (NCAA Manual, 2012).

Limitations

The main limitation of this report is the availability of data to be collected. Ultimately, a number of different variables are serving as proxies for immeasurable characteristics (i.e. stadium size as proxy for popularity, date-of-entry into FBS as proxy for tradition). While some specific demographic information was obtained from institution-specific sources, other more difficult-to-obtain information was acquired from third-party sources who had compiled information. Additionally, some third-party sources had established their own criteria to categorize institutions (i.e. *US News & World Report* America's Best Colleges). These sources were validated by assessing previous studies that had also relied on their data, but ultimately, it remains a limitation. To insure accuracy of source information, the reliability of these third-party sources was tested before data collection (see methodology).

Only the resulting consequences of investigated major violations were used for the purposes of this study. Any unreported violations that may have occurred during this time period did not factor into this study.

Delimitations

This study is only be applicable to variables contributing to the likelihood of probation in the sport of football at the FBS level.

Significance of the Study

This study assessed the importance of several factors as contributors to the likelihood an institution would be on NCAA probation for a violation in the sport of football. The results of this study have the potential to alert institutions of factors that might put them at a greater risk of being placed on probation by the NCAA. Major violation investigations by NCAA Enforcement result in significant time commitments from department staff to satisfy the requirements responding to allegations. If an institution then goes on probation, it must also satisfy the requirements of “being on probation.” Needless to say, investigation by NCAA Enforcement and being on probation are two things that no athletic department wants to have to encounter.

Additionally, this model provides evidence to further discussions surrounding the effectiveness, equitability and comprehensiveness of NCAA Enforcement by evaluating previously held notions regarding the reliance upon purely probabilistic variables to determine whether or not a violation had occurred.

CHAPTER II

REVIEW OF LITERATURE

Cartel Theory

A cartel in its most basic form is a collection of firms with similar products who collude to control the prices of inputs and outputs (Fleisher et al., 1992, p.8). When firms circumvent the market to set their own prices for inputs and outputs, they can more easily achieve profit maximization. This collusion and the resulting profit maximization provides for similar market circumstances as a monopoly so it is no surprise that given the opportunity, firms pursue cartelization (Stigler, 1964). However, cartelization is volatile, and in much of the world illegal, including in the United States (Stigler, 1964). Still, regardless of the volatility and illegality of cartels, a number of different cartels exist around the world (Stigler, 1964). The aim of this study is to assess the NCAA and its role as the supervisory body of collegiate sports – one that some academicians and economists have likened to that of a cartel (Fleisher et al., 1992; Humphreys & Ruseski, 2009).

This first section of this chapter will assess how and why cartels form; how cartels operate following formation; and the difficulties cartels face throughout their existence. Subsequent sections will address the NCAA's actions as a cartel and specifically how enforcement of the NCAA's cartel-like agreement with its member institutions affects the sport of NCAA FBS Football through the monitoring of rules violations.

Cartels form for two main reasons: profit maximization and/or externality control (Fleisher et al., 1992, p.20). By colluding with competing firms, the collection of firms is able to control the price of their product inputs and outputs (Grant et al., 2008). By colluding to skirt the general market forces and set their own prices, they can set prices at a similar level to what they might be if set by a

monopolist or monopsonist. A monopolistic market situation occurs when there is one producer while a monopsonistic market occurs when there is only one buyer (Grant et al., 2008). Both situations allow – the buyer in the monopolistic and the seller in the monopsonistic marketplace – to demand prices without worrying about usual market forces. The unfair market advantages experienced by firms in these situations are the reason that cartels are outlawed in many nations.

Although collusion happens at some level relatively frequently in the business world, collusion takes a more institutionalized form within a cartel (Grant et al., 2008; Stigler, 1964). Grant et al., outlined this “more structured type of collusion” in *The Economics of Intercollegiate Sport*: “[A cartel has] formal agreements on how much each firm will produce and sell, and limits on other forms of competition, such as advertising...a cartel can control the price charged for the output (e.g., tickets to a baseball game) or the price paid for an input (baseball players)” (Grant et al., 2008, p.71). Despite the market benefits, agreeing on the initial terms of a cartel often proves difficult (Grant et al., 2008).

There are a number of factors that factor into the initial cost of cartel formation; primarily, the number of firms involved and the spectrum of characteristics of those firms (Grant et al., 2008). A smaller number of firms will have an easier time agreeing to terms and the more similar firms are both in type and quality of output and input demanded, the easier the initial coordination will be (Levenstein & Suslow, 2006). If a small, local grocer wanted to collude with a nationally incorporated grocer, they would undoubtedly experience difficulties. The smaller grocer would be so far separated from the national grocer on the spectrum of revenue, brand awareness, etc. that deciding the terms of collusion would be very difficult. If 30 separate smaller grocers wanted to collude, they would also run into difficulties because of the differences between each individual store. These two examples of unlikely collusion would prove to have extremely high costs of initial agreement. For cartelization to occur, the costs of initial agreement must be less than the expected profits gained by cartel members (Levenstein & Suslow, 2006).

First and foremost, firms entering into a cartel agreement will need to agree to restrictions on the price paid for inputs, as well as prices sought for outputs (Levenstein & Suslow, 2006). This proves to be easier when firms are colluding to control an externality and more difficult when colluding with the sole purpose of profit maximization (Fleisher et al., 1992). A cartel agreement does not necessarily dictate an equal distribution of profits. As expected, when a more valuable firm enters into a cartel agreement it will demand that it receives an increased amount of generated profits (Grant et al., 2008). The tension resulting from such ongoing negotiations is yet another challenge that cartels need to overcome in order to be successful.

After agreeing upon the levels of input/output restrictions, determining pricing levels and sorting out profit distribution, a cartel must also agree on how it will be governed. Such governance agreements dictates how future adjustments to restrictions will be agreed upon, how day-to-day operations will occur, how issues will be resolved, how the cartel will enforce its regulations, and what types of penalties firms might face for violations (Levenstein & Suslow, 2006). These components are critical to extended cartel success. As would be expected, such agreement is difficult with homogeneous firms. In addition, when firms with different market values, demand and product quality attempt to collude, creating a successful cartel becomes nearly impossible (Levenstein & Suslow, 2006).

“The tumultuous process of initial coordination, agreement and continued governance may eventually contribute to a cartel’s demise. The governance of a set of firms within a cartel is often “ill-suited to custom work and creates serious administrative costs in achieving quality standards, cost reductions and product innovations” (Stigler, 1964, p. 40).

Although there are many difficulties associated with cartel formation, cartel maintenance is even more challenging. Levenstein & Suslow (2006) outline the two immediate issues cartels face following the establishment of firm-behavior expectations: “monitoring the behavior of cartel

participants to detect and deter defections from these collusive strategies; and preventing entry by noncartel firms” (p.44).

Cheating by firms is considered to be a cartel’s greatest challenge (Stigler, 1964). Regardless of the restrictions placed on firms by the cartel agreement, firms within a cartel will act according to their self-interests (Grant et al., 2008). In a cartel agreement, the profit gained by acting undetected in self-interest is enhanced if all firms abide by an established agreement. A cartel only works when firms act in coordination: “if a firm reduces output, the market price will not rise appreciable and its market share and profits would fall. However, as all firms reduce output at the same time, the market price will rise, market shares will remain constant and everyone’s profits will increase” (Grant et al., 2008, p. 74).

Game Theory

Cheating within the cartel structure is explained by game theory – an economic theory that deals with decision making. A common representation of game theory is an example called the “Prisoners’ Dilemma.” Grant et al. outlines this example:

Suppose that two criminals, Bob and Sue, have been arrested for a theft at a jewelry store. The police find some of the stolen goods in their apartments, but they cannot prove that Bob and Sue were the ones to actually rob the store. As they are being taken to jail, Bob and Sue agree to not confess to the robbery. They know that without a confession from one of them, they can only be convicted of possession of stolen property. However, the detectives are clever. They put the two criminals in different rooms and make each one the same one-time offer. In return for confessing to the robbery and agreeing to testify against their partner, the district attorney will ask for a light sentence, perhaps even probation. However, if one of them does not confess, and their partner does, then they will be sentence to a long stretch in the slammer. Each one is told that their partner is being given the same offer and that they must make their choice now (Grant et al. 2008, p.74).

If both prisoners confess, they will both receive five years in prison. If one confesses, they will get one year while the other gets ten years. If neither one confesses, they both get two years in prison. It turns out that the dominant strategy for this example is to confess. Not knowing what the other

person is going to do, this choice results in the shortest amount of time incarcerated. However, this example is only a microcosm of a much larger set of circumstances. In cartel relationships, interactions between member firms do not only occur once, but rather a number of times. Firms adapt to these circumstances and develop what economists call a “tit-for-tat” strategy (Grant et al., 2008). If Bob confesses to save himself, Sue will do the same next time.

Within the circumstances of a cartel, a firm might believe it can increase profits by violating the cartel agreement – similar to the “confess option” – but it also understands too many such violations will jeopardize the cartel. If in the future every firm acts as they did, the cartel will likely cease to exist. This will undoubtedly result in decreased long-term profits for all firms. To decrease the incentive to cheat, a cartel may establish a set of penalties for violators. Establishing a level for effective penalties is difficult since if all firms deem penalties to be too severe, they may never be levied. On the other hand if consequences are too light, they may not be an effective disincentive to cheating (Grant et al., 2008). If cheating is properly dis-incentivized by the establishment of a penalty structure, firms will resort to non-price competition to separate themselves in the market from other firms (Fleisher et al., 1992).

In the collegiate sport industry, non –price competition generally takes the form of things like advertising and product innovation or facility construction (Grant et al., 2008). Non-price competition is explained by the Prisoners’ Dilemma: it is feasible for competing firms to enact similar strategies: “Each firm engages in non-price competition both because it hopes to gain an advantage over its rivals and because it knows that its rivals will be attempting to do the same thing to it” (Grant et al., 2008, p.75). Ironically, such non-price competition generally results from decreased incentives to cheat on price, but the resulting “non-price arms race” can also jeopardize the stability of the cartel. During times of price regulation, airline and banking industries in the United States both went through periods of increased non-price competition. Banks resorted to building “fancier facades and

more expansive message boards.” Meanwhile, airlines offered “brightly colored planes and scantily clad attendants” (Fleisher et al., 1992, p.26).

Monitoring adherence to a cartel agreement is expensive and clumsy, especially with a large collection of firms. However, “[u]nless inspection of output is costly or ineffective; this is the ideal method of enforcement” (Stigler, 1964, p.40). This supposes that there is a direct relationship between cheating on the cartel agreement and output. In other words, an outside monitor would be able to tell whether or not a firm is cheating because of their success. The more formalized this process is, the easier it is to detect violators. If each firm must undergo an audit, detecting violators is much easier than if the cartel governing body subjectively monitors outputs. Monitoring becomes increasingly difficult if there is not a defined marketplace where goods are traded and if firms rely regularly on one-time transactions (Levenstein & Suslow, 2006).

Levenstein and Suslow point out that “cartels much prefer to develop the means to monitor each other’s behavior in order to deter or physically prevent cheating rather than resorting to expensive punishments such as price wars (p.44). Defining cartel success as the duration of a cartel agreement, Levenstein and Suslow (2006) evaluated a number of factors related to cartel success. When it came to monitoring, the more successful cartels relied on a tiered approach. In this system, more important enforcement decisions are made by high-level officials, while day-to-day monitoring is handled by lower level officials. In any given market setting monitoring and enforcement of a cartel is a fluid process, and occurs over time with increased familiarity of competitors and a greater understanding of the industry.

Aside from cheating on the cartel agreement, the other primary challenge firms face upon cartel formation is controlling entry. Since cartels form to restrict output, an increase in the product’s supply within the marketplace poses a challenge to the success of a cartel (Grant et al., 2008). As the market becomes more competitive, outside firms might look to join the cartel or the cartel might look

to add firms. Non-members joining the cartel aids cartel stability with respect to the marketplace, but may also result in decreased profits, thus destabilizing the cartel (Fleisher et al., 1992). This decrease in profits may result in increased incentives to cheat on the agreement. Additionally, the larger the number of firms in a cartel, the more difficult it is to monitor and the more likely monitoring will focus on easily observable variables (Fleisher et al., 1992).

One critical factor to the success of a cartel is the elasticity of demand and supply. A highly elastic product is one that consumers consider to have multiple substitutes. A product with low elasticity is one that consumers consider to be a necessity and has very few substitutes. Therefore, cartel profitability will be greater if its product has low elasticity and a restriction in the supply will result in a large increase in price (Grant et al., 2008). As with the elasticity of demand, the elasticity of supply dictates cartel profitability as well. For a cartel whose input is labor, if there are few substitute venues in which labor can maximize wages, the cartel will have greater ability to control input costs.

A long-lasting cartel will undoubtedly see significant changes to its governance and monitoring procedures, as well as the initial agreement. Since cartels exist within the marketplace, they are forced to adapt to market changes. Just as would be the case with individual firms who are not cartel members, if a cartel's product becomes obsolete, other externalities develop or technological improvements occur, significant changes to the cartel's viability and the functionality result. Along with marketplace factors, cartel members may change throughout the duration of cartel agreement. This can have significant influence on a particular firm's decision making, as well as the necessary monitoring procedure for the cartel. For instance, a firm could move its headquarters overseas, which would cause a monitoring issue for cartel firms. On the other hand, a firm could have a revolutionary breakthrough, which would likely result in the firm reassessing the viability of the cartel agreement. With this in mind, effective governance and enforcement of a cartel is critical to

its success. Additionally, it becomes clear that maintaining a cartel for an extended time period is difficult.

Within an industry setting potential challenges and market volatility are not enough to prevent cartel formation. Historically, there have been numerous successful cartels. The Organization of Petroleum Exporting Countries (OPEC) is one of the more formalized cartels. Their leaders literally meet and decide how much production each country will have for a given time period (Grant et al., 2008). Another cartel – The De Beers Group – famously controls a very large segment of the world's diamond supply (<http://www.debeers.co.uk/>). In the late 19th century US railroads were deemed a cartel and forced to break up (Levenstein & Suslow, 2006).

Perhaps most infamously, cartels exist in the drug trade marketplace. Drug dealers – firms – join together to restrict the amount of drugs (output) available within the marketplace. Drugs are a perfect example of a product with little-to-no elasticity; as a result, the price increases easily with a decline in output. With the output fixed, it suddenly becomes an advantage to any dealer who chooses to secretly increase the amount drugs they are distributing. With all other firms abiding by the rules of the cartel, they are easily able to take advantage of the artificial demand and price increase. What ends up causing instability within drug cartels is generally a lack of an effective governing body. With the illegality of drug transactions, they obviously do not occur in standardized marketplaces, which make it difficult to monitor individual sellers' output. Furthermore, the illegal nature of the marketplace generally results in industry leaders who are both more apt to commit crimes and less likely to properly consider long-term ramifications. This has resulted in a penalty structure and tit-for-tat strategy that involves extreme violence.

Consider the alternative for the drug marketplace. There remain a number of individual drug dealers in the market. Consumers would have their choice to go to whichever dealer had the lowest price. Dealers need to lower prices and increase output to raise profits. Within a cartel dealers are able to restrict output and control prices. Essentially, they are able to reduce their costs and increase

their product price – a profitable situation for a firm in any market. The outcome reveals why cartels are illegal in many areas of the world. Just as with monopolies, the ability to completely control the market is a negative for consumers. Additionally, with the elimination of competitors and the control over the market, monopolistic firms and cartels have no need to invest in product innovation or improvement.

Given the possibility of the profitability of cartel success, cartels will most likely continue to remain a part of many industries around the world. They form in order to maximize profits or to minimize externalities. Cartels face many challenges including initial agreement, monitoring of members and entry of new firms to the marketplace. Successful cartels are generally those that have a small number of concentrated firms whose product has a low elasticity of demand. Even with perfect monitoring of a cartel, competition amongst firms will continue to occur through non-price competition. Additionally, successful cartels are able to effectively monitor its firms while also being adept at adjusting to market changes.

From the Beginning: The NCAA as a Cartel

Countless works have assessed the factors that led to the NCAA's formation and have cataloged the tribulations that have accompanied the NCAA throughout its rise to being the preeminent – if not the only – venue for post-secondary educational-based athletics competition. Many of these works, like Fleisher, Goff and Tollison's *The National Collegiate Athletic Association* (1992), Grant, Leadly & Zygmunt's *The Economics of Intercollegiate Sports* (2008) and Humphreys & Ruseki's "Monitoring Cartel Behavior and Stability: Evidence from NCAA Football" (2009) have evaluated the NCAA's history using cartel theory. This section will provide a historical retrospective, while also providing an updated view of the landscape of intercollegiate sport. A comprehensive understanding of the NCAA's history is necessary to establish a frame of reference when examining the NCAA as a cartel. The issues that caused its formation and the manner in which NCAA

formation occurred are critical to economists' contention the NCAA was formed and now acts as a cartel.

The earliest inter-collegiate sport dates back to the mid-1800's. Harvard and Yale's student-operated crew teams competed in a meet in 1852, marking the first time that intercollegiate competition took place (Sack & Staurowsky, 1998). This early competition and symbolic support of athletics within the educational context coincided within a much larger reevaluation of the "purpose of The University" (Sack & Staurowsky, 1998, p.19). During this era the federal government began to dole out funds for the purpose of enabling universities to teach about more specialized pursuits. Student-run sport club teams would remain the norm until the 1880's when campuses attempted to seize control of ever-growing athletic organizations (Sack & Staurowsky, 1998). Much of the motivation to gain this control stemmed from the principle of amateurism and an education-first mission.

Most of the schools at which competitions were taking place during this period were schools that would later band together to create what is known today as the Ivy League (Sack & Staurowsky, 1998). As premier educational institutions they immediately began to question athletics' place within the university and when academics started to suffer at the hand of athletics, criticisms quickly arose (Zimbalist, 1999). In 1868, Yale banned away baseball games because of the detrimental effect they had on class attendance. In 1871, Harvard went a step further and deemed that baseball games could only be played on Saturdays and holidays. During this same time, these same schools had eligibility concerns for graduate students and freshmen athletes who were failing classes (Sack & Staurowsky, 1998). Additionally, the increase in commercialism and the resulting evolution of the full-time professional coach increased the concerns of how athletics fit within the university structure (Sack & Staurowsky, 1998).

Despite some discussion of amateurism and academic concerns, how to remedy the proliferation of football injuries was the primary item of discourse amongst intercollegiate decision-makers. This would eventually be the impetus for collusion amongst schools sponsoring football (Smith, 2011). Without standardized rules and punishment, the sport of football had become an incredibly violent and sometimes deadly sport (Fleisher et al., 1992). Regardless, intercollegiate football competitions during the late 1890's and early 1900's were incredibly competitive as well as incredibly popular (Smith, 2011). Increases in public interest resulted in the construction of stadiums by those schools with the highest demand for football. Thousands of fans could now watch each game in person. Hand-in-hand with the increased demand for the product, commercialization crept onto the intercollegiate sport landscape (Zimbalist, 1999). Media coverage of events quickly ensued; books were being written and newspapers began to closely follow the events of intercollegiate sport (Grant et al., 2008). The potential for increased revenue – often to cover increased facility costs - forced teams to compete while generally disregarding the safety concerns for players. In an uncontrolled marketplace there is no incentive for a team to increase its safety measures if other teams will continue to ignore those same measures to remain more competitive. As Fleisher et al. (1992) noted institutions (or producers) during this time found themselves facing a situation like the prisoners' dilemma: “without a formal agreement or means to punish the aberrant behavior, each producer continues to engage in it. If any one firm imposes constraints on itself, the problem on the whole continues, and the self-constrained firm loses profits relative to the other firms” (Fleisher et al., 1992, p.21). The problem of violence in college football escalated to the point that over a fifteen-year time period around the turn of the 20th century, 330 students died from football-related injuries (Zimbalist, 1999). Football's safety concerns were so great that Columbia, California and Stanford all eliminated the sport of football. It became clear that if the safety issues were left unchecked, the continuation of the prisoners' dilemma would undoubtedly threaten the entire enterprise of college sport before it was even really developed.

Meanwhile, along with the safety concerns of football, additional concerns were mounting as they pertained to eligibility and amateurism. During this same time period, the Intercollegiate Conference of Faculty Representatives – who would later become the Big Ten – was formed to establish restrictions on these two issues (Fleisher et al., 1992). The organization was formed out a fear of “the ills of the game.” Payments were occurring between outside influences and current players as well as between outside influences and prospective players. As students remained in control of the teams, implementation of regulations proved especially difficult.

At the behest of President Theodore Roosevelt, 68 institutions met in New York City in late 1905 to reform the sport of football. Despite some of the most important universities choosing not to attend this meeting out of hesitancy of entering into a joint endeavor, this meeting resulted in what is known today as the NCAA (Smith, 2011).

In 1905, when institutions met to discuss the beginnings of the NCAA, there was little prospect of the enterprise that exists today. While revenue and demand was steadily increasing, there was no evidence that binding competing schools together would position them to develop a model that would eventually bring in hundreds of millions of dollars per year. This distinction is important as it means that profit maximization was not the reason to enter into a cartel agreement. Rather, the motive to collude and control a common externality – football injuries – served as the catalyst. Injuries occurring during competitions in the sport of football caused significant costs to each competitor as well as the sport itself; the popularity of the sport was in jeopardy. To address the externality, institutions essentially colluded to stop the use of violent tactics in football so that they all could continue competitions – and continue to fill stadiums - while also reducing the cost injuries were having on its players and public perception of the sport (Sack & Staurowsky, 1998). Regardless, traditional powerhouses who had used these strategies to succeed were resistant to any type of rule that attempted to eliminate violent tactics (Fleisher et al., 1992). Ultimately, the entire group agreed that the benefit of agreement outweighed the cost of business as usual. The agreement

contained restrictions on types of formations as well as increased penalties for inappropriate use of force on the field (Grant et al., 2008). This important compromise makes up a portion of the initial cost of agreement amongst cartel members. Perceived inequities during agreement - in this case by those who forfeited the right to use violence in order to appease the greater good - are oftentimes the driving force behind cartel volatility (Levenstein & Suslow, 2006). While nearly every cartel's formation has to do with some type of maximization of profit, in the NCAA's case with no profit maximization model, it formed in order to eliminate an externality. Despite this peculiar distinction, the NCAA quickly began to show signs that it was also making significant considerations of profit by placing restrictions on inputs and outputs (Sack & Staurowsky, 1998).

Sack and Staurowsky (1998) point out that although "...football violence was the catalyst that brought the NCAA into existence, problems relating to amateurism and eligibility rules received as much if not more attention at the first NCAA Annual Meeting in 1906" (p. 33). Original amateurism regulations stipulated that "no payments could be made to students based on their athletic abilities by the university or individual alumni...declaring students as ineligible if they had ever received any payment for competing in a sporting event" and "freshmen and transfer students must complete one year of college before being eligible" (Grant et al., 2008, p.92). It is evident that soon after its formation – which revolved around controlling violence on the football field – the NCAA began to shift its focus to maximization of profits by restricting the price paid for inputs (Sack & Staurowsky, 1998).

The NCAA spent the ensuing decades enacting myriad rules around the notion of protecting the spirit of amateurism (Sack & Staurowsky, 1998). Ten years after the initial formation, the NCAA defined "amateur athlete" as "...one who participates in competitive physical sports only for the pleasure, and the physical, mental, moral and social benefits directly derived therefrom" (p.35). They added to their definition in 1922 by inserting the phrase "...and to whom the sport is nothing more than an avocation" (Sack & Staurowsky, 1998, p.35). Cartel theory views each change to the rule

book as a tweaking of the original cartel agreement. During the developmental years (1920-1948), the foundation of the cartel agreement between NCAA institutions was established.

These developmental years saw huge increases in the demand for college sport. In fact, NCAA institutions saw their “largest increases in live attendance over the 1920-1950 period” (Fleisher et al., 1992, p.51). As a result of these marketplace changes, and the lack of an effective enforcement mechanism, violations continued to plague the industry. Internal committees were formed at the national level to address the “athletic differences between colleges” and to “encourage compliance with the rules of eligibility and amateurism” (Fleisher et al., 1992). External organizations also began to question the intentions and effects of the NCAA. The Carnegie Foundation and the *New York Times* both criticized the recruiting, eligibility and amateurism rule violations that were prevalent throughout the time period and flew in the face of NCAA rules and standards. There is evidence from these two groups as well as others that “by 1922 schools were bartering fairly openly for athletic talent” (Sack & Staurowsky, 1998, p.37).

The main reason so many issues of compliance existed during this time period was that there was no effective enforcement mechanism for the NCAA’s evolved purpose. As discussed in the overview of cartel theory, the ability to monitor and enforce rules is critical to any cartel’s success. The NCAA is a unique cartel case study because while the initial agreement dealt mostly with the controlling of the common externality of violence in football; it quickly morphed into an organization that restricted trade and attempted to maximize profits (Fleisher et al., 1992). It is not surprising then that the enforcement mechanism for the NCAA’s initial guidelines – rules designed to assure schools abided by the same rules that restricted football violence – worked well as all violations would be visible on the field of play. But, “by 1920, the NCAA had faced and overcome most of the initial organizational costs in order to overcome the problems of violence and nonstandard rules of play” (Fleisher et al., 1992, p.45). Consequently, through what is called the “by product theory of organization,” the NCAA’s purpose changed whether they acknowledged it or not (Fleisher et al.,

1992, p.35). While organizational intentions evolved away from safety and into input/output control, the NCAA's structure for monitoring and enforcement did not.

In an attempt to aid in regulating, the NCAA heavily promoted conference affiliation (Fleisher et al., 1992). These conferences could then serve as an un-institutionalized means of enforcement. To some extent, it worked; the Big Ten punished the University of Iowa for a number of rule violations in 1929 and the Big Six removed Kansas for rule violations in 1930 (Sack & Staurowsky, 1998, p.39). This unintended consequence of conference affiliation also nurtured agreements that circumvented NCAA values and created such an atmosphere where schools were willing to turn each other in. For instance, in 1938 the Southern Conference voted to "...allow athletic ability to be considered in awarding financial aid" (Sack & Staurowsky, 1998, p.39).

The escalation of issues in college athletics coincided with non-participating campuses around the country realizing the popularity of college sport. NCAA membership nearly doubled and significant amounts of monies were being allocated to facility construction and expansion. The facility expansion was so significant that "by 1950 most of the Big Ten stadiums were within a few thousands of their current size" (Fleisher et al., 1992, p.43). Radio broadcasts of college events became prevalent and the prospect of television coverage was on the horizon (Fleisher et al., 1992). The influx of money into the college athletics industry during this time period provides anecdotal evidence that values for both the inputs and outputs of college athletics were increasing. While the actual output dollar value increased because of an increase in demand and equally reflected by an increased cost to consume college sport, the increase in input value was not perfectly reflected on the "supply" side since student-athletes were still permitted to receive the same amount of scholarship benefits.

Concordantly with any cartel, a significant change in the market will cause volatility within a cartel, especially with a market imbalance such as the NCAA's case; the 1920s-1940s saw an extreme

increase in demand. The NCAA increased supply by adding more and more institutions to its membership. The profit structure was also rapidly changing; some institutions were more successful than others during collegiate competition and in turn, those institutions' product was more highly in demand than their less successful counterparts. As cartel theory suggests, volatility on both the demand and supply sides of the industry along with a lack of means to effectively monitor and enforce the cartel agreement resulted in extreme volatility within the cartel. Incentives existed for successful and non-successful schools alike to cheat on the cartel agreement to improve their positioning within the cartel. "Member schools in the aggregate would benefit from compliance but had an incentive not to comply while expecting noncompliance from others" (Fleisher et al., 1992, p.46).

Largely in an effort to control the quickly changing landscape, the NCAA gathered decision makers from the four largest conferences and developed a document entitled "Principles of Conduct of Intercollegiate Athletics" (Fleisher et al., 1992, p.47). These became better known at the 1948 convention as the Sanity Code. The adoption of this set of rules and the eventual changes that followed its adoption was a seminal moment in NCAA history and served as the point of transition for the NCAA from "a loosely tied, mostly voluntary association to an effective cartel" (Fleisher et al., 1992, p.46). The Sanity Code represented a holistic approach to NCAA rule changes while also attempting to remain steadfast to its amateur principles. It attempted to address issues in amateurism, financial aid and eligibility while also including a means of enforcement. The most significant part of the Sanity Code prohibited awarding financial aid to a student based on athletic ability (Sack & Staurowsky, 1998). A student could receive aid, but only if awarded for non-athletic qualifications. Additionally, the Sanity Code established the NCAA's first means of monitoring and enforcement. Two committees were formed: the Constitutional Compliance Committee and the Fact Finding Committee (Sack & Staurowsky, 1998, p.45). The Fact Finding Committee investigated possible rule violations while the Constitutional Compliance Committee made rulings on those breaches. Their

word was final and could only be overruled by an Association-wide vote (Fleisher et al., 1992). The Constitutional Compliance Committee had full reign over penalizing rule-breaking institutions. Coupled with a two-thirds vote from the membership, they had the ability to terminate NCAA membership (Fleisher et al., 1992).

While it was an attempt at compromise, the Sanity Code was not viewed favorably by all parties. Conferences in the South – comprised by schools that had deliberately developed rules to circumvent the NCAA years earlier - were particularly against The Code (Sack & Staurowsky, 1998). Just two years after its adoption at the 1950 NCAA Convention, seven schools had been found in violation of the Sanity Code and faced expulsion from the NCAA (Fleisher et al., 1992). While the vote to abolish those seven members would end up failing, this would mark the beginning of the end for the short-lived Sanity Code (Fleisher et al., 1992). The official end came in 1951 when Section Four of the Sanity Code was dropped from the NCAA Constitution altogether (Sack & Staurowsky, 1998, p.47). This meant that again, the NCAA was without an enforcement mechanism.

Over the next several years, the NCAA pieced together financial aid regulations that were much more inclusive than those of the Sanity Code. Students would be allowed to receive scholarships based on their athletic ability regardless of financial need. There also were not any limits on numbers of scholarships a school could provide (Sack & Staurowsky, 1998). During this same time, the Committee on Infractions – a segment of the NCAA Council – was established to dole out penalties for rule-breaking. An improved penalty structure provided for a number of penalties short of outright membership termination, and also allowed them to penalize without consent from the Membership (Fleisher et al., 1992).

Fleisher et al. (1992) point out that the NCAA's rule and structural changes that took place from 1948-1957 can be explained well by Cartel Theory. "By restricting financial aid to student athletes...the NCAA members lowered the costs of one of their inputs" (p.50), while in turn

increasing revenue to the athletics department. Furthermore, since campus financial aid offices had to handle all disbursement of newly available financial aid, the NCAA also reduced its monitoring costs (Fleisher et al., 1992). As demand for college sport continued to increase, so did the return to the NCAA and their members. With the prospect of increased demand and potential television revenue on the horizon, the cost to create - and the benefits from - a stable enforcement arm made economic sense. Despite ceding control to the NCAA, institutions were largely satisfied because the prospect of catching institutions that cheat on the cartel agreement was promising (Fleisher et al., 1992, p.51).

The final implementation of the enforcement mechanism essentially set in stone much of the power structure that still exists today. The power schools that possessed representation and voting power over the course of the development of the Association would remain in control, including decisions on penalties (Sack & Staurowsky, 1998).

Cartels are only effective when firms work together. Extensive cheating on the cartel agreement results in ineffective input/output restrictions or such volatility that will cause members to adopt a tit-for-tat strategy that rebukes cheating which leads to fatal cartel dysfunction. For these reasons, the NCAA's establishment of an effective enforcement arm to combat rule breakers was crucial to its evolution. The establishment of an enforcement arm also institutionalized the notion that one of the roles of the NCAA was to restrict inputs and outputs. If a school gave too much aid to a student-athlete, they could be penalized; furthermore, if a school scheduled 20 football games for a season, they could be penalized.

From the end of the 1950s to the beginning of the 1980's the NCAA reaped massive benefits from further increases in demand as well as the rise of television revenue. NCAA television revenue increased from \$1.1M in 1952 to \$64M in 1983 (Fleisher et al., 1992, p.54). Marketplace evolution continued to alter the dynamic of the NCAA and forced the Association to adapt yet again by attempting to restrict television output during this time period. In the formative days of television

restrictions, the NCAA Television Committee dictated both how many NCAA games were allowed to be televised and how many times a particular institution would be allowed to appear (Fleisher et al., 1992, p.52). During this time, television bans were more routinely used as a means of penalizing institutions that violated NCAA rules (Zimbalist, 1999).

On the production side, the NCAA restricted the number of bowl games that received authorization and developed restrictions for all sports as to the number of practices per week, games per season, etc. (Fleisher et al., 1992). All of these incremental actions resulted in limited supply for the college football product. Meanwhile, demand amongst the public was increasing and limited output meant that media corporations were forced to pay more than they theoretically would have paid in a normal market. This increase in revenue coincided with further facility construction and expansion and increases in coaches' salaries (Sack & Staurowsky, 1998). Throughout this time period, the "price paid" for student-athletes remained unchanged.

Football was not the only sport to experience growth during this time period; men's basketball also grew significantly and the NCAA immediately recognized another possible large stream of income (Grant et al., 2008). The NCAA aimed to develop basketball to be a similar commodity to football and in turn a similar revenue stream. The NCAA increased the number of teams that qualify for the post season and also colluded to force teams to compete in the NCAA's post season tournament. Other post-season tournaments – like the National Invitation Tournament in Men's and Women's Basketball– that attempted to enter the market were effectively barred and relegated them to select only from those teams who did not qualify for the NCAA tournament (Grant et al., 2008).

The restriction of inputs and the price of inputs are just as important as the restriction of outputs to many cartels. As a monopsonistic entity, the NCAA places restrictions on allowable financial aid for student-athletes while also enacting other rules aimed at the restriction on how those

same student-athletes are allowed to make their decision on where to attend school, who they can talk to about their decision and when, and how many student-athletes an institution is permitted to provide aid to (Grant et al., 2008). These limits have changed significantly over the years in coordination with changes in the marketplace. The number of scholarships an institution can offer has decreased from 95 in 1990 to 85 in 2011 for the sport of football and from 15 in 1990 to 13 in 2011 for men's basketball (NCAA Manual, 2012). This was a move to increase the competitive balance in college football and basketball, and consequently increase the value of the product (Fleisher et al., 1992, p.57).

Some restrictions need to exist in a market or in society. Laws against murder or rape are –in a perverse sense - restricting freedoms. There is an obvious public purpose served by those restrictions. Colleges in general claim to be acting *in loco parentis*, or in the best interest of, the student-athlete by imposing restrictions (Grant et al., 2008). Restrictions placed on the number of calls that a coach can make to a prospective student-athlete serves to protect the prospect from too much interference during their last years of high school. Similarly, student-athletes are not permitted to practice 60 hours a week or play 45 games over the course of a basketball season. Understanding that the NCAA is attempting to regulate a sporting industry while also balance academic and amateurism principles is important to attempting to glean the true reasoning behind the rule itself in addition to the effect it has on value of output. Regardless, a remarkable number of the collective actions taken by member institutions have undoubtedly decreased the cost of producing output while the price paid for producing output has remained stable (Fleisher et al., 1992, p.58).

As more and more regulations have been added to the cartel agreement, the cost of enforcement has increased significantly both because of increased complexity of the cartel agreement and increased incentives to break the agreement. Particularly amongst institutions that have not been able to add significant value to the cartel, incentives to cheat in an attempt to raise their value within the cartel raise significantly. Since revenue sharing is dictated partially by the “value of output” from

a particular school, a smaller school is more likely to cheat than a larger school (Fleisher et al., 1992). If a “low-value” school is not willing to cheat, it becomes nearly impossible to compete with the larger, more successful schools. The incentive to cheat is not as large for the successful schools that already bring “value” to the cartel. A good example of this is Appalachian State football compared to Michigan football. Michigan routinely has over 100,000 fans at each home game while millions others –Michigan fans and non-Michigan fans alike – watch on TV (Grant et al., 2008). Appalachian State, while successful against their peer institutions does not add the same value to the NCAA as Michigan. However, Michigan indirectly subsidizes schools like Appalachian State every year with the value they bring to the cartel and the resulting cartel payment issued to the likes of Appalachian State from the NCAA. In 2007, despite having the odds stacked against them, Appalachian State football beat Michigan in Ann Arbor. While that win increased Appalachian State’s equity within the cartel, it also causes Michigan’s peer schools to be less likely to schedule a game against an Appalachian-State type school for fear they might suffer a similar outcome. These economic imbalances result in cartel volatility.

In an attempt to control the stratification of athletics, the NCAA federated into three segments in 1973 and further divided in 1978 (Grant et al., 2008). The eventual result was four different groupings within the NCAA: Division IA, IAA, II and III. Divisions I, II and III all maintain different sets of rules and regulations as well as enforcement and monitoring mechanisms. Division IA (now called the Football Bowl Subdivision or FBS) and Division IAA (now called Football Championship Subdivision or FCS) abide largely by the same rules, but in the sport of football maintain different post-season structures as well as a few additional rule changes dealing with the management of football (NCAA Manual, 2012). Division I was developed for those schools that were most capable of supporting athletics at a high level (Grant et al., 2008, p.39). Theoretically, by combining “peer” schools the NCAA would be able to more effectively control some of the cartel volatility. In other words, there would be less of an incentive for a lower end Division IAA school to

cheat and attempt to “match up” with a much more successful school in Division IA in the new model because they were not directly competing with that subset of schools. From a cartel theory perspective, this was a means of establishing barriers to entry into the “big-time” football club.

Perhaps the biggest piece of evidence supporting the NCAA’s cartel status is the 1983 Supreme Court ruling involving the University of Oklahoma, the University of Georgia and the NCAA. Centered on the argument that Oklahoma and Georgia felt they owned their own television rights, they put forth an anti-trust claim against the NCAA (Sack & Staurowsky, 1998). Oklahoma and Georgia wanted the chance to appear on TV more than the NCAA Television Committee was permitting them to be. While the NCAA claimed their distribution “promoted the noncommercial undertakings of the organization,” the courts ruled that the plan artificially restricted output and skirted the free market. In accordance with this decision, the Court deemed the NCAA to be “cartelizing in nature” (Fleisher et al., 1992, p.59). Oklahoma claimed the NCAA acted as a cartel when it came to restricting outputs and purported that demand for the college football product was artificially high (Fleisher et al., 1992, p.59). This court decision was certainly a blow to the NCAA cartel agreement and further divided the Association. Even amongst the highest Division - Division IA – stratification between budgets, fan support, etc. remained (Grant et al., 2008). Traditional college football powers would now command all of the revenue from media corporations while less successful schools would continue to watch the divide increase (Sack & Staurowsky, 1998).

To govern post-season play in Division IA, the Bowl Alliance was formed in 1992. This grouping eventually morphed into the Bowl Championship Series (BCS) in 1998 (Grant et al., 2008, p.58). Responsible for college football’s postseason and the television contracts accompany it, the BCS delineates the “Big 6 conferences” from everyone else. In 2003, the post-season football television contract was worth \$100M while television revenue for the remaining bowl games (which non-BCS schools could play in) generated only \$20M (Grant et al., 2008, p.59). The BCS represents

another institutionalization of successful schools playing keep-away with revenue from less successful schools.

Non-BCS schools and conferences have been able to maintain a steady level of revenue from the NCAA because of the success of the post-season men's basketball tournament. The media rights contract for the tournament Final Four has become incredibly substantial in recent years with the most recent contract's terms of \$10.8B over 14 years (NCAA Finances, 2012). This contract provides the NCAA with 86% of its total revenue and payments are disbursed from this revenue to schools and conferences within the NCAA depending on their Divisional affiliation and their success in the NCAA Men's Basketball Tournament. Divisions II and III split 7.55% of the total media contract revenue while the remainder is divided between NCAA operating expenses and Division I schools/conferences. In 2009-2010, a total of \$433M was distributed amongst Division I members (NCAA Finances, 2012).

The large dollar figures suggest that the College Athletics industry has become one that is incredibly popular and benefits from significant television revenue. As discussed earlier, cartel theory purports that any change in demand within the marketplace will cause a change in the cartel dynamic. Over the course of over a hundred years, this most certainly has been the case for the NCAA. Also explained by cartel theory, the less similar firms are with regard to output and demand, the more volatile a cartel will be. If the demand for college football in the US was zero, there would be no incentive to cheat since there would be no profits if successful cheating occurred. Alternatively, extremely high demands for the product of college football have caused the incentive to cheat to increase. On the output side, because cartel income is tied to share within the cartel, the incentive to differentiate from another firm will always exist. A firm is more likely to resort to cheating however if the differentiation is already large given that they need to make up for that difference (Fleisher et al., 1992). Though cartels exist to allow for greater profit maximization with

the realization that all members add to the revenue of the cartel, the discussion of cartel theory make it clear that regardless, firms continue to act in their best interest.

An institution's athletics interest is generally be best served by joining forces with other athletics powers (Grant et al., 2008). Look no further than the flurry of conference realignment. In 2003, the Atlantic Coast Conference added the University of Miami, Virginia Tech and Boston College which allowed the conference to hold a championship game for the sport of football. Boise State – an example of a less traditional powerhouse – has attempted to take advantage of its recent football successes by joining the Big East. The University of Colorado and Utah both moved to the Pac-10 to better position themselves within the landscape of college athletics. Each of these moves was dictated by the possibility of increased revenue with a changed affiliation. Since the NCAA is comprised of the schools that continue to make decisions based on the financial bottom line, their amateur ideals within the larger association become more difficult to support. These moves also illustrate the importance of barriers to entry by conferences. With the increase in media revenue that the larger conferences are able to generate, they have developed into mini-cartels within the larger NCAA cartel. While they are able to establish their own restrictions on membership and output, however, they still must abide by the NCAA cartel agreement. Although, each firm is so dependent on the share that each other firm provides to the conference as a whole, they may be less likely to cheat or accuse another firm of cheating (Fleisher et al., 1992).

While NCAA's monitoring and enforcement strategies have undergone monumental changes since the formation of the NCAA, they still rely heavily on probabilistic variables (Fleisher et al., 1992). Even if the NCAA had a large enough enforcement staff for direct surveillance, to maintain surveillance at every institution would be incredibly costly (Fleisher et al., 1992). Reliance upon historical performance data both in regards to athletic performance and financial performance results in traditional powers being subject to less scrutiny than non-traditional powers. In turn, the NCAA must rely on observable variables or on other accounts of rule breaking occurrences (Fleisher et al.,

1992). Successful schools have essentially grandfathered themselves into control of NCAA governance (Fleisher et al., 1992, p.133). Fleisher et al. (1992) assessed this theory as it pertained to NCAA enforcement actions toward football programs in *The National Collegiate Athletic Association*. In the study, it was discovered that an increased winning percentage and switching conferences both led to schools being more likely to be placed on probation by the NCAA. Additionally, a larger number of secondary schools in a state resulted in an increase in likelihood that a school would be placed on probation. A school's stadium size and the date it was founded were both also positive and significant variables in the study suggesting that schools with a higher demand for successful football programs are penalized more than schools with a lower demand for football programs. Perhaps most importantly, when traditional winning measures were added to the equation, the likelihood of probation did not change which "suggests that NCAA enforcement does not bother itself with either consistently successful teams or with teams that never win" (Fleisher et al., 1992, p. 133). This resulted in two possible explanations: by effectively formulating the enforcement mechanism over several decades, traditional powers are able to fly under the radar of the system that they control or, that by developing such strong traditions over the years, traditional powers no longer need to cheat the cartel agreement to "maintain their dominant position" (Fleisher et al., 1992, p.121).

These schools are able to attract superior high school athletes season after season at the cartel wage with the offer of a package of complementary inputs. Their well-equipped training facilities, quality coaching staffs, talented teammates, national television and media exposure increase the present value of an amateur football player's future professional income...The NCAA has served to maintain the status quo, benefiting the perennial powers at the expense of their rivals" (Fleisher et al., 1992, p.122).

The NCAA has maintained that the Association's "commitment to amateurism" has governed the evolution of its rules and regulations over the course of its existence. Conveniently or otherwise, adherence to these amateurism principles has allowed the NCAA to restrict prices paid to student-

athletes. In strictly economic terms, collusion amongst a number of firms to restrict output and the price paid for input makes that collection of firms a cartel.

The most important part of maintaining a cartel –enforcement and monitoring mechanisms – will be evaluated in this study as it pertains to the NCAA cartel. Fleisher, Goff & Tollison's (1992) work has proven valuable, but is outdated and due for an update. Using cartel theory as a theoretical framework by which to evaluate the results, numerous variables will be used to construct a model that will assess how much they factor into the likelihood that an institution's football program will be subject to NCAA enforcement and as a result placed on probation.

Fleisher, Goff & Tollison's (1992) study of NCAA enforcement revealed that the enforcement mechanism of the NCAA does in fact rely upon observable variables. Since the study, however, many changes on the college sport landscape have occurred. Not only does demand continue to increase for college athletics in the marketplace, technological advancements have also affected the marketplace. The last year included in the Fleisher et al. study was 1983. Since then, ESPN (Entertainment and Sport Programming Network) has developed into a multi-billion dollar media giant whose reliance on sports has increased both the popularity of sports and the microscope under which athletes (college and professional alike) live. In addition, use of Internet and social-media websites that provide minute-to-minute updates on people's lives has become commonplace (Grant et al., 2008).

The principles upon which the NCAA doles out punishment have also evolved. Bowl bans, television broadcast bans and large scholarship reductions have all decreased significantly over the past twenty years – even while the length of probations has increased (Grant et al., 2008; Zimbalist, 1999). The result has been increased volatility within the NCAA.

CHAPTER III

METHODOLOGY

The purpose of this study was to construct a model to evaluate which factors were more important than others to contributing to the likelihood that an institution would be on probation from 1990-2011. The specific research question was: What variables are significant contributors to an institution's probationary status for the sport of FBS Football?

Population

The population of this study for a given year was defined as the Football Bowl Subdivision. As of 2011, there are 120 institutions belonging to the FBS of the NCAA's Division I, however, that number has fluctuated between 1990-2011. If a school was a member of the FBS at the beginning of a year, the institution was included in the population for that year's data set.

Members of the Football Bowl Subdivision are universally considered to compete at the highest level of athletic competition and have specifically dedicated resources to compete at the highest level of NCAA football (Grant, et al. 2008). Accordingly, these institutions generate the most revenue, produce the most fanfare, have the most media following and endure the most media scrutiny of all NCAA institutions.

Instrumentation

The theoretical framework of Cartel Theory and Fleisher, Goff and Tollison's 1992 study served as the preliminary foundation for the construction of the model used in this study. In addition, researchers specializing in the study of collegiate-athletics (Dr. Richard Southall & Dr. Mark Nagel)

as well as acclaimed economists/statisticians (Dr. Claudio Battaglini & Dr. Dan Rasher) were consulted as to which variables should be included in the initial model as well as which variables should be removed during the statistical analysis. If the data source was not an institutional one, the validity of the data was tested by selecting 12 institutions (10% of n) and cross referencing the data with the corresponding official institution website.

Table 1 – Potentially Included Variables

Variable	Definition
PROBATION	Probationary status (1= on probation, 0= not on probation)
PROBATIONRATING	Total duration of probation penalty (yrs.)
ENTEREDFBS	Years since entering the FBS
INSTITUTIONSWITHIN	Number of other Division I institutions located within 400 miles
ACADMICREPUTATION	Institution's rank in <i>US News & World Report</i> – America's Best Colleges
ENROLLMENT	Number of full-time student enrolled at institution
OTHERSPORTSPROBATION	Probationary status of all non-football programs at institution (1= probation, 0= no probation)
WINNINGPERCENTAGE	Winning percentage of football program for given year
VARIATIONWINNINGPERCENTAGE	Variation in winning percentage from previous year to given year
CHANGEINCONFERENCE	Change in conference affiliation during past five years
STADIUMSIZE	Capacity of football stadium
BIGSIX	1= Member of Big Ten, Big 12, SEC, Big East, Pac12, ACC 0= non member
BIGSIXRANK	Rank if member of Big6, =0 if not member of Big6
CONFERENCECHAMPIONSHIPS	Number of Conference Championships won in program history
ALLAMERICANS	Number of Consensus All Americans in given year
TENUREOFCOACH	Number of years Head Coach has been at institution (as Head Coach)
YEARSSINCEFOUNDING	Number of years from the date the institution was founded
FINALRANK	Rank determined by James Howell College Football Power Rankings
RANKPERCENTAGE	Rank as percentage
VARIATIONRANK	Variation in rank from previous year to given year
YEAR	Year of data collected

For each year 1990-2011, data was collected on 21 different variables. The variable YEAR represented the year during which the data for that set was valid. PROBATION served as the dependent variable as was represented by either a 1 if an institution was on probation during that year, or a 0 if not. PROBATIONRATING served as an alternative dependent variable and represented the total number of years an institution was sentenced to during its probation (0 years-5 years). Depken & Wilson (2006) specify that the most accurate way to determine severity of a particular penalty is by observing the number of years of probation in the penalty. OTHERSPORTSPROBATION was represented by either a 1 if the institution had any sport serving probation or a 0 if not. This variable served as a proxy for the complicity of the athletic department as a whole. All information pertaining to probationary status as well as the number of years for each reprimand was gathered using the NCAA's LSDBi database.

ENTEREDFBS was represented by the total number of years than an institution has been in the Football Bowl Subdivision. WINNINGPERCENTAGE was the percentage of games won by a team in a given year. This variable accounted for the amount of success had by a team in a given year (Fleisher, et al. 1992). VARIATIONWINNINGPERCENTAGE was the variation in winning percentage from year x-1 to year x ($\text{WINNINGPERCENTAGE year } x / \text{WINNINGPERCENTAGE year } x-1$). This variable served to represent any change in success had by a team from one year to the next. CHANGEINCONFERENCE was represented by either a 1 or 0 depending on whether or not for the given year; the institution had changed conferences affiliation within the last five years. BIGSIX was represented by either a 1 if the institution was a member of one of the "Big 6 Conferences" (Big Ten, Big 12, SEC, Big East, Pac12, ACC) or a 0 if not. This distinction served as a determining factor as to the level of commitment to the football program held by the University (Grant, et al. 2008). BIGSIXRANK was equal to RANK for an institution only if they were also in BIGSIX. CONFERENCECHAMPIONSHIPS was the number of conference championships won by a given institution. This was an alternative proxy for the tradition and success of a given team.

TENUREOFCOACH was the number of years that the Head Coach had been serving as the Head Coach at that particular institution. This variable served as a proxy for the stability of the football program at a given institution (Bolognese & Rozycki, 2005). ALLAMERICANS was the number of consensus All-Americans on a particular team for a given year. Since only the best players are recipients of the All American distinction (22 each year; one from each position), this served as a proxy for the talent level as well as the talent level of recruits that an institution had during a particular season. Data for the variables WINNINGPERCENTAGE, CHANGEINCONFERENCE, CONFERENCECHAMPIONSHIPS, TENUREOFCOACH and ALLAMERICAN were collected from a website database company – Sports Reference LLC - a member of the USA Today Sports Media Group. Twelve pieces of data (10% of n) from each variable was validated by evaluating data found on sports-reference.com compared to data from institutional sources such as media guides or institution-published news articles. In each case, the data matched without discrepancy.

INSTITUTIONSWITHIN represented the number of FBS institutions located within 400 miles of the given institution. This variable served as a proxy for the amount of competitiveness and the amount of “supervision” a particular institution was subject to due to the proximity of its competitors (Fleisher et al. 1992, p. 108). Google Maps was used to determine distances between institutions.

ACADMICREPUTATION was equal to an institutions rank in the corresponding year’s US News and World Report (USNWR) Americas Best Colleges Ranking. For each year, USNWR assigned each school either an exact value as to their rank, or a range of values that corresponded with a number of like institutions. This ranking is systematic and regularly utilized by numerous academic works each year (Webster, 2008). From 1990-2011, the America’s Best Colleges rankings underwent significant changes which only allowed for an “average ranking” to be determined for some schools.

ENROLLMENT was equal to the number of full time students enrolled at the beginning of the fall semester. For the year 2011, data from 2010 was used since the most recent figures were not yet available. These numbers were gathered from the National Center for Education Statistics. This number then served as a proxy for the size of the student body and also for the size of the alumni base for a particular school.

FINALRANK represented the rank of a football team amongst other FBS schools for a particular year. This rank served for a proxy of athletic success held by the team for that year. James Howell's ranking system was used to determine these ranks. His ranking system is widely regarded as a reliable source (Coleman, 2005). These rankings were then also used to populate the data used for VARIATIONRANK which took the rank of a school for year $x-1$ and divided it by year x . This variation would then determine how much better a school's football program preformed than the previous year. RANKPERCENTAGE was another variable that used the data from James Howell's ranking system; it took the determined rank and divided it by the total number of football programs in the FBS. YEARSSINCEFOUNDING represented the number of years since an institution's founding date to proxy for the tradition of a school as well as the duration of existence of a school's athletic program. STADIUMSIZE was the capacity of a football program's venue during a particular year. This served as a proxy for the demand for football in a given market as well as the financial commitment to football by the institution. Both of these datasets were collected using demographic information contained on the institution's Wikipedia site. The validity of these data was tested by selecting 12 institutions (10% of n) and cross referencing the data with the corresponding official institution website. All 12 values were determined to be correct. Also, it should be known that Wikipedia is becoming a much more widely recognized source for academic works – especially when using figures as opposed to content (Taemin, 2011).

Following data collection, the entire data set was inspected by Dr. Mark Nagel & Dr. Richard Southall and scrubbed of questionable data. Following scrubbing, the data was generally analyzed to

determine which variables should be dropped because of co-linearity. STADIUMSIZE, CONFERENCECHAMPIONSHIPS, ALLAMERICANS, YEARSSINCEFOUNDING and RANKPERCENTAGE were all eliminated. As proxies for tradition of success, STADIUMSIZE, CONFERENCECHAMPIONSHIPS and ALLAMERICANS were all eliminated since WINNINGPERCENTAGE and BIGSIX would also account for traditional success. It was determined that ALLAMERICANS would not completely encompass a team's success and also may skew the data with the outliers from year to year. It was determined that YEARSSINCEFOUNDING would be accounted for with the variable ENTEREDFBS. RANKPERCENTAGE was not needed as a variable because it would be accounted for with FINALRANK.

It was also determined that in order to account for more than just a one-year difference with VARIATIONRANK (year $x-1/x$), some analysis should also be conducted with lagged values accounting for a five year window of rank (see results section). This analysis was conducted in addition to the non-lagged data model.

Following the completion of scrubbing, initial data analysis and discussion, the data were entered into STATA – a statistical analysis computing program – to conduct a logit regression. Model specific methodology will be discussed in the results section.

CHAPTER IV

A LOGIT ANALYSIS OF OBSERVABLE FACTORS AND THEIR RELATIONSHIP WITH FBS INSTITUTIONS' PROBATIONARY STATUS IN FOOTBALL

Introduction

The National Collegiate Athletic Association (NCAA) is an organization comprised of more than a thousand institutions of higher learning across the United States. The NCAA “oversees 89 championships in 23 sports” in which over 400,000 student-athletes compete during their time enrolled at these institutions. “Founded more than one hundred years ago as a way to protect student-athletes, the NCAA continues to implement that principle with increased emphasis on both athletics and academic excellence” (About the NCAA, 2012). The NCAA’s member institutions agree on rules that will regulate not only actual gameplay, length of seasons and how to determine a champion, but also who is eligible to play, for how long and what types of standards they will uphold while they are playing (Smith, 2011).

The NCAA has also developed into big-time business. In 2010 it signed a 14-year media contract with Turner & CBS to broadcast the Men’s Basketball National Championship Tournament worth over \$10.8 billion (O’Toole, 2010). With these types of revenues, and the amount of attention that the “Sports Industry” sports industry attracts, the NCAA is often the subject of analysis from economists and academicians. With just a preliminary search, it does not take long to notice that several of these researchers have long agreed that the NCAA operates as a cartel (Fleisher, Goff, & Tollison, 1992; Kahn, 2007; Zimbalist, 1999).

When evaluated as a business, the NCAA – just like any other business – has inputs and outputs. The primary outputs are the widely recognized product: the games. The inputs are the

resources that the NCAA needs to put forth “the games:” players and coaches. Perhaps most prominently, Fleisher, Goff & Tollison’s 1992 work purports that the restrictions that the NCAA places on the both their output and the price paid for their inputs triggers cartel status. Cartel agreements allow for a group of firms to achieve profit maximization by colluding to place restrictions on output and input prices rather than allowing for the market to dictate these levels (Stigler, 1964). These regulations designed to circumvent market forces also result in significant challenges to the sustainability of the organization – or cartel - as a whole (Levenstein & Suslow, 2006). Whether outputs or inputs are being restricted by a governing body, therein lays an incentive for firms to cheat to increase profitability. Look no further than another prominent – albeit significantly different – cartel for evidence of cheating by firms; the Organization of Petroleum Exporting Countries (OPEC) has experienced significant cheating on cartel agreements (Koch & Leonard, 1978). Because of this “built-in” incentive to cheat, cartels attempt to use proper enforcement and monitoring to reduce cheating and in turn reduce cartel volatility (Fleisher, Shughart, Tollison, & Goff, 1988).

To prevent cheating amongst its members, the NCAA has established an enforcement division to oversee investigations into suspected rules violations (Fleisher et al., 1988). Previous studies assessing enforcement in the sport of football have shown that the NCAA’s enforcement division seems to rely on probabilistic and observable variables when determining which schools may be violators. If the school is found to have actually violated a rule, they receive penalties from the NCAA -the most standard of which is probation. In just the past several months, several NCAA institutions have been implicated in football rules violations. These violations harm the academic and athletic reputations of these institutions, as well as that of the NCAA. They also have an effect on a school’s athletic department “bottom-line.” Football generates the most money of any NCAA sanctioned sport (Grant, Leadley, & Zygmunt, 2008) and revenue is what continues to drive the competitiveness and a win-at-any-cost mentality amongst some athletic departments as they – and

their conferences – vie for the biggest slice of the financial “pie.” This is a mentality that also often results in schools ending up just where they do not want to be...on probation.

The research question that will be answered in this study is:

RQ1. What variables explain the likelihood of an institution’s probationary status for the sport of football for institutions in the Football Bowl Subdivision (FBS)?

Review of Literature

Cartel Theory

A cartel in its most basic form is a collection of firms with similar products who collude to control the prices of inputs and outputs (Fleisher et al., 1992, p.8). When firms circumvent the market to set their own prices for inputs and outputs, they can more easily achieve profit maximization. This collusion and the resulting profit maximization provides for similar market circumstances as a monopoly so it is no surprise that given the opportunity, firms pursue cartelization (Stigler, 1964). The aim of this study is to assess the NCAA and its role as the supervisory body of collegiate sports – one that some academicians and economists have likened to that of a cartel (Fleisher et al., 1992; Humphreys & Ruseski, 2009).

Cartels form for two main reasons: profit maximization and/or externality control (Fleisher et al., 1992, p.20). By colluding with competing firms, the collection of firms is able to control the price of their product inputs and outputs (Grant et al., 2008). By colluding to skirt the general market forces and set their own prices, they can set prices at a similar level to what they might be if set by a monopolist or monopsonist. A monopolistic market situation occurs when there is one producer while a monopsonistic market occurs when there is only one buyer (Grant et al., 2008). Both situations allow – the buyer in the monopolistic and the seller in the monopsonistic marketplace – to demand prices without worrying about usual market forces.

For cartelization to occur, the costs of initial agreement must be less than the expected profits gained by cartel members (Levenstein & Suslow, 2006). Firms entering into a cartel agreement will need to agree to restrictions on the price paid for inputs, as well as prices sought for outputs (Levenstein & Suslow, 2006). This proves to be easier when firms are colluding to control an externality and more difficult when colluding with the sole purpose of profit maximization (Fleisher et al., 1992). Following their formation, cartels immediately face two issues to its existence: “monitoring the behavior of cartel participants to detect and deter defections from these collusive strategies; and preventing entry by non-cartel firms” (Levenstein & Suslow, 2006, p.44).

The larger of these two challenges is cheating by firms within the cartel (Stigler, 1964). Regardless of the restrictions placed on firms by the cartel agreement, firms within a cartel will act according to their self-interests (Grant et al., 2008). In a cartel agreement, the profit gained by acting undetected in self-interest is enhanced if all firms abide by an established agreement. A cartel only works when firms act in coordination: “if a firm reduces output, the market price will not rise appreciable and its market share and profits would fall. However as all firms reduce output at the same time, the market price will rise, market shares will remain constant and everyone’s profits will increase” (Grant et al., 2008, p. 74).

Cheating within the cartel structure is explained by game theory – an economic theory that deals with decision making. A common representation of game theory is an example called the Prisoners’ Dilemma. Grant et al. outlines this example: Two prisoners are being interrogated by police; if both prisoners confess, they will both receive five years in prison. If one confesses, they will get one year while the other gets ten years. If neither one confesses, they both get two years in prison. It turns out that the dominant strategy for this example is to confess. Not knowing what the other person is going to do, this choice results in the shortest amount of time behind bars. However, this example is only a microcosm of a much larger set of circumstances. In cartel relationships, interactions between

member firms do not only occur once, but rather a number of times. Firms adapt to these circumstances and develop what economists call a “tit-for-tat” strategy (Grant et al., 2008).

Within the circumstances of a cartel, a firm might believe it can increase profits by violating the cartel agreement but it also understands too many such violations will jeopardize the cartel. If in the future every firm acts as they did, the cartel will likely cease to exist. To decrease the incentive to cheat, a cartel may establish a set of penalties for violators. Establishing a level for effective penalties is difficult since if all firms deem penalties to be too severe, they may never be levied. On the other hand if consequences are too light, they may not be an effective disincentive to cheating (Grant et al., 2008).

Aside from cheating on the cartel agreement, the other primary challenge firms face upon cartel formation is controlling entry. Non-members joining the cartel aids cartel stability with respect to the marketplace, but may also result in decreased profits, thus destabilizing the cartel (Fleisher et al., 1992). This decrease in profits may result in increased incentives to cheat on the agreement. Additionally, the larger the number of firms in a cartel, the more difficult it is to monitor and the more likely monitoring will focus on easily observable variables (Fleisher et al., 1992).

Cartels face many challenges including initial agreement, monitoring of its members and entry of new firms to the marketplace. Successful cartels are generally those that have a small number of concentrated firms whose product has a low elasticity of demand. Even with perfect monitoring of a cartel, competition amongst firms will continue to occur through non-price competition. Successful cartels are those who are able to effectively monitor their firms while also being adept at adjusting to market changes.

From the Beginning: The NCAA as a Cartel

A comprehensive understanding of the NCAA’s history is helpful to establishing a frame of reference when examining the NCAA as a cartel. The issues that caused its formation and the manner

in which NCAA formation occurred are critical to economists' contention the NCAA was formed and now acts as a cartel.

The earliest inter-collegiate sport dates back to mid-1800's. Harvard and Yale's student operated crew teams competed in a meet in 1852 marking the first time that intercollegiate competition took place (Sack & Staurowsky, 1998). This early competition and symbolic support of athletics within the educational context coincided within a much larger reevaluation of the "purpose of The University" (Sack & Staurowsky, 1998, p.19). During this era the federal government began to dole out funds for the purpose of enabling universities to teach about more specialized pursuits. Student run sport club teams would remain the norm until the 1880's when campuses attempted to seize control of ever-growing athletic organizations (Sack & Staurowsky, 1998). Much of the motivation to gain this control stemmed from the principle of amateurism and an education-first mission.

Most of the schools at which competitions were taking place during this period were schools that would later band together to create what is known today as the Ivy League (Sack & Staurowsky, 1998). As premier educational institutions they immediately began to question athletics' place within the university and when academics started to suffer at the hand of athletics, criticisms quickly arose (Zimbalist, 1999). In 1868, Yale banned away baseball games because of the detrimental effect they had on class attendance. In 1871, Harvard went a step further and deemed that baseball games could only be played on Saturdays and holidays. During this same time, these same schools had eligibility concerns for graduate students and freshmen athletes who were failing classes (Sack & Staurowsky, 1998). Additionally, the increase in commercialism and the resulting evolution of the full-time professional coach increased the concerns of how athletics fit within the university structure (Sack & Staurowsky, 1998). Despite some discussion of amateurism and academic concerns, how to remedy the proliferation of football injuries was the primary item of discourse amongst intercollegiate decision-makers. This would eventually be the impetus for collusion amongst schools sponsoring

football (Smith, 2011). Without standardized rules and punishment, the sport of football had become an incredibly violent and sometimes deadly sport (Fleisher et al., 1992). Regardless, intercollegiate football competitions during the late 1890's and early 1900's were incredibly competitive as well as incredibly popular (Smith, 2011). Increases in public interest resulted in the construction of stadiums by those schools with the highest demand for football. Thousands of fans could now watch each game in person. Hand-in-hand with the increased demand for the product, commercialization crept onto the intercollegiate sport landscape (Zimbalist, 1999). In an uncontrolled marketplace there is no incentive for a team to increase its safety measures if other teams will continue to ignore those same measures to remain more competitive. As Fleisher et al. (1992) noted institutions (or producers) during this time found themselves facing a situation like the prisoners' dilemma: "without a formal agreement or means to punish the aberrant behavior, each producer continues to engage in it. If any one firm imposes constraints on itself, the problem on the whole continues, and the self-constrained firm loses profits relative to the other firms" (Fleisher et al., 1992, p.21). The problem of violence in college football escalated to the point that over a fifteen-year time period around the turn of the 20th century, 330 students died from football-related injuries (Zimbalist, 1999). Football's safety concerns were so great that Columbia, California and Stanford all eliminated the sport of football. It became clear that if the safety issues were left unchecked, the continuation of the prisoners' dilemma would undoubtedly threaten the entire enterprise of college sport before it was even really developed.

The motive to collude and control a common externality – football injuries – served as the catalyst for the formation of the NCAA in 1905. Injuries occurring during competitions in the sport of football caused significant costs to each competitor as well as the sport itself; the popularity of the sport was in jeopardy. To address the externality, institutions essentially colluded to stop the use of violent tactics in football so that they all could continue competitions – and continue to fill stadiums - while also reducing the cost injuries were having on its players and public perception of the sport (Sack & Stauirowsky, 1998). Regardless, traditional powerhouses who had used these strategies to

succeed were resistant to any type of rule that attempted to eliminate violent tactics (Fleisher et al., 1992). Ultimately, the entire group agreed that the benefit of agreement outweighed the cost of business as usual. The agreement contained restrictions on types of formations as well as increased penalties for inappropriate use of force on the field (Grant et al., 2008).

Although “...football violence was the catalyst that brought the NCAA into existence, problems relating to amateurism and eligibility rules received as much if not more attention at the first NCAA Annual Meeting in 1906” (Sack and Staurowsky, 1998, p. 33). Original amateurism regulations stipulated that “no payments could be made to students based on their athletic abilities by the university or individual alumni...declaring students as ineligible if they had ever received any payment for competing in a sporting event” and “freshmen and transfer students must complete one year of college before being eligible” (Grant et al., 2008, p.92). It is evident that soon after its formation – which revolved around controlling violence on the football field – the NCAA began to shift its focus to maximization of profits by restricting the price paid for inputs (Sack & Staurowsky, 1998).

During the developmental years (1920-1948), the foundation of the cartel agreement between NCAA institutions was established. These years saw huge increases in the demand for college sport with NCAA institutions seeing their “largest increases in live attendance” during this period” (Fleisher et al., 1992, p.51). As a result of these marketplace changes, and the lack of an effective enforcement mechanism, violations continued to plague the industry. Internal committees were formed at the national level to address the “athletic differences between colleges” and to “encourage compliance with the rules of eligibility and amateurism” (Fleisher et al., 1992). External organizations also began to question the intentions and effects of the NCAA. The Carnegie Foundation and the *New York Times* both criticized the recruiting, eligibility and amateurism rule violations that were prevalent throughout the time period and flew in the face of NCAA rules and standards. There is evidence from these two groups as well as others that “by 1922 schools were

bartering fairly openly for athletic talent” (Sack & Staurowsky, 1998, p.37). Also during this time NCAA membership nearly doubled and significant amounts of monies were being allocated to facility construction and expansion. Radio broadcasts of college events became prevalent and the prospect of television coverage was on the horizon (Fleisher et al., 1992). The influx of money into the college athletics industry during this time period provides anecdotal evidence that values for both the inputs and outputs of college athletics were increasing. Concordantly with any cartel, a significant change in the market will cause volatility within a cartel, especially with a market imbalance such as the NCAA’s case; the 1920s-1940s saw an extreme increase in demand.

Largely in an effort to control the quickly changing landscape, the NCAA gathered decision makers from the four largest conferences and developed a document entitled “Principles of Conduct of Intercollegiate Athletics” (Fleisher et al., 1992, p.47). These became better known at the 1948 convention as the Sanity Code. The adoption of this set of rules and the eventual changes that followed its adoption was a seminal moment in NCAA history and is one economists view as the point of transition for the NCAA from “a loosely tied, mostly voluntary association to an effective cartel” (Fleisher et al., 1992, p.46). The Sanity Code represented a holistic approach to NCAA rule changes while also attempting to remain steadfast to its amateur principles. It attempted to address issues in amateurism, financial aid and eligibility while also including a means of enforcement. The most significant part of the Sanity Code prohibited awarding Financial Aid to a student based on athletic ability (Sack & Staurowsky, 1998). A student could receive aid, but only if awarded for non-athletic qualifications. Additionally, the Sanity Code established the NCAA’s first means of monitoring and enforcement.

While it was an attempt at compromise, the Sanity Code was not viewed favorably by all parties. Conferences in the South – made up by schools that had deliberately developed rules to circumvent the NCAA years earlier - were particularly against The Code (Sack & Staurowsky, 1998). Just two years after its adoption at the 1950 NCAA Convention, seven schools had been found in

violation of the Sanity Code and faced expulsion from the NCAA (Fleisher et al., 1992). While the vote to abolish those seven members would end up failing, this would mark the beginning of the end for the short lived Sanity Code (Fleisher et al., 1992). The official end came in 1951 when the Section Four of the Sanity Code was dropped from the NCAA Constitution altogether (Sack & Staurowsky, 1998, p.47). This meant that again, the NCAA was without an enforcement mechanism.

The ensuing deliberations resulted in the Committee on Infractions being established as the premier enforcement arm of the NCAA. This Committee structure survived the ensuing changes of allowing for athletic scholarships, allowing for freshmen eligibility, etc. and still exists today. The Committee was allowed significant power, allowing them to penalize without consent from the Membership (Fleisher et al., 1992). With the prospect of increased demand and potential television revenue on the horizon, the cost to create - and the benefits from - a stable enforcement arm made economic sense. The establishment of an enforcement arm also institutionalized the notion that one of the roles of the NCAA was to restrict inputs and outputs. If a school gave too much aid to a student-athlete, they could be penalized; furthermore if a school scheduled 20 football games for a season, they could be penalized.

Despite the establishment of an enforcement concept, it was still clear that there were significant differences between institutions in the NCAA. In an attempt to control the stratification of athletics, the NCAA federated into three segments in 1973 and further divided in 1978 (Grant et al., 2008). The eventual result was four different groupings within the NCAA: Division IA, IAA, II and III. Divisions I, II and III all maintain different sets of rules and regulations as well as enforcement and monitoring mechanisms. Division IA (now called the Football Bowl Subdivision or FBS) and Division IAA (now called Football Championship Subdivision or FCS) abide largely by the same rules, but in the sport of football maintain different post-season structures as well as a few additional rule changes dealing with the management of football (NCAA Manual, 2012). Division I was developed for those schools that were most capable of supporting athletics at a high level (Grant et

al., 2008, p.39). Theoretically, by combining “peer” schools the NCAA would be able to more effectively control some of the cartel volatility. In other words, there would be less of an incentive for a lower end Division IAA school to cheat and attempt to “match up” with a much more successful school in Division IA in the new model because they were not directly competing with that subset of schools. From a cartel theory perspective, this was a means of establishing barriers to entry into the “big-time” football club.

The “big-time” football club wanted to further separate themselves when in 1983; Oklahoma and Georgia challenged the NCAA’s model for restricting television appearances by schools in the Supreme Court. The NCAA claimed their distribution “promoted the noncommercial undertakings of the organization,” as Oklahoma claimed the NCAA acted as a cartel when it came to restricting outputs and purported that demand for the college football product was artificially high (Fleisher et al., 1992, p.59). The Court ruled that the NCAA’s plan for restricting football on television artificially restricted output and skirted the free market. This court decision was certainly a blow to the NCAA cartel agreement and further stratified the Association.

This study evaluates punishments levied by the Committee on Infractions upon institutions in Division I – FBS. Fleisher, Goff & Tollison’s study of NCAA enforcement revealed that the enforcement mechanism of the NCAA does in fact rely upon observable variables. Since the study was completed however, many changes on the college sport landscape have occurred. Not only does demand continue to increase for college athletics in the marketplace, but technological advancements have also affected the marketplace. The last year included in the Fleisher et al. study was 1983. Since then, ESPN (Entertainment and Sport Programming Network) has developed into a multi-billion dollar media giant whose reliance on sports has increased both the popularity of sports and the microscope under which athletes (college and pro alike) live. In addition, use of internet and social-media websites that provide minute to minute updates on people’s (recruits, student-athletes, coaches) lives has become commonplace (Grant et al., 2008).

The principles upon which the NCAA doles out punishment have also evolved. Bowl bans, television broadcast bans and large scholarship reductions have all decreased significantly over the past twenty years – even while the length of probations has increased (Grant et al., 2008; Zimbalist, 1999). Still, NCAA enforcement remains has depended heavily on probabilistic variables (Fleisher et al., 1992). Even if the NCAA had a large enough enforcement staff for direct surveillance, to maintain surveillance at every institution would be incredibly costly (Fleisher et al., 1992). Reliance upon historical performance data both in regards to athletic performance and financial performance results in traditional powers being subject to less scrutiny than non-traditional powers. In turn, the NCAA must rely on observable variables or on other accounts of rule breaking occurrences (Fleisher et al., 1992). This theory was assessed as it pertained to NCAA enforcement actions toward football programs in the 1992 work *The National Collegiate Athletic Association*. In the study, they discovered that an increased winning percentage and switching conferences both led to schools being more likely to be placed on probation by the NCAA. They also discovered that a larger number of secondary schools in a state resulted in an increase in likelihood that a school would be placed on probation. A school's stadium size and the date it was founded were both also positive and significant variables in the study suggesting that schools with a higher demand for successful football programs are penalized more than schools with a lower demand for football programs. Perhaps most importantly, they found that as traditional winning measures were added to the equation, the likelihood of probation did not change which “suggests that NCAA enforcement does not bother itself with either consistently successful teams or with teams that never win” (Fleisher et al., 1992, p. 133). This resulted in two possible explanations: by effectively formulating the enforcement mechanism over several decades, traditional powers are able to fly under the radar of the system that they control or, that by developing such strong traditions over the years, traditional powers no longer need to cheat the cartel agreement to “maintain their dominant position” (Fleisher et al., 1992, p.121).

Methodology

The purpose of this study was to construct a model to evaluate which factors were more important than others to contributing to the likelihood that an institution would be on probation from 1990-2011. The specific research question was: What variables are significant contributors to an institution's probationary status for the sport of FBS Football? The population of this study for a given year was defined as the Football Bowl Subdivision. As of 2011, there are 120 institutions belonging to the FBS of the NCAA's Division I; however that number has fluctuated between 1990-2011. If a school was a member of the FBS at the beginning of a year, the institution was included in the population for that year's data set. The theoretical framework of Cartel Theory and Fleisher, Goff and Tollison's 1992 study served as a foundation for the preliminary foundation for the construction of the model used in this study. In addition, researchers specializing in the study of collegiate-athletics (Dr. Richard Southall & Dr. Mark Nagel) as well as acclaimed economists/statisticians (Dr. Claudio Battaglini & Dr. Dan Rasher) were consulted as to which variables should be included in the initial model as well as which variables should be removed during the statistical analysis. For each year 1990-2011, data was collected on 21 different variables; a table of these variables is presented below. If the data source was not an institutional one, the validity of the data was tested by selecting 12 institutions (10% of n) and cross referencing the data with the corresponding official institution website.

Following data collection, the entire data set was inspected by Dr. Mark Nagel & Dr. Richard Southall and scrubbed of questionable data. Following scrubbing, the data was generally analyzed to determine which variables should be dropped because of co-linearity. STADIUMSIZE, CONFERENCECHAMPIONSHIPS, ALLAMERICANS, YEARSSINCEFOUNDING and RANKPERCENTAGE were all eliminated. As proxies for tradition of success, STADIUMSIZE, CONFERENCECHAMPIONSHIPS and ALLAMERICANS were all eliminated since WINNINGPERCENTAGE and BIGSIX would also account for traditional success. It was

determined that ALLAMERICANS would not completely encompass a team's success and also may skew the data with the outliers from year to year. It was determined that YEARSSINCEFOUNDING would be accounted for with the variable ENTEREDFBS. RANKPERCENTAGE was not needed as a variable because it would be accounted for with FINALRANK.

It was also determined that in order to account for more than just a one year difference with VARIATIONRANK (year $x-1/x$), some analysis should also be conducted with lagged values accounting for a five year window of rank (see results section). This analysis was conducted in addition to the non-lagged data model. Following the completion of scrubbing, initial data analysis and discussion, the data were entered into STATA – a statistical analysis computing program – to conduct a logit regression.

Results

From 1990-2011 there were 51 probation infractions, totaling 145 years (5.8% of possible years), levied against FBS NCAA D-I athletic departments. Several schools were assessed one-year probations, while the maximum probation length was five years (twice). Seven institutions were issued two separate probation periods during this time span.

Following the initial analysis, the relative importance of each variable to the model was discussed and two model variations were constructed. Model (1) was constructed using a logit analysis. This technique constrains the predicted values for the binary dependent variable, PROBATION, to fall between 1 and 0 (Fleisher et al., 1992).

A robust estimator was used to deal with heteroscedasticity that was revealed by the Cook-Weisberg test. Using Wald χ^2 , the model was determined to be significant at a .05 level. This model had a Pseudo R^2 value of .1507. This level has been deemed to indicate a “moderately strong” model (Hu, 2006). Model (1) results are reported below in Table 4.

Table 1 – Potentially Included Variables

Variable	Definition
PROBATION	Probationary status (1= on probation, 0= not on probation)
PROBATIONRATING	Total duration of probation penalty (yrs.)
ENTEREDFBS	Years since entering the FBS
INSTITUTIONSWITHIN	Number of other Division I institutions located within 400 miles
ACADMICREPUTATION	Institution's rank in US News & World Report – America's Best Colleges
ENROLLMENT	Number of full-time student enrolled at institution
OTHERSPORTSPROBATION	Probationary status of all non-football programs at institution (1= probation, 0= no probation)
WINNINGPERCENTAGE	Winning percentage of football program for given year
VARIATIONWINNINGPERCENTAGE	Variation in winning percentage from previous year to given year
CHANGEINCONFERENCE	Change in conference affiliation during past five years
STADIUMSIZE	Capacity of football stadium
BIGSIX	1= Member of Big Ten, Big 12, SEC, Big East, Pac12, ACC 0= non member
BIGSIXRANK	Rank if member of Big6, =0 if not member of Big6
CONFERENCECHAMPIONSHIPS	Number of Conference Championships won in program history
ALLAMERICANS	Number of Consensus All Americans in given year
TENUREOFCOACH	Number of years Head Coach has been at institution (as Head Coach)
YEARSSINCEFOUNDING	Number of years from the date the institution was founded
FINALRANK	Rank determined by James Howell College Football Power Rankings
RANKPERCENTAGE	Rank as percentage
VARIATIONRANK	Variation in rank from previous year to given year
YEAR	Year of data collected

Table 2 – Schools on Probation (Football) 1990-2011

Institution	Year	Institution	Year
Clemson	1990	Arkansas	2003
Florida	1990	Colorado	2003
Washington	1991	Maryland	2003
Minnesota	1992	Rutgers	2003
Tennessee	1992	San Diego State	2003
Auburn	1993	Oregon	2004
Pittsburgh	1993	Arizona State	2005
Syracuse	1993	Baylor	2005
Virginia	1993	FIU	2005
Texas A&M	1994	Mississippi State	2005
Alabama	1995	Georgia Tech	2005
Ole Miss	1995	Illinois	2005
Washington State	1995	South Carolina	2005
Miami	1996	Kansas	2006
Michigan State	1996	Ohio	2006
Mississippi State	1996	Ball State	2007
Florida State	1997	Louisiana-Lafayette	2007
Georgia	1997	Ohio State	2007
Texas	1997	Colorado	2007
Texas Tech	1998	FIU	2008
Kansas State	1999	New Mexico	2008
Notre Dame	2000	Alabama	2009
SMU	2001	Arkansas State	2011
USC	2001	LSU	2011
Wisconsin	2001	Michigan	2011
California	2002	UCF	2011
Kentucky	2002	USC	2011
Marshall	2002	West Virginia	2011
Alabama	2002	Georgia Tech	2011

In examining the model's results, several variables were found to be significant ($\alpha.05$):

OTHERSPORTSPROBATION, BIGSIX, BIGSIXRANK, YEAR and TENUREOFCOACH, with OTHERSPORTSPROBATION, BIGSIX and YEAR all having positive coefficients. Succinctly, if an athletic department has another sport on probation during the given year, its football program is more likely to also end up on probation; a BCS Automatic Qualifier (AQ) "Big Six" conference program is

more likely to be placed on probation than a program from a non-Big-Six conference; and probation has become more prevalent from 1990 to 2011.

Table 3 – Schools with Multiple Instances of Probation (Football) 1990-2011

Institution	Years on probation
Alabama	1995-1996, 2002-2006, 2009-2011
Colorado	2003-2004, 2007-2008
Florida International University	2005-2007, 2008-2011
Florida State	1997, 2009-2011
Georgia Tech	2005-2006, 2011-2013
Mississippi State	1996, 2005-2008
University of Southern California	2001-2002, 2011-2014

Model (1):

prob[PROBATION] = YEAR; ENTEREDFBS; INSTITUTIONSWITHIN;
ACADEMICREPUTATION; ENROLLMENT;
OTHERSPORTSPROBATION; WINNINGPERCENTAGE;
CHANGEINCONFERENCE; BIGSIX; BIGSIXRANK;
TENUREOFCOACH; FINALRANK; Constant

In addition, the negative coefficient associated with the variable TENUREOFCOACH indicates FBS programs are more likely to be placed on probation during a coach's first few years at a university. And finally, while ACADEMICREPUTATION only approached significance, its positive coefficient suggests football programs at "more-academically" rigorous universities are more likely to end up on probation.

Using the same model, a logit regression was run, this time assessing the average marginal effect on probation instead of assigning a coefficient. The same five variables from the first regression: OTHERSPORTSPROBATION, BIGSIX, BIGSIXRANK, YEAR and TENUREOFCOACH - remained statistically significant when assessing marginal effect on probation.

Table 4 – Model (1) - Logit Model without Lagged Terms (Coefficient – PROBATION)

PROBATION	Coef.	Z	P> z
YEAR	0.033	2.320	0.020
ENTEREDFBS	0.005	1.060	0.289
INSTITUTIONSWITHIN	-0.006	-0.690	0.489
ACADMICREPUTATION	0.004	1.780	0.074
ENROLLMENT	0.000	1.490	0.135
OTHERSPORTSPROBATION	1.944	9.870	0.000
WINNINGPERCENTAGE	0.484	0.680	0.494
CHANGEINCONFERENCE	-0.353	-1.230	0.217
BIGSIX	2.301	4.080	0.000
BIGSIXRANK	-0.018	-2.460	0.014
TENUREOFCOACH	-0.047	-2.120	0.034
FINALRANK	0.010	1.490	0.137
Constant	-72.137	-2.550	0.011

ACADMICREPUTATION continued to approach significance while the remaining values had no statistical significance. From this model we can surmise the following: if an athletic department had a sport on probation, it was 16% more likely that its football program would also end up on probation; schools in the Big Six conferences were 11% more likely to be on probation than those not in the Big Six conferences; for every ten years forward, the probability of probation increases by 2%; for every ten years of experience a head coach has, the likelihood of probation decreases by 2.2; and being ranked worse by 100 lowers probability of probation by 8.7.

Table 5 – Model (1) - Logit Model without Lagged Terms (Average Marginal Effects - PROBATION)

PROBATION	Coef.	Z	P> z
YEAR	0.002	2.330	0.020
ENTEREDFBS	0.000	1.050	0.293
INSTITUTIONSWITHIN	0.000	-0.690	0.489
ACADMICREPUTATION	0.000	1.770	0.076
ENROLLMENT	0.000	1.440	0.151
OTHERSPORTSPROBATION	0.167	6.680	0.000
WINNINGPERCENTAGE	0.024	0.680	0.494
CHANGEINCONFERENCE	-0.016	-1.350	0.176
BIGSIX	0.113	3.100	0.002
BIGSIXRANK	-0.001	-2.410	0.016
TENUREOFCOACH	-0.002	-2.090	0.037
FINALRANK	0.001	1.480	0.140

Sometimes it could be that a football program's cheating could go undetected until they experience success; to account for these lags in observed success, Model (2) built in lagged ranking variables. This was a parsimonious model using the following variables:

Model (2):
logit_ PROBATION ACADMICREPUTATION OTHERSPORTSPROBATION
CHANGEINCONFERENCE BIGSIX BIGSIXRANK TENUREOFCOACH FINALRANK
FINALRANK1 FINALRANK3 FINALRANK5 FINALDIF2 FINALDIF4 FINALDIF5

For instance, the variable FINALRANK3 = FINALRANK 3 years before. FINALDIF2 = FINALRANK / (FINALRANK2). Using Wald Chi², Model (2) was also significant ($\alpha.05$), with a pseudo R² of .1649 indicating – once again – that it is a “moderately strong” model (Hu, 2006). The results for Model (2) are displayed in Table 6 & Table 7.

In summary, if a school had another sport on probation, they were more likely to be on probation in the sport of football; if the school was in a Big Six conference, they were more likely to be on probation; and if a school experienced improvement over the past two seasons, they were more likely to be on probation. Also, the longer tenure a school's coach had, the less likely they were to be on probation and if a school changed conferences they were more likely to be on probation.

Expanding Model (1) results in Table 2, and in an effort to assess the average marginal effect on probation instead of assigning a coefficient, another logit regression was run, this time with the developed lagged variables included. The results are located in Table 7.

Table 6 – Model (2) - Logit Model with Lagged Terms (Parsimonious – Coefficient - PROBATION)

PROBATION	Coef.	Z	P> z
ACADMICREPUTATION	0.003	1.490	0.137
OTHERSPORTSPROBATION	2.209	10.020	0.000
CHANGEINCONFERENCE	-0.517	-1.620	0.105
BIGSIX	1.962	3.700	0.000
BIGSIXRANK	-0.011	-1.480	0.139
TENUREOFCOACH	-0.042	-1.880	0.061
FINALRANK	0.005	0.700	0.482
FINALRANK1	-0.003	-0.660	0.510
FINALRANK3	0.006	1.330	0.183
FINALRANK5	-0.007	-1.390	0.163
FINALDIF2	-0.149	-1.980	0.047
FINALDIF4	0.039	1.180	0.238
FINALDIF5	-0.021	-0.930	0.352
Constant	-4.049	-6.250	0.000

In Model (2), OTHERSPORTSPROBATION and BIGSIX had statistically significant values ($\alpha.05$). When accounting for lagged values, having another sport on probation increases the probability that a school's football program will be on probation by 22%. Being in a Big Six conference increased the probability of probation by 10%. Again the only lagged term that was significant was the two-year lagged rank difference with a negative coefficient. An improvement in a football program's rank by 10 from two years ago increased the probability of probation by 7.9%. CHANGEINCONFERENCE was approaching significance with a negative coefficient; by not changing conferences a school was 2% more likely to be on probation.

Table 7 Model (2) – Logit with Lagged Variables (Parsimonious, Average Marginal Effects – PROBATION)

PROBATION	Coef.	Z	P> z
ACADMICREPUTATION	0.000	1.490	0.136
OTHERSPORTSPROBATION	0.220	6.930	0.000
CHANGEINCONFERENCE	-0.024	-1.860	0.064
BIGSIX	0.101	3.110	0.002
BIGSIXRANK	-0.001	-1.460	0.143
TENUREOFCOACH	-0.002	-1.840	0.066
FINALRANK	0.000	0.700	0.484
FINALRANK1	0.000	-0.660	0.511
FINALRANK3	0.000	1.330	0.183
FINALRANK5	0.000	-1.380	0.166
FINALDIF2	-0.008	-1.980	0.047
FINALDIF4	0.002	1.170	0.240
FINALDIF5	-0.001	-0.920	0.357

Discussion & Implications

The significance of this study was twofold: to answer the declared research question and update previous research (Fleisher et al., 1992). This section assesses the answers to the research question, establishes a point-by-point comparison of this study to the previous study followed by conclusions and future research.

RQ1: What variables explain the likelihood of an institution's probationary status for the sport of football for institutions in the Football Bowl Subdivision (FBS)?

There were two models used to analyze the data set and attempt to determine which factors did alter the probability that a football program would be on probation. Both models used a logit analysis; the second model accounted for a lag in team success (comparing a team's rank from previous years to its "current" probation status). For each model, two outputs were gathered; one utilizing coefficients and the other utilizing average marginal effects to illustrate the significance of each variable's effect on probationary status. Between the four outputs, there were a total of 16 statistically significant variable outputs at the .05 level: YEAR (two outputs), BIGSIX (all four outputs), BIGSIXRANK (two outputs), OTHERSPORTSPROBATION (all four outputs), TENUREOFCOACH (two outputs) and FINALDIF2 (two outputs). There were also five variable outputs that approached significance: ACADMICREPUTATION (two outputs), TENUREOFCOACH (two outputs) and CHANGEINCONFERENCE (one output).

In Model (1), YEAR, BIGSIX, BIGSIXRANK, TENUREOFCOACH and OTHERSPORTSPROBATION were all significant contributors for both the Coefficient and the Average Marginal Effect outputs. ACADMICREPUTATION approached significance for both outputs of Model (1).

The variable YEAR proved to be a significant one. Initially included as a placeholder with the data, the variable YEAR actually proved to be significant. While there was no consideration to

YEAR included with the data analysis breakdown, it is quite evident that more probation has been administered recently than in the 1990's. Of the 1200 data entry points (1 year for 1 school = 1 data entry point) for years 1990 through 1999, 47 of them were years that schools were on probation. For the 1304 data entry points for years 2000-2009, there were 88 years during which schools were on probation. While the entire data set is not readily available, there were only 25 NCAA investigations that resulted in probationary action from 1953-1983 (Fleisher et al., 1992, p. 106). Of course, if the NCAA possessed a perfect enforcement model (where every violation was detected and punished), these figures would be evidence that there has simply been more cheating during recent years. It also could evidence that the penalty structure has undergone a shift over the past 20 years. No information is available as to the number of investigations opened by the NCAA during a certain time period, but another possibility is that information gathering has become more effective and conclusive so that of late, the NCAA can more easily justify a probation penalty. Either way, further research should look into the prevalence of probation from throughout the NCAA's existence and explore any trends that exist on a whole.

The significance of the BIGSIX variable means that it is more likely that a school from within a BCS conference would have a football team placed on probation than a school that is not in the BCS. Furthermore BIGSIXRANK's significance and negative coefficient means that amongst schools in the Big Six, the worse a school was, the less likely they were to be on probation. Of the 2,640 total data points, 1297 of those data entry points were for schools outside of the Big Six conferences while 1343 were for schools inside the Big Six. "Big Time" schools are being penalized at a greater rate than "non-Big Time" schools.

Two possible explanations for these results are: institutions that compete at the BCS level are more likely to cheat because of the pressure to compete and stay "at the top" year after year, or the NCAA is paying closer attention to these bigger schools and in turn results in more investigations and eventually more probation for these schools.

The disparity between BCS conferences and non-BCS conferences is already large and increasing rapidly. Considering this, it might not be surprising for teams competing with higher stakes to push the envelope on NCAA rules more than those without the possible financial windfalls. On the other hand, previous studies suggested that non-BCS schools would be more willing to breach NCAA rules because of the thirst for success in the hopes that they could possibly make it into a BCS conference (Fleisher et al., 1992).

Intra-conference stratification may play a part of this significance as well. Ohio State – a regular contender for a BCS Bowl berth – and Northwestern are both in the Big Ten, but have very different brand values. At the end of 2011, Ohio State was placed on 3 years of probation by the NCAA. Did Ohio State build their brand because of the cheating that has occurred within their program? Were violations that occurred more likely to come out at Ohio State because of the constant national media attention the school's football program receives? Was the NCAA keeping a closer eye on Ohio State because of how much attention they receive? Do the same violations occur at Northwestern, but it just never receives any attention from outsiders?

There are no clear cut answers, and it is clear that these two explanations are not mutually exclusive. BCS schools may take more risks and receive more media coverage/attention from the NCAA. Either way, the most successful schools were the most likely ones to be on probation. Their less successful BCS peers as well as their Division I peers were not as likely to be on probation. Given how lucrative the opportunity is, it's doubtful that a school would turn down an opportunity to join a BCS conference simply because they were more likely to be on probation, but it does shed light to the fact that a subset of schools is receiving more attention –perhaps rightfully so – than another subset. More research could be done in this area just amongst BCS schools or just amongst non-BCS schools to determine in more depth the differences between the two groups and further explain why one is more apt have schools on probation than others.

The variable TENUREOFCOACH was a significant contributor to probationary status in Model (1). The coefficient for TENUREOFCOACH was negative; meaning that the fewer years of experience a coach had at a given school, the more likely it was that the school would have a football program on probation. It could be that during the first several years at a school, a coach is adjusting to the culture of compliance at that institution and is more likely to have a rules violation occur on their watch during that time period. Since coaches with low values of TENUREOFCOACH generally followed a coach being fired for lack of success, they may be taking over a worse team and therefore feel the need to break rules to establish success within their first few years at a new school.

It also could be that other football coaches are watching new coaches more closely from afar and because of the lack of preexisting relationships, they are more willing to turn a “new” coach in for observed rules violations. The NCAA could also be more apt to investigate suspected rules violations at a school where a coach is “new” because of the perceived inexperience of that coach and their staff.

On the flip side, this variable’s significance could have been driven up by extremely long tenured coaches (e.g. Joe Paterno, Bobby Bowden) that did not have a major rules violation that resulted in probation occur during their tenure. For instance, Joe Paterno had no instances of probation during the window of years which data was collected from. Though Florida State was placed on probation while Bobby Bowden was coach, the first year of the three years of probation coincided with Coach Bowden’s last year. In turn the succeeding coach had the probation reflected in the data for their first two years as coach.

OTHERSPORTSPROBATION was a significant contributor to probationary status in Model (1) and carried a positive coefficient. It makes sense that this variable would be significant as many rules violations resulting in probation involve more than one sport. It also could be that an institution that “allows” rule violations to occur within their department for other sports means it is more likely

to have less effective monitoring and as a result is more likely to incur probation for the sport of football. From a theoretical perspective, this aligns with Organizational Culture research conducted previously (Southall, Wells & Nagel, 2005). Departments that successfully promoted a culture of compliance amongst all sports were less likely to incur probation in the sport of football. Fleisher et al. suspected that that NCAA relied on observable variables to determine which schools to investigate; considering their results, it may be that NCAA believes schools that have previously been penalized are more likely to have committed violations. These results call for more research to be done into the “compliance culture” of athletic departments and how important the culture is to preventing – or promoting – rule violations.

While ACADMICREPUTATION was not significant at the .05 level, it did approach significance with a positive coefficient. This meant that schools with a higher numerical rank for ACADMICREPUTATION were more likely to be on probation than those with a lower numerical rank. This could mean that student-athletes who are at less reputable academic institutions are more likely to commit violations that result in their team being on probation. It also could mean that schools with lower academic reputations are less likely to effectively monitor their football coach’s NCAA complicity. One reason this variable may not have resulted in a statistically significant value is because many of the schools who fit the profile of being more likely to be on probation – BIGSIX schools with a high indicator of athletic success – are also schools that maintain a low (better) rank for ACADMICREPUTATION. For instance, Notre Dame, California and Minnesota were all on probation at one point during this window of time despite being ranked in the top 25 academically. These instances likely skewed the p-value for ACADMICREPUTATION.

When accounting for lagged success, many of the same results held true in Model (2). OTHERSPORTSPROBATION and BIGSIX were significant contributors for both the Coefficient and the Average Marginal Effect outputs of Model (2). The same conclusions can be drawn for these variables and their significance in Model (2) as Model (1).

Of note for the output from Model (2) is the FINALDIF2 variable that accounted for a team's athletic success two years prior to being on probation. With a negative coefficient, this means that a team who is on probation in the current year was likely to have experienced a lower athletic rank (better) two years ago. In fact, intuitively, this makes sense because assumedly the team gained an advantage by cheating. The investigation and sentencing process often takes over a year, so this could mean that when an observed rank change occurred, an investigation was initiated. Interestingly, variables for FINALDIF4 and FINALDIF5 were not significant. This could mean that the NCAA is adept at catching violators within the two year window of athletic success that comes because of rule violations.

Results Compared to Previous Research

The overall goal of the current study was to update previous research conducted by Fleisher, Goff & Tollison (1992) assessing which factors contributed to a football program being on probation from 1953-1983. The results of the current study reaffirm some of the conclusions drawn by Fleisher et al.; however many of the fundamental conclusions from the previous study differ from the conclusions of this study. There were nine major conclusions drawn by Fleisher et al.:

1. *Model explained 33% of the variation in enforcement actions across schools. This percentage is quite high given the aggregated and pooled nature of the underlying data (pg.109).*

The current study used two models; Model (1) explained 15% of the variation in enforcement actions while Model (2) explained 16.5% of the variation in enforcement actions. These figures are considerably smaller than the 1992 study. There were several different variables included in the current study which may be responsible for the wide discrepancy. This discrepancy also may have been caused by the increase in the number of schools in Division I since the completion of the previous study. Finally, it could be that enforcement actions rely less on probabilistic variables than they did before. This may be a logical conclusion given the increase in information flow amongst

institutions especially considering the advances in technology since 1983 (last year in the previous study).

2. *Higher variability in a team's winning percentage leads to a greater probability of the NCAA taking action against those schools (pg. 110).*

In the current study, VARIATIONRANK and VARIATIONWINNINGPERCENTAGE were used to evaluate the varying success of a football program. Using these numbers, it could be determined how important variation – positive or negative – in performance was in relation to the probability that a program might be on probation. While the previous study determined that it was a significant factor and played a large role in how likely a program was to be on probation, in the current study, neither of these two factors proved to be significant. This could mean that while the NCAA may have relied on purely observing which teams got better from year to year for potential violators that they no longer do so. It also may mean that there is more parity amongst teams and it is more difficult to rely on year to year differences in success as to who may be violating NCAA rules

3. *Winning teams that switch conferences face a higher probability of sanction from the NCAA.*

Therefore, teams use conference switching and quality performance as a signal of illegal activity.

In the current study, CHANGEINCONFERENCE was not a significant contributor to probationary status. This may mean that during the more recent realignment, conferences were more likely to align themselves more closely with peer institutions that they did not suspect rule violations from. It also could mean that the stakes are higher now within a conference and teams are less likely to turn in another school from their own conference because of the potential financial ramifications.

4. *If there are few high schools, college teams and their agents can monitor each other's recruiting activities directly, at less cost and thereby can discourage cheating. If there are many high schools, the costs of monitoring college recruiting increase and the likelihood of cheating and sanctions increases.*

To proxy for “supervision from other schools,” the current study relied on the variable INSTITUTIONSWITHIN – which counted the number of institutions within a 400 mile radius. This variable was not highly correlated with probation and was dropped from both of the final models. Intuitively, the advances in technology have made it easier to “supervise” other schools regardless of the distance between them.

5. *Other things equal, schools with a higher demand for successful football programs are penalized more than schools with a lower demand for football programs.*

To proxy for demand of a football program, the current study used STADIUMSIZE. That variable was removed from the final model because of its collinearity with other variables. Football programs that experienced higher levels of athletic are more likely to have bigger stadiums and more demand. The current study did find that more successful football programs were more likely to be penalized than less successful ones; therefore this conclusion has most likely remained unchanged since the conclusion of the previous study.

6. *NCAA enforcement does not bother itself with either consistently successful teams or with teams that never win.*
7. *Consistent winners may be prosecuted at a lower rate than other schools*
8. *Teams appearing in the final top twenty the most often are not the most heavily sanctioned*

One of the strongest results coming out of the current study is that more successful teams were more likely to be on probation during the last 22 years than less successful teams. While the current study did indicate that “teams that never win” did have less number of years on probation, it may have more to do with the fact that they aren’t cheating rather than they aren’t winning. These conclusions seem to completely contradict conclusions drawn by the previous study.

9. *Winning percentage of schools about to be on probation increased over the five years prior to probation*

VARIATIONWINNINGPERCENTAGE was removed from the model due to colinearity, however Model (2), using VARIATIONRANK indicated that teams who experienced success two years ago (in reference a year of data) were more likely to be on probation. This seems to indicate that there was significance to the variability of success and a team's probationary status. As mentioned earlier, this conclusion makes sense because cheating should give you an advantage; if there were on noticeable advantage before a team received penalties then the motivation for cheating would have had to be drawn into question.

Conclusions, Cartel Theory and Future Research

If Fleisher et al. had nine conclusions, this study has eight: involvement with a Big Six conference increases the probability of probation, furthermore the more successful a team is amongst the Big Six the more likely they are to be on probation; the NCAA non-complicity of other sports at an institution increases the probability of probation; having a long tenured head coach decreases probation probability; if a school preformed abnormally well two years ago, there is an increased chance they are on probation; there is a possible relationship between lower institutional academic achievement and higher probabilities of probation; and finally, there is a possible relationship between changing conferences and the decreased likelihood that a school is on probation.

When assessed against the theoretical backdrop provided by Cartel Theory and Fleisher et al., the results of this study provide mixed results. Fleisher et al. proclaimed that the "powerhouse schools" – generally considered the Big Six - use the NCAA Enforcement arm to keep less powerful schools from achieving athletic success so that they can continue to reap the monetary benefits amongst themselves. The picture painted by the results of this study provides the evidence of a much more equitable system. Despite finding that teams experiencing success two years prior are more likely to be on probation (Fleisher et al. considered these schools as up-and-comers trying to break into the power structure with athletic achievement; the likes of which NCAA Enforcement was meant

to keep from succeeding.), the much more clear and far reaching conclusion was that if an institution is amongst the elite conferences –even the ultra-elite amongst those conferences – they are more likely to be on probation.

Times have changed significantly since the study conducted by Fleisher et al. Their study was unable to collect even general information on previous NCAA rules violations despite extensive inquiry while researchers involved in this study were simply able to log on to the NCAA website and view an entire enforcement action history. This is indicative of a larger shift of monitoring rules violations as well. During the previous study, word of mouth seemed to be a large impetus for many enforcement investigations while now the NCAA relies on media discovered on social media websites. While the NCAA certainly seems to satisfy the definitional requirements of a cartel – firms agreeing to restrict output and input – it certainly is not completely controlled by those “at the top” to the extent that they are free from penalties when they break the rules. Violations continue to occur at schools that routinely bring in the most revenue to the entire entity. If documented violations happened this extensively or frequently in other cartels, the result would most certainly be disbandment of the cartel like many of those studied by Levenstein & Suslow (2006). In this sense, the NCAA is not like other cartels because of its ability to withstand constant violation of its established restrictions. Administrators and coaches seem to recognize that many of the violations that occur “could just as likely have happened to us” because of a reliance on teenagers to conduct much of their business.

Future research should look into the role of a “culture of compliance” existing within a department and how critical it is to maintain that culture to prevent a rash of violations occurring at one institution. It would also be valuable to delve into the specifics of each enforcement action and to what extent the school/institution was at fault, to what extent the coach was at fault and to what extent the student-athlete was at fault in each case. This could provide significant insight into each violation as well as provide for a clear categorization of violations.

APPENDIX A

	YEAR	PROBATION	PROBATION RATING	ENTEREDFBS	INSTITUTIONS WITHIN	ACADMICREPUTATION	ENROLLMENT
VARIATIONRANK	0.0345	-0.0194	-0.0126	0.0963	0.0099	-0.0699	0.0734
RANKPERCENTAGE	0.0852	-0.1084	-0.1222	-0.3229	0.116	0.2768	-0.2573
FINALRANK	0.0852	-0.1084	-0.1222	-0.3229	0.116	0.2768	-0.2573
SIMPLERANK	-0.007	0.1325	0.1394	0.4267	-0.1295	-0.3615	0.3243
YEARS SINCE FOUNDING	0.1039	0.0772	0.0613	0.4044	0.3446	-0.3014	0.1612
TENURE OF COACH	-0.06	-0.0069	-0.0013	0.017	-0.0474	-0.1187	0.1293
ALL AMERICANS	-0.012	0.1002	0.0928	0.1978	-0.0707	-0.1985	0.2198
CONFERENCE CHAMPIONSHIPS	0.0229	0.0779	0.1071	0.3962	-0.1444	-0.2911	0.3179
BIG SIX	-0.092	0.1713	0.1823	0.5773	-0.0709	-0.5193	0.4643
STADIUM SIZE	0.0151	0.1471	0.1583	0.4968	-0.0718	-0.4687	0.4724
CHANGE IN CONFERENCE	-0.081	-0.0432	-0.0113	-0.1801	0.1421	0.1445	-0.0867
VARIATION WINNING PERCENTAGE	-0.001	0.0307	0.0407	-0.0051	0.0384	-0.0022	-0.0303
WINNING PERCENTAGE	0.0251	0.0688	0.0712	0.1656	-0.0714	-0.1196	0.1326
OTHER SPORTS PROBATION	0.009	0.2137	0.1929	0.0215	0.0455	0.0219	0.078
ENROLLMENT	0.0647	0.1095	0.1322	0.1397	-0.0754	-0.1085	1
ACADEMIC REPUTATION	0.1149	-0.076	-0.0864	-0.6414	0.0469	1	
INSTITUTIONS WITHIN	0.0462	-0.0005	-0.0039	-0.1354	1		
ENTERED FBS	0.0723	0.1261	0.1319	1			
PROBATION RATING	0.05	0.9132	1				
PROBATION	0.0524	1					

[illegible]

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