THE ACADEMIC PROGRESS RATE AND THE FACTORS THAT AFFECT SCORES FOR FOOTBALL AND MEN'S BASKETBALL TEAMS

by

SCOTT ANTHONY RIZZO

(Under the Direction of James C. Hearn)

ABSTRACT

Part of the responsibilities of the National Collegiate Athletic Association (NCAA) relates to academics of student-athletes. The NCAA currently has a sliding scale of high school GPAs and SAT/ACT scores is in place, and a student-athlete must fall somewhere on the scale to be admitted to an institution. However, the NCAA had previously not had a mechanism in place to track student-athlete academic progress while they were enrolled. In 2004, the NCAA introduced the academic progress rate (APR) to track the progress of student-athletes, and a score is assigned to each individual team. Successful teams with high APR scores are publicly commended, but those with low APR scores face potential penalties.

This study aims to look at the APR scores for football and men's basketball teams in the Division I Football Bowl Subdivision (FBS) and discern what characteristics, both organizational and financial, are associated with those scores. It also looks at a group of teams in each sport that have the lowest APR scores, which are termed to be in "APR trouble," and determines what

characteristics are associated with this low performing group, and if increased financial investment helps these teams more than other teams not in this group. Finally, it looks to see of previous financial investment leads to change in later versions of APR scores

The results show that APR scores themselves have been steadily increasing from year to year, that graduation rate and athletic spending per athlete are associated with the APR scores of football teams, and that institutional funding for athletics per athlete is associated with the APR scores of basketball teams. In addition, those teams in APR trouble are typically part of the lower resourced “Group of 5” conferences in Division I FBS, are typically public institutions, and typically smaller than the non-trouble counterparts. Although financial investment for APR trouble teams did not have the expected effects, institutional funding for athletics in years prior did show some association with models in both football and basketball.

INDEX WORDS: academic progress rate, APR, NCAA, football, men’s basketball, Division I, FBS

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DEDICATION

This dissertation is dedicated to my grandparents, Joseph and Marie Rizzo, William and Doris Lewis, Grover Cook, James Nichols, and Sara Cook Nichols. Grandpa, MaMaw, Papa, Grammie, PawPaw, Grandpa Jim, & MawMaw: Thank you for all the time you spent with me growing up. I'm not the man I am today without you.

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CHAPTER 1

INTRODUCTION

Intercollegiate athletic departments have been referred to as the “front porch” because of the visibility they provide for the university, which includes large on-campus stadiums, television coverage, and big-name coaches (Thelin, 2004). High levels of visibility invite scrutiny from internal and external stakeholders in any sort of enterprise, and athletics has not been immune. Scandals, including the use of non-students on teams, have rocked intercollegiate athletics since even before the 20th century (Thelin, 1994). However, intercollegiate athletics provide several benefits to the institutions. Football and men’s basketball (and sometimes other sports) provide a community-building experience that ties students, employees, alumni, and residents together (Toma, 2003). For those teams that are on TV, athletics provides institutional exposure to a national audience. In recent years, younger institutions like Florida Atlantic University and Georgia State University have started football to help transition the universities from “commuter” schools to places with more on-campus residents and a more traditional campus feel (Toma, 2003).

Over the years, the National Collegiate Athletic Association (NCAA) has come under fire for many of its policies related to intercollegiate athletics and student-athletes (Crowley, 2006). For instance, even though many institutions

produce millions of dollars a year in revenue-generating sports (typically football and men's basketball), student-athletes in those sports only receive full tuition and fees as compensation (NCAA, 2012c). A series of stringent rules prevent student-athletes from holding jobs (generally) and receiving financial benefits or loans from private parties (NCAA, 2012c). When rules are broken, it brings negative publicity and sanctions to the institutions and student-athletes involved (Crowley, 2006).

One major challenge for student-athletes is remaining eligible according to NCAA regulations (NCAA, 2012c). As mentioned in the previous paragraph, student-athletes must maintain their amateur status to keep their eligibility (NCAA, 2012c). In addition, student-athletes must remain academically eligible to be able to play each season (NCAA, 2012c). This can be a challenge, as many student-athletes in the revenue-generating sports come from families with lower socioeconomic status (Davis, 1996). Likewise, these athletes are often zoned to the lower-achieving high schools so they do not have the same academic opportunities (Davis, 1996). As a result, they often enter college with low GPAs and SAT scores and are not fully prepared for college-level academics (Davis, 1996).

To respond to the question of academic ability and performance, the NCAA introduced a series of reforms over the last 100 years (Crowley, 2006). Initially, reforms focused on requiring high school diplomas to enter college, then focused on a specific number and type of courses, and eventually emphasized specific GPA and SAT/ACT requirements (US Congress, 1992). Today, a sliding

scale of high school GPAs and SAT/ACT scores is in place, and a student-athlete must fall somewhere on the scale to be admitted to an institution (NCAA, 2012b). In addition, institutions are judged on their graduation rates for student-athletes as a means to see if these athletes are being properly educated and earning a degree in a timely fashion (NCAA, 2012d). A percentage is given to each athletic department corresponding to the number of student-athletes who graduate within a six-year period (NCAA, 2012d).

The most recent academic reform introduced by the NCAA is the Academic Progress Rate (APR) (NCAA, 2012a). This reform, instituted in 2004, differs from graduation rates in a few respects (NCAA, 2012a). The graduation rate is given to an entire athletic department, whereas the APR gives a score for each sport at a given institution (NCAA, 2012a, c). Disaggregating scores for different sports counteracts the effect of student-athletes in upper-crust sports (golf, tennis, etc.) that help to raise the overall athletic department graduation rate (NCAA, 2012a, c). Secondly, the APR monitors the academic progress of student-athletes throughout their collegiate experience, not just a final judgment upon graduation (NCAA, 2012a). Before the APR, the only monitoring of student-athletes progress was done on an individual athlete level through an athletic department (Crowley, 2006). Now, the NCAA also tracks student-athlete and team academic performance each year (NCAA, 2012a). Finally, the APR also helped to alleviate the unfair circumstance of a student-athlete transferring or entering a draft early and hurting a team's GSR (NCAA, 2012a). Now, if the

student-athlete is in good academic standing upon departure, it does not count against the original team (NCAA, 2012a).

Another major change brought on by the APR was the introduction of definitive penalties for substandard scores (NCAA, 2012a). Previously, institutions would report graduation rates each year, with some departments and teams receiving low scores, but no tangible consequences motivating institutions to make changes (NCAA, 2012d). Now, consistently low APR scores (the original cutoff score was 925, but was changed to 930 to better equate to a GSR below 50%) could mean loss of scholarships, loss of practice time, and banishment from participation in postseason championships (NCAA, 2012a). As a result, athletic departments have been forced to take these new APR guidelines seriously and ensure their teams are gaining strong APR scores.

For institutions and athletic departments, questions about the APR center on how to ensure that their teams are meeting the academic standards. Since the inception of the APR, many institutions have had trouble maintaining the minimum scores. (NCAA, 2012a). In this dissertation, I focus on the institutions that have had APR trouble in either football or men's basketball. These two sports were chosen because they are the two most popular sports at most institutions and provide the most revenue generation. Being penalized in these sports provide a larger and more visible impact to the institution than a penalty in a non-revenue generating sport.

The purpose of this study is to answer these research questions:

1. What are the characteristics of institutions that are most/least likely to have lower APR scores?
2. What organizational and financial factors are associated with institutions' APR scores?
3. Will institutions in APR trouble experience greater improvements from financial investment as compared to those that are not in APR trouble?
4. Do APR scores appear to change based on earlier financial investments?

CHAPTER 2

REVIEW OF THE LITERATURE

This chapter provides a literature review of the background history of academic reforms in athletics. This includes the inception of athletics on college campuses, academic reforms that were instituted by institutions themselves, as well as the academic reforms put in place by the NCAA. This overview provides a greater understanding for the context and lead up to the NCAA's most recent academic reform, the APR. This review discusses, in detail, the various facets of the APR and how it differs from previous NCAA academic reforms.

The Early Years of Intercollegiate Athletics

Athletics, like other extracurricular activities on college campuses, were originally initiated and managed by students (Smith, 1998). The idea of student-run athletics made faculty uneasy. For instance, although they wanted students to get healthy exercise, they were concerned that intercollegiate athletics could lead to educational abuses (Smith, 1988).

There were many justifications for the rise of intercollegiate athletics on college campuses. For one, athletics emphasized character and teamwork, which were at the heart of the "collegiate ideal" (Thelin, 2004). Athletics also helped to promote institutional unity, which had been waning (Thelin, 2004). Camaraderie amongst students was no longer as great because of increased

enrollments and the advent of the elective system (Rudolph, 1962). Football brought the student body and alumni together with a common interest. In addition, riots and brawls were once a commonplace occurrence on college campuses, but the emergence of football helped channel that energy in more controlled ways (Veysey, 1965).

In the late 19th century, faculties would typically take a wait-and-see approach regarding athletics. They did not want to get involved and they allowed students, and later alumni and athletic associations, to do most or all of the administration for intercollegiate athletics (Rudolph, 1962). However, if they felt that athletics were having a negative effect on academics or were putting the institution in poor standing, the faculty would take up their paternalistic role and curtail athletic activities (Smith, 1988). Some of the actions that the faculty would take included limiting or banning games off campus, not allowing student spectators to accompany teams off campus, restricting the days, times, and amount of games teams could play, not allowing class or religious activities to be missed for athletic activities, and many other restrictions (Smith, 1988). Every college was different as to how their faculty chose to make and enforce these rules, with some being stricter than others.

Unfortunately, intercollegiate athletics struggled with corruption through the late 19th century and early 20th century. Abuses included enrolling players for the sole purpose of athletics, the giving of unauthorized gifts to players by alumni and coaches, and illegal recruiting of players by coaches and alumni. These

abuses threatened the integrity of the academic institutions that sponsored the teams.

To help oversee athletics, universities began forming faculty athletic committees. Some of the earliest of these emerged at Princeton and Harvard (Smith, 1988). Some of the accomplishments of these faculty committees included proposing regulations, suggesting times and places of contests, setting absentee guidelines, approving coaches, limiting associations with professionals, and many others (Smith, 1988). By the turn of the century, faculty athletic boards existed at many institutions of higher learning, although many added students and alumni to the committees for expertise in the sports and their influence warranted a place on the committee (Smith, 1988).

Southern Conference Academic Requirements

Athletic conferences also helped oversee athletics and tried to bring forth rules within and outside the sports. The earliest example of this in the South was a group called the Southern Intercollegiate Athletic Association (SIAA). The SIAA came into existence on December 21, 1894, with seven charter members (Saylor, 1993). The SIAA attempted to set some eligibility guidelines and help to run some intercollegiate tournaments (Saylor, 1993). The “one-year rule,” which banned freshmen from intercollegiate competition and favored the larger institutions that did not have issues with numbers of players, became the major disagreement within the group (Saylor, 1993). The SIAA eventually splintered, and the Southern Intercollegiate Conference (SIC), later known as the Southern

Conference, was created and started operating during the 1921-1922 school year (Gurr, 1999). This new conference established more strict guidelines regarding intercollegiate athletics, and most specifically, student eligibility. It started with requiring that any member institution had to require 15 Carnegie units (classes) from an accredited high school (SIC Rules, 1922). Other rules stated that students must be "bona fide" and enrolled and doing full academic work, must wait twelve months to compete in games, could not be transfers from other schools (to close the "tramp" issue), could only compete for three years in a five-year span, could not receive compensation or gifts, and could not be delinquent from studies (SIC Rules, 1922).

The NCAA and the Carnegie Report

The National Collegiate Athletic Association (NCAA) was another significant organization that dealt with student eligibility issues. Letters by college presidents to national magazines like Harper's and the Saturday Evening Post detailed many abuses in intercollegiate athletics, such as the use of professionals, paying of athletes, and the lack of scholastic achievement by athletes (Thelin, 1994). Newspapers reported stories in the same vein. A review of the situation in intercollegiate athletics was long overdue, since many of these abuses had been occurring back in the 19th century. Finally, at the NCAA conference on December 29-30, 1925, the members decided to have the Carnegie Foundation study and submit a report on intercollegiate athletics to see just how bad things had become (Snelling, 1926).

In the end, 130 schools, colleges, and universities were visited (some multiple times) and a data sheet with the individual findings for each institution was sent to the presiding officers (Savage, 1953). However, Henry S. Pritchett, the president of the Carnegie Foundation at the time, realized how sensitive the information in this report was and did not distribute a proof of the report prior to publish to anyone, even though that was his standard operating procedure (Thelin, 1994). The report, known as “Bulletin Number Twenty-three,” was released on October 24, 1929 and received widespread attention in newspaper columns, speeches and other special articles, all coming out on both sides of the arguments (Thelin, 1994). The report encouraged schools to follow existing law more closely and brought up abuses in student eligibility, recruiting, and compensation of players (Savage, 1953). Savage felt that this report, along with a report by Flexner on medical education, were the two most controversial reports that the Carnegie Foundation ever published (Savage, 1953) However, some felt that the contents of the report were overblown, and that most of the report lacked the propaganda that the media made it seem like it included (Mendell, 1930).

The NCAA and Academic Requirements for Athletes

From its inception in 1906, the NCAA has tried to gain more power to help govern intercollegiate athletics (Crowley, 2006). The Carnegie report brought attention to many of the issues within intercollegiate athletics. The NCAA then made rules for its national championships in 1939, which included making

freshmen ineligible to play in a championship but eligible to play regular season games (US Congress, 1992). Then came World War II, when many athletes went to war and the service academies fielded dominant teams in the era, allowing attention to divert from any scandals that were occurring (Crowley, 2006). However, following the GI Bill and the massive influx of students and potential athletes to US universities, scandals returned and the NCAA needed to deal with the problems (Crowley, 2006). In 1948, the NCAA passed the "Sanity Code," which put into place guidelines on financial aid, recruitment, academic standards for athletes, institutional control, and amateurism (Crowley, 2006). Unlike previous codes and laws, the Sanity Code gave the NCAA the ability to expel members who did not comply with the rules. Unfortunately, when they tried to expel seven members for recruiting violations, the two-thirds majority needed for expulsion was not met, the Sanity Code as constituted was repealed, and the seven violating programs were simply declared "not in good standing" (Crowley, 2006).

In the second half of the 20th century, the NCAA finally began to make clear guidelines for academic requirements in intercollegiate athletics. The first requirement, in 1964, stated that incoming freshmen receiving athletic-related financial aid needed a high enough high school GPA and standardized test score to "predict" and 1.6 GPA in college (US Congress, 1992). This proposal was controversial for a couple of reasons. Many thought that a standardized test score should not be used in the measure, as there was some discussion that the tests were biased against minorities. In addition, putting a formula together that is

supposed to “predict” a 1.6 GPA is difficult. As a result, in 1972, the rules were changed and incoming freshmen simply needed a 2.0 high school GPA and a standardized test score was not needed (US Congress, 1992).

The NCAA policy concerning academic progress of athletes was always left up to the individual institutions to determine. However, in 1981, the NCAA decided to make basic minimum guidelines for the academic progress of athletes. These included requiring the completion of an average of twelve hours per semester as well as requiring student-athletes to choose a major by their 3rd year (US Congress, 1992). Athletes could take classes in the summer to make up credits if classes were failed during the academic year.

In 1986, Proposition 48 went into effect to tighten the requirements for incoming freshmen student-athletes (US Congress, 1992). The guidelines became a 2.0 GPA in 11 core high school classes as well as a 700 SAT score or a 15 ACT score (US Congress, 1992). These changes tightened two different problem areas. The previous rules allowed a cumulative 2.0 GPA in all classes, which allowed the GPA to be fluffed by good grades in physical education and other non-academic courses. By requiring the 2.0 GPA to be in 11 core courses, students would have to achieve a strictly academic 2.0 GPA. In addition, given the variation in education from high school to high school, requiring a minimum standardized test score allows the NCAA to compare students on a standard scale. Again, complaints came, especially on the standardized test score portion. Therefore, the NCAA allowed schools to accept “partial qualifiers” and put them on athletic scholarship until they became fully qualified (US Congress, 1992).

However, this was later changed and partial qualifiers could only receive need-based aid. Eventually, the NCAA got rid of partial qualifiers altogether and those students need to attend prep school or junior college to become eligible for NCAA competition and financial aid.

In 1989, legislation introduced by former athlete Bill Bradley and others was passed that required institutions to report graduation rates by race, sport, and sex (US Congress, 1992). Although NCAA already had a rule in place that forced its membership to report information back to the organization (including graduation rates, admissions information, and satisfactory progress data), the members did not want to have to report that sort of information to the US Government. Therefore, although the NCAA initially balked at the 1989 legislation, it decided to follow the guidelines and the US government began to receive important data on student-athletes.

In 1991, the Knight Commission published a report that brought attention again to abuses in the NCAA (US Congress, 1992). The biggest academic issues brought up included the lower than average graduation rates for athletes in the revenue-producing sports (football and men's basketball) as well as the low graduation rates for minority athletes in general (US Congress, 1992). In response, the NCAA introduced new academic guidelines. Effective in 1995, students needed a 2.5 GPA in 13 core courses as well as a 700 SAT or 18 ACT (US Congress, 1992). However, the NCAA also put a sliding scale into place. A student-athlete with an 800 SAT or 21 ACT would only need a 2.25 GPA and a student-athlete with a 900 SAT or 23 ACT would only need a 2.0 GPA. In

addition to entrance requirements, the NCAA also tightened rules on academic progress. Students needed to complete 25% of their degree requirements by their third year, 50% by their fourth year, and 75% by their fifth year (US Congress, 1992). Student-athletes also needed a GPA equal to 95% of the average needed for graduation by the third year and needed the full average by the fourth (US Congress, 1992).

Once again, the NCAA contended that using the combination of high school GPA and standardized test scores was the most accurate way to predict college success, despite objections that the tests are biased against minority students (US Congress, 1992). The NCAA also argued that the bare minimum test scores that a potential student-athlete would need to have any chance for success in college is a 700 SAT or 18 SAT, which is why they did not index the scale to include higher GPA with test scores lower than those minimums (US Congress, 1992). By increasing these standards, the hope was that graduation rates would increase for student-athletes.

Over the next decade or so, minor adjustments were made to the entrance requirements and academic progress guidelines. Today, the academic requirements are stiffer than ever before. Student-athletes must complete 16 core courses and have an acceptable ratio on a more comprehensive GPA/SAT sliding scale, which requires a 2.0 GPA to have at least a 1010 SAT but allows a 3.55 GPA to have an SAT score as low as 400 (NCAA, 2012b). In addition, athletes must complete 40% of their degree by their second year, 60% by their third year, and 80% by their fourth year (NCAA, 2012b). The NCAA hoped that

requiring more of student-athletes in high school and college, would increase their chances of successfully graduating with a college degree.

Athletics in the Modern University

In today's universities, intercollegiate athletics serves a variety of purposes. First, athletics fit with the concept of the collegiate ideal and has come to be a legitimate part of the modern university (Toma, 2003). When visitors arrive on a college campus for a tour, they expect to see green spaces, trees, old buildings with character, new buildings with state-of-the-art equipment, dorms, and libraries. Those same visitors expect to be told about the elite faculty, top-notch academic advisors, and cutting-edge research being done at the university. However, no college tour would be complete without a visit to the athletic facilities, including the basketball arena and the football stadium. Visitors are regaled by tales of campus tailgating, a football stadium packed with tens of thousands of fans, and postgame celebrations downtown. Athletics are a part of the collegiate ideal and are intertwined with life on a college campus.

Although football and men's basketball are part of the collegiate ideal at most American universities, many of the traditions that are connected to the athletic events are unique to each university. Athletics provide a specific institutional culture through symbols, rituals, and songs (Toma, 2003). The University of Miami has the famous "U" on the helmet. The University of Georgia has the famous "Uga" bulldog mascots. The University of Michigan plays "Hail to the Victors" after every touchdown. Each of these is an easily identifiable cultural

symbol or ritual that each student and university community member learns while they are at the university.

Because of this cultural indoctrination, intercollegiate athletics help connect the university community together (Toma, 2003). Football Saturdays bring the community together in a way that no other university event does. Not only is it an event that brings currently enrolled students together, but it also brings alumni back to campus to re-experience their youth. It is not a coincidence that homecoming events are always scheduled on a weekend when there is a home football game.

This sense of community around the major spectator sports not only leads alumni to return to campus, but it also leads to those same alumni donating large sums of money to the university. The largest and most lucrative athletic departments, such as those in the SEC and Big Ten conferences, force an annual donation for the privilege to buy season tickets each year, which can raise millions of dollars each season (Clotfelter, 2011). Obviously, not all (or even most) universities earn those kinds of dollars, but most universities are able to leverage spectator sports for some financial gain. Typically, the money made from spectator sports will be able to fund most or the rest of the teams in each athletic department.

For the universities with large athletic departments, athletics can provide another benefit: national exposure. Universities like Penn State and Southern Cal are likely most known for their geographic location and their football prowess (Toma, 2003). Elite universities like Stanford and Duke get notoriety from

athletics that others like the University of Chicago or Emory do not (Toma, 2003). Success in football or men's basketball can turn a university that mostly serves a local community into one that might be able to recruit students from out of state.

The Academic Progress Rate (APR)

The most recent development of major importance in the area of academics in intercollegiate athletics is the introduction of the Academic Progress Rate (APR). The APR measures the academic performance of individual teams at higher education institutions. The APR is unique in that it has serious sanctions tied into poor academic performance of athletes. Teams lose points for not graduating players on time or having players leave an institution in poor academic standing. Sanctions for these offenses include loss of practice time for the team in question, loss of scholarships for the team, and banishment from postseason play.

The APR has a straightforward calculation. Each student-athlete who receives some amount of athletic scholarship receives one point for remaining is school and one point for remaining eligible academically (NCAA, 2012a). A team's points are added up and divided by the total points possible. That score is then multiplied by one thousand to yield the final total (NCAA, 2012a).

As an example, a football team grants the full 85 scholarships it is allowed as a Division I Football Bowl Subdivision member. Of these 85 players, 79 remain in school and are academically eligible, five remain in school but are academically ineligible, and one drops out and was academically ineligible, which

adds up to a total of 163 points. By dividing that total by 170 and multiplying the result by 1000, a solid APR score of 959 is determined.

The initial threshold score for an acceptable APR score was 925. If a team scored below a 925, they could lose up to 10 percent of their scholarships for the following season. However, if a team scored below a 900, more severe penalties kicked in. In Year 1, the team received a letter of warning to go with the same reduction loss as a sub-925 team. Year 2 yielded further scholarship restrictions as well a lost practice time. Year 3 resulted in a loss of postseason competition (NCAA tournament, bowl game, etc.). Finally, Year 4 resulted in a restricted status for the entire athletics program, where they are no longer considered Division 1. (NCAA, 2012a)

Today, teams must achieve a 930 four-year average APR or a 940 average in the most recent two years to be able to compete in NCAA postseason championships. This is now applied as the minimum standard immediately and not part of the progression of penalties. The NCAA is also able to apply further penalties if the teams remains below the minimum standard, including loss of practice time, coach suspensions, financial aid reductions, and even restricted NCAA status (NCAA, 2017).

CHAPTER 3

THEORETICAL FRAMEWORK

This chapter examines theories that might explain why colleges and universities try to achieve high APR scores for their institutions, cultural pressure that drives some institutions to have higher APR scores, and financial predictors that explain why some schools are more likely to have higher scores than others. This chapter begins with a discussion of neo-institutional theory, focusing on factors such as isomorphism and legitimacy as influences on the actions of institutions. The chapter then addresses cultural pressures, such as those from institutions' academic standards and norms. The chapter ends with a discussion of resource dependency theory's suggestion that financial constraints or advantages substantively may influence APR scores. Within each of these theoretical discussions, I suggest hypotheses regarding the nature and direction of influences on APR outcomes.

Neoinstitutional Theory

Neoinstitutionalsim was preceded by the historic conception of institutionalism by Philip Seleznick and his associates (DiMaggio & Powell, 1991a). There are many commonalities between the two, including limits on rationality by organizations due to external factors, strong relationship between organizations and their environment, and an emphasis on the power of culture to

shape organizational realities (DiMaggio & Powell, 1991a). However, there are differences between classic institutionalism and neoinstitutionalism. For instance, classic institutionalism considers only the local communities and the influences of that on an organization, whereas neoinstitutionalism considers nonlocal environments as an influence as well.

Meyer and Rowan (1977) expanded on classic institutional theory and introduced the ideas of scripts and schemas, institutional myths, and ceremonies. Since 1977, many other scholars built upon Meyer and Rowan's foundational works to define institutionalization as the process of developing social rules and norms, ceremonies, traditions, scripts and schemas, and institutional logics to introduce, develop, implement, and sustain organizations. All of this initially occurs because of constraints on organizations from the outside environment, which affect their structure and practices and result in conformity to social rules, norms, and expectations.

Isomorphism

DiMaggio and Powell (1991b) suggest that organizations that experience similar environmental factors tend to resemble each other, and that phenomenon is known as isomorphism. Meyer and Rowan (1977) suggest that isomorphism is valuable to the success and sustainability of an organization. Through isomorphism, institutions create rational myths and legitimacy that have the power to force conformity and prevent too much variety among the different colleges and universities. DiMaggio and Powell (1991b) also describe

isomorphism as a “constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions” (p. 66), which explains why universities conform to NCAA policies and regulations. In a typical market environment, isomorphism naturally occurs through competitive forces (DiMaggio & Powell, 1991b) that drive institutions to norm. Given modern economic and social constraints of scarce resources, organizations compete for political power and legitimacy. However, in higher education, institutional factors must also be considered, as universities compete for political power and legitimacy (DiMaggio & Powell, 1991b).

Coercive Isomorphism and Legitimacy

There are three ways that institutions exhibit isomorphic behaviors and patterns- coercive, mimetic, and normative. Coercive isomorphism occurs through either formal or informal pressures exerted on organizations by other organizations (DiMaggio & Powell, 1991b). These pressures can be actual force, persuasion, or invitation (DiMaggio & Powell, 1991b). Organizational change can occur in direct response to a government mandate (DiMaggio & Powell, 1991b). In this context, the creation of the APR is a form of coercive isomorphism, as the NCAA (acting as the “government” in this case) is exerting formal pressure on organizations to create a specific environment. The NCAA’s hope is that those institutions and teams that are already doing a good job educating their student-athletes will have another measure with which to demonstrate this success (NCAA 2012a). Those institutions that are not successful will have a clear

mandate to improve. In this way, the official and external pressures of the NCAA to promote academic success of student-athletes is incentivized and enforced through the APR policy.

The idea that coercive isomorphism would lead to institutions making changes also lead to the first hypothesis related to lower performing teams in APR scores:

Hypothesis 1: Those teams in APR trouble will have strong similarities in conference strength, institutional control, size, and academics.

Institutions are dependent on the NCAA to provide legitimacy for their athletic pursuits. Legitimacy, both a process of institutionalization and an outcome, is included in many studies of institutional theory. Covaleski and Dirsmith (1988) draw upon earlier theorists to define institutionalization as, “the processes by which societal expectations of appropriate organizations form and behavior come to take on rule-like status in social thought and action. These expectations, in turn, gain wide acceptance, are adopted by the individual organization, and help legitimate its existence” (p. 562). When new programs are introduced, old ones changed, or inefficient ones eliminated, organizations seek legitimacy to gain acceptance and support from other organizational actors. Once programs are institutionalized through taken-for-granted values, scripts, ceremonies, and institutional myths, they achieve a sense of legitimacy (Meyer and Rowan, 1977; DiMaggio and Powell, 1991b). Legitimacy is a key concept

within the study of neo-institutional theory because it focuses on the cognitive understanding of actors and success of an organization or program does not rely on rationality or efficiency, but on the understanding that it is appropriate and trustworthy.

Mimetic Isomorphism

When organizations are uncertain of what to do, they will often imitate what other organizations are doing. This behavior is known as mimetic isomorphism (DiMaggio & Powell, 1991b). The behavior is also often referred to as modeling. The organizations that are being modeled do not necessarily know that it is happening, nor is it necessary for them to know. For the organization that is modeling them, they are simply a convenient source of useful practices and behaviors (DiMaggio & Powell, 1991b). Typically, the organizations that are being modeled will have as much or more legitimacy as compared to the institutions that are doing the modeling.

Regarding the APR, given that it has now been around for more than a decade, organizations have begun modeling themselves after other successful organizations. One example of this is that athletic departments are hiring more academic advisors and tutors to help with schoolwork (Carodine, Almond, & Gratto, 2001) and support student-athletes in achieving academic success. Many are adding mentoring programs to make sure athletes have support and stay organized (Carodine et al, 2001). Other departments are consolidating all academic support operations for athletes to a single building or section of a

building and essentially removing the student-athlete from the rest of the student body (Carodine et al, 2001). It is possible that admissions practices have changed and institutions are more hesitant to admit a student-athlete with low academic potential who could harm future APR scores. Over time, these athletic departments are looking more and more similar through legitimacy seeking strategies, just as neo-institutionalism and isomorphism would suggest (DiMaggio & Powell, 1991b).

Given these changes by institutions to improve their APR scores, this leads to the first hypothesis:

Hypothesis 2: The overall APR rates will increase over time

Normative Isomorphism

Normative isomorphism refers to behaviors associated with the formalization and professionalization of a field. Through this process, members of an organizational field, such as colleges and universities, network to regulate and define conditions and methods of work (DiMaggio & Powell, 1991b). In collegiate athletics, normative isomorphism developed through the creation of the NCAA and its subsequent rise to power and creation of rules and guidelines to govern college sports (Crowley, 2006). This resulted in the professionalization of academic support staff members and the increased development and financial support of academic centers for student-athletes (Carodine et al, 2001). In addition, organizations like the National Association of Academic Advisors for

Athletics (N4A) developed a professional organization to support academic advisors. As such, they have developed “Best Practices for Promoting and Maintaining a Culture of Student-Athlete Success, Accountability, and Academic Integrity” to inform the work of athletic academic advisors, thus providing guidelines and norms for professionals responsible for supporting the success of APR scores.

Institutional Culture

Organizations are not independent from the society in which they are embedded, and are subject to institutional controls in the form of history and norms and/or societal values (Miles, 1982). The NCAA has a history of amateurism, an ideal that is the basis by which society views student-athletes (Crowley, 2006). Under this ideal of amateurism, athletes should be legitimate students, and the APR is one way that the NCAA is trying to ensure this.

Miles suggests that for institutions to be effective, they must do both “well” and “good” (1982). The “well” is measured through their effectiveness and the “good” is measured by achieving this effectiveness through the context of societal values (Miles, 1982). In the context of this study, the “well” is the ability for athletic teams to achieve and maintain satisfactory APR scores. This can be accomplished through various means. Initially, institutions can choose to recruit student-athletes that are well-equipped out of high school to be successful in college, based on their grades and standardized scores (NCAA, 2012b). While student-athletes are enrolled, institutions can provide an environmental structure

that is conducive to academic success. Strategies typically include having student-athletes enroll for courses that they have a chance to be successful in, having required study hall and tutoring sessions, providing mentors to help provide study skills and accountability, providing technological resources that lead to success, and having academic advisors specifically assigned to student-athletes who monitor their progress and communicate regularly with professors (Carodine et al, 2001).

Neo-institutional theory suggests that the culture, schema, scripts, and rhetoric of the university will have some influence on the way in which policies like the APR are institutionalized on specific campuses (Meyer and Rowan, 1977). For example, depending on the academic prestige of the rest of the university, athletic departments may react in different ways to implementing the APR policy. Institutionalized culture denotes a specific property or state (Jepperson, 1991). Universities that have a highly-institutionalized culture typically have a long history, specific norms and values, and a more academic focus (Jepperson, 1991). Theoretically, this focus will be pervasive into all the different departments and facets of a university structure.

Take, for instance, the cases of Vanderbilt University and Florida International University. Vanderbilt is a historic university with a highly-institutionalized environment. Because of this, there are a few possibilities we can infer concerning the APR. First, Vanderbilt likely has a higher standard than the NCAA minimums for admitting student-athletes. Second, because of its culture, Vanderbilt would likely not have any issues achieving high APR scores.

Third, Vanderbilt will likely operate to ensure that they avoid low APR scores. In fact, for a period, Vanderbilt operated without an athletic department, as they felt this was a better approach to achieve their goals (Pope, 2008). Vanderbilt wants their student-athletes to be part of the standard student body, showing a desire to stay in their institutional patterns (Pope, 2008; Jepperson, 1991).

Florida International University (FIU) is a far less institutionalized institution, with a short history and a search for legitimacy through the adoption of football to correlate with their peer and aspirational institutions (Toma, 2003; DiMaggio & Powell, 1991b). As a result, FIU is likely less worried about APR sanctions, as they do not have the historic academic constraints that historic, more established, and more institutionalized universities have. FIU is attempting to gain legitimacy in athletics through success on the field. To do this, they may sacrifice strict academic standards for their teams to succeed on the field of play. The fact that FIU was given APR sanctions in football previously lends evidence to this argument.

This overall discussion of neoinstitutionalism, including isomorphism and institutional culture, leads to the second hypothesis:

Hypothesis 3: Universities that lack a historically strong academic reputation will be more likely to have teams with low APR scores.

Conversely, those universities that have an historic emphasis on academic will have higher APR scores, because the athletic department will want to conform to the overall traditions of the university.

Resource Dependency

The theory of resource dependency focuses on how external resources affect the behavior of organizations (Pfeffer & Salancik, 1978). Generally, this theory encourages readers to focus less on internal dynamics and leadership in organizations and instead focus on the environment that surrounds an organization and the pressures and constraints that come from that environment (Pfeffer & Salancik, 1978). The need for financial resources can make organizations dependent on the sources of those resources (Pfeffer & Salancik, 1978).

One way to apply this theory within intercollegiate athletics is through the relationship of an athletic department to the university. The university provides the budget for the athletic department, establishing a dependency relationship. Those institutions with smaller budgets will have limited resources to provide to their athletic departments. Athletic departments must then decide what items to devote to these limited resources. Those resources may include items that help student-athletes succeed in the classroom, such as academic advisors, tutors,

and mentors (Carodine et al, 2001). These limited resources could leave institutions more vulnerable to APR sanctions. One way to counteract this is to admit student-athletes with a greater chance for academic success. However, as mentioned in the FIU example, many institutions are seeking wins, so the temptation might be to admit an elite athlete with questionable academics rather than deny him.

Out of 119 Football Bowl Subdivision (FBS) institutions, less than 20 turn a profit in athletics (Perko, 2010). This select group of athletic departments are less dependent on the institution to provide them with their budget and resources. This makes it more likely that these institutions will provide the infrastructure that is typical of a successful academic operation in athletics.

This discussion leads to the third hypothesis:

Hypothesis 4: Institutions with fewer financial resources are more likely to have lower APR scores.

Resource dependency theory also states that, although organizations are constrained by their environments, there are opportunities, at times, to gain more autonomy to pursue interests or needs (Pfeffer & Salancik, 1978). Organizations cannot survive without effectiveness. In the case of athletics, universities with struggling athletic department may choose to invest more resources into those departments, at least temporarily, in hopes of jumpstarting success. This can apply to the actual on-field success of the teams, or, in this case, the academic

success of the teams. Financial resources could be used to hire more academic advisors, tutors, mentors, and other resources that could help boost the academic performance of student-athletes at a given university (Carodine et al, 2001).

This discussion leads to a fourth hypothesis:

Hypothesis 5: Institutions in APR trouble will experience greater improvements from financial investment as compared to those that are not in APR trouble.

Finally, institutions that invest financial resources to solve an issue often will not see positive results for a year or more. This idea connects to a final hypothesis:

Hypothesis 6: Earlier financial investments are associated with a change in later APR scores.

Table 1 shows a matrix of research questions and pairs them with the hypotheses that go with each research question.

Table 1: *Research questions and hypotheses*

Research Questions	**Hypotheses**
1. What are the characteristics of institutions that are most/least likely to have lower APR scores?	*Hypothesis 1: Those teams in APR trouble will have strong similarities in conference strength, institutional control, size, and academics.*
2. What organizational and financial factors are associated with institutions' APR scores?	*Hypothesis 2: The overall APR rates will increase over time* *Hypothesis 3: Universities that lack a historically strong academic reputation will be more likely to have teams with low APR scores.* *Hypothesis 4: Institutions with fewer financial resources are more likely to have lower APR scores.*
3. Will institutions in APR trouble experience greater improvements from financial investment as compared to those that are not in APR trouble?	*Hypothesis 5: Institutions in APR trouble will experience greater improvements from financial investment as compared to those that are not in APR trouble.*
4. Do APR scores appear to change based on earlier financial investments?	*Hypothesis 6: Earlier financial investments are associated with a change in later APR scores.*

Conclusion

Neoinstitutional and resource dependency theory provide a lens to create hypotheses to examine how universities respond to the NCAA's APR policies. The focus on the influence of outside entities on organizations and how they respond to those pressures and the coercive influence of the NCAA's mandate regarding APR scores causes university athletic departments to respond in ways to ensure that they achieve at least the minimum scores so as not to fall victim to penalties. This can influence the athletes that teams recruit, the difficulty level of

classes that student-athletes take, and the academic services that are provided to student athletes.

In addition, the overall university sometimes acts almost as an outside entity to athletic departments and those pressures also affects the behavior of athletic departments. These pressures include historical and cultural pressures as well and financial pressures. These pressures can help explain which athletic teams will be most likely to have trouble achieving the minimum required APR scores.

CHAPTER 4

RESEARCH DESIGN

The purpose of this study was to answer these research questions:

1. What are the characteristics of institutions that are most/least likely to have lower APR scores?
2. What organizational and financial factors are associated with institutions' APR scores?
3. Will institutions in APR trouble experience greater improvements from financial investment as compared to those that are not in APR trouble?
4. Do APR scores appear to change based on earlier financial investments?

APR Calculation Method

The APR measures the academic performance of individual teams at higher education institutions. The APR is unique in that it has serious sanctions tied into poor academic performance of athletes. Teams lose points for not graduating players on time or having players leave an institution in poor academic standing. Sanctions for these offenses include loss of practice time for the team in question, loss of scholarships for the team, and banishment from postseason play. (NCAA, 2012a)

The APR measures the academic progress of student-athletes while they are enrolled at a given higher education institution and assigns scores to each team based on this progress. Each student-athlete that receives athletic financial aid earns one point for staying in school and one point for being academically eligible. A team's total points are divided by the total points possible, and then multiplied by 1000 to give the APR score. Scores are calculated after each term, and a yearly score is created. However, the scores published by the NCAA and used for both commendation and punishment are a four-year average score. (NCAA, 2012d)

As an example of a calculated score, a football team has 85 total players on scholarship. Of those, 79 players were both academically eligible and remained with the school, which gives a score of 79 x 2 = 158. Three players were academically eligible, but left the school, so 3 x 1 = 3. Two stayed in school, but were academically ineligible, so 2 x 1 =2. One player left school and was academically ineligible, so 1 x 0 = 0. Overall, 158 + 3 + 2 + 0 = 165/170 = .971 x 1000 = an APR score of 971. (NCAA, 2012d)

Description of the Data

The study looks specifically at APR scores in football and men's basketball for the 119 institutions that were part of the Football Bowl Subdivision (FBS) of NCAA Division I football during the years of the study (2004-14). These are all the years of APR scores at the time of the analysis. These two sports were chosen because they are the two most popular sports at most institutions

and provide, by far, the most revenue for their respective institutions. A school that is penalized in these sports deals with a larger and more visible impact to the institution than a penalty in a non-revenue generating sport. Division I FBS is the highest level of football in the NCAA and where most revenues are made.

One portion of my overall dataset comes from the NCAA through the Interuniversity Consortium for Political and Social Research (ICPSR). The dataset includes APR rates for each individual year from 2004-2014. It also includes yearly eligibility and retention rates for each of those years, as well as number of athletes, and whether they received a penalty or award in a given year. The APR rates act as the dependent variable in the various models I used. I also used the years to create a time variable, which assigns a number value to each year (2004 = 0, 2005 = 1,…2014 = 11). This controls for time in the model, but also allows me to investigate my first hypothesis:

Hypothesis 2: The overall APR rates will increase over time

The APR scores from this source are different from the scores that are publicized each year by the NCAA. The publicized scores use an APR score that is a four-year average. However, the data for this study show the APR score from each individual year. The yearly scores are more useful for this study as they do a better job of showing changes from year-to-year in the scores as compared to a four-year average. For instance, a four-year average score could include two poor years of scores and two good years of scores to average out to a solid APR

score. With the individual scores, we can see the potential larger swings in year-to-year scores that the four-year average does not show.

Another portion of the dataset includes some institutional characteristics of the given institutions. The study looks at differences between public and private institutions as it relates to APR through the Private variable. It also compares those institutions that are part of the “Power 5” conferences in FBS, which include the Southeastern Conference (SEC), Atlantic Coast Conference (ACC), Big Ten, Big 12, Pac 12, and Notre Dame, to the rest of the FBS. These Power 5 conferences are the largest resourced, most influential athletic institutions and receive automatic bids to the most lucrative college football bowl games and the college football playoff. In earlier years of this study, the largest resourced schools were the ones that automatically qualified for the Bowl Championship Series (BCS) bowls. However, the vast majority of BCS schools are now also Power 5 schools, so there is no reason to use a variable for BCS schools.

Another portion of my overall dataset comes from the Knight Commission on Athletics, and it covers the years 2005-13. This study uses the variables related to the finances of universities and athletic departments. These variables include academic spending per FTE, athletic spending per athlete, and institutional funding for athletics per athlete. Utilizing variables that include a per-athlete and/or per-student calculation helps to control for the size of various athletic departments. The academic spending per FTE variable shows how much the institution spent per student on academics, which shows the priority and resources of academics at that institution. Athletic spending per athlete shows

the total amount athletic departments spend on athletics. This essentially shows which athletic departments are the wealthiest and spend the most each year. Theoretically, these athletic departments will have more money to spend on the things that help academic performance of student-athletes, including academic advisors, tutors, and mentors. The institutional funding for athletics per athlete variable shows how much the overall institution transfers to their athletic department to cover athletic spending. Typically, those athletic departments with fewer resources are the ones that require more money transferred from the overall institution. These variables are only available for the public universities in the overall dataset. The reason for the inclusion of these financial variables relates to two of my hypotheses:

Hypothesis 4: Institutions with fewer financial resources are more likely to have lower APR scores.

Hypothesis 5: Institutions in APR trouble will experience greater improvements from financial investment as compared to those that are not in APR trouble.

The final portion of my overall dataset comes from National Center for Education Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS) Data Center. The variables from IPEDS that are used for this study are percent of applicants admitted, percent of admitted applicants enrolled, FTE enrollment, and graduation rate. The FTE enrollment variable helps control for

size in the study, and the other three variables connect to the selectivity and academic standing of the institutions. The first two variables have data from 2006-13 and the last two have data from 2004-13. I chose these variables because they can help explain my second hypothesis:

Hypothesis 3: Universities that lack a historically strong academic reputation will be more likely to have teams with low APR scores.

Table 2 shows all the variables and includes the source, dates available, and a short description of each variable.

Table 2: *Description of variables used in analysis*

Variable	Source	Years	Description
Private	IPEDS	2004-14	Dichotomous variable indicating if an institution is private (1=Private)
Power 5	NCAA	2004-14	Dichotomous variable indicating if an institution is Power 5 (1=Power 5)
Time	ICPSR	2004-14	Time indicator, coded 0-11 (2004=0; 2005=1;…2014=11)
Academic spending per FTE	Knight Commission	2005-13	Academic expenditures per full-time equivalent
Athletic spending per athlete	Knight Commission	2005-13	Athletic expenditures per student-athlete
Institutional funding for athletics per athlete	Knight Commission	2005-13	Amount of funding provided by the institution to athletics per student-athlete
Percent of applicants admitted	IPEDS	2006-13	Percent of applicants that are admitted into an institution
Percent of admitted applicants enrolled	IPEDS	2006-13	Percent of admitted applicants who enroll in the institution
FTE enrollment	IPEDS	2004-13	Enrollment calculated by using full-time equivalent
Graduation rate	IPEDS	2004-13	Percent of student who graduate six years after that have first enrolled

Methods

The overall dataset is a panel dataset that contains time series data, which are data collected over a period, and cross-sectional data, which are data on one or more variables collected at one point in time. This dataset will allow for analysis for both between and within institutions over time. I logged each of the three financial variables to account for varying returns to scale. The assumption is that an institution spends their first dollar differently than they spend their *x*th dollar. These three variables are then interpreted as elasticities, meaning that the coefficients represent a percent change rather than the original dollar value. (Gujarati, 2009).

For the first research question, I categorized a group of institutions as being in "APR Trouble" that had an average APR score at or approaching the APR cutoff score of 930. For basketball, the group included all institutions with an average APR score below 930. For football, the group included all the institutions with an average APR score below 935, because there is less volatility in the football scores as compared to the basketball scores. The APR scores in football are less volatile than those in basketball because of the larger number of players on each team. Football at the FBS level can have up to 85 players on full scholarships, whereas basketball can only have up to 13. For the institutions in each group, I show their APR average, whether it is part of one of the Power 5 conferences, whether it is public or private, what the average FTE enrollment is, and what the average graduation rate is. I then looked for trends and patterns in

the data and compared them to the institutions that are not part of this group to understand what might make this group different.

For the second research question, I employed ordinary least squares (OLS) regression estimated using a fixed effects model. Fixed-effects modeling allows unobserved time-invariant institutional heterogeneity to be correlated with the explanatory variables in the model (Zhang, 2010). As a result, fixed-effects modeling limits the bias that results from omitted variables by removing the effect of unobserved time-invariant institutional characteristics (such as institutional prestige) on APR scores from the estimates. By controlling for possible unobservable and time-consistent institutional characteristics that may confound the relationship between APR and my independent variables, fixed effects can produce unbiased estimates. In removing institutional heterogeneity from the estimates, however, the effects of any time-invariant institutional characteristics are absorbed by the fixed effect. Because of this, categorical variables cannot be used in a fixed effect model, which is why all the independent variables discussed above (except for public/private and Power 5, which are not be used in this model) are variables that change from year to year.

For the third research question, I used the APR Trouble groups I created for the first research question. In Stata, I created a dummy variable, with "0" representing the schools that never experienced APR trouble and a "1" for those that have. I then used this variable to interact with the variables in my OLS regressions from the previous question. Because interaction terms must be interpreted in the context of both of the elements of the interaction—in this case,

an independent variable of interest and APR Trouble—the results of a series of F tests are also included in the tables that involve interactions. These tests indicated whether the two variables were jointly significant, and so provided a better guide to interpretation than did p-values for individual coefficients.

Finally, for the fourth research question, I lagged the independent variables. I did this to test the possibility that earlier versions of a variable can affect later APR scores. This model includes a lagged version of the APR score, which allows me to test whether earlier APR scores are associated with later APR scores, Although I lag all the variables, I am focused mainly on the financial variables, and most specifically, the two financial variables that are associated with athletics: athletic spending per athlete and institutional funding for athletics per athlete. An athletic department could choose to invest more or less money per student athlete or the overall institution could choose to fund athletics more or less based on the APR scores of football or men's basketball. These models connect to my final hypothesis:

Hypothesis 6: Earlier financial investments are associated with a change in later APR scores.

Several different factors contributed to the fact that I have a variety of models for the last three research questions. First, since there are separate APR scores for football and men's basketball, there are different models that use the football APR as the dependent variable and the men's basketball APR as the

dependent variable. In addition, the Knight Commission financial data does not include private institutions. Because of this, I created models that did not include the Knight Commission data and ones that did. Since the unavailable data in the Knight Commission set is the private school, the models that include the financial factors essentially are models that only show results for the public institutions in the data set. Because the two financial factors related to athletics are the variables of interest in the models that include interactions and all of the lagged models, I did not include models for those that did not include the financial factors.

CHAPTER 5

RESULTS

This chapter describes the results from the methods described in Chapter 4. I first discuss the descriptive analysis of the institutions that qualify as being in APR Trouble for football and men's basketball. I then discuss the regression results, which include models without and with the financial factors included, as well as models that include interactions with the APR Trouble institutions. Finally, I discuss the regressions where I use lagged independent variables to reveal if earlier versions of variables have a significant effect on a later version of the APR rate.

Descriptive Analysis

Table 3 shows the group of seventeen institutions that have an average APR score in football of under 935 for the period 2004-14. None of them are part of a Power 5 conference and only one (University of Tulsa) is a fully private institution. Given that all the institutions in Table 3 are part of the lesser-resourced "Group of 5" conferences, it may suggest that financial factors play a role in APR trouble. In addition, given that all but one of the schools on this list is fully public (Temple is a hybrid public/private institution), it may be that factors related to institutional control could play a role in APR trouble.

The average FTE enrollment for the institutions in Table 3 varies greatly, from a low of 3,915.7 (University of Tulsa) to a high of 31,432.5 (Temple University). The overall average FTE enrollment for the institutions in Table 3 is 19,838.8, compared to 23,758.9 for the rest of the data set, which is a 19.7% difference. This may suggest that institutions with smaller enrollments are more likely to be in APR trouble.

The average graduation rate for the institutions in Table 3 ranges from a low of 31.2 (University of Louisiana at Monroe) to a high of 64.6 (University at Buffalo, the State University of New York). The overall average graduation rate for the institutions in Table 3 is 46.2, compared to 67.1 for the rest of the data set, which is a 45.2% difference. This may suggest that institutions with lower graduation rates are more likely to be in APR trouble.

Table 3: *Institutions in football APR trouble*

Institution	APR Average	Power 5?	Public or Private?	Average FTE enrollment	Average Graduation Rate
University of Idaho	911.36	No	Public	10586.7	54.7
New Mexico State University	918.64	No	Public	14801.1	43.3
Florida International University	920	No	Public	31298.5	47.7
University at Buffalo, the State University of New York	923	No	Public	25450.1	64.6
Florida Atlantic University	927.27	No	Public	20006.3	39.3
San Jose State University	928.27	No	Public	25347.2	43.8
University of Louisiana at Monroe	928.55	No	Public	7327	31.2
Temple University	928.73	No	Hybrid	31432.5	62.6
Eastern Michigan University	932.09	No	Public	17506.6	38.7
University of Texas at El Paso	932.27	No	Public	16092.9	32.5
University of Akron	932.45	No	Public	20295.8	36
Troy University	932.64	No	Public	17483.6	41.7
San Diego State University	933	No	Public	28292.3	60.4

Institution	APR Average	Power 5?	Public or Private?	Average FTE enrollment	Average Graduation Rate
University of Louisiana at Lafayette	933.45	No	Public	14689.5	40.4
University of Nevada, Las Vegas	934	No	Public	22119.5	40.7
University of Houston	934.64	No	Public	30615.8	43.3
The University of Tulsa	934.73	No	Private	3915.7	63.8

Table 4 shows the group of twenty-one institutions that have an average APR score in basketball of under 930 for the period 2004-14. Only 4 institutions (University of Southern California; Auburn University; Louisiana State University; Iowa State University) out of 21 are part of a Power 5 conference and only one (University of Southern California) is a private institution. The low number of Power 5 institutions suggests that financial resources may factor into APR scores in basketball, with institutions with smaller financial resources more likely to be in APR trouble. However, the relationship might be stronger in football, where no Power 5 institutions were on the APR trouble list. Just like in Table 3, Table 4 only includes one private institution, suggesting that institutional control may play a similar role in APR trouble for basketball as it does for football.

The average FTE enrollment for the institutions in Table 4 varies greatly, from a low of 7,327.0 (University of Louisiana at Monroe) to a high of 32,896.4 (University of Southern California). The average FTE enrollment for the

institutions in Table 4 is 19,136.7, compared to 24,069.4 for the rest of the data set, which is a 25.8% difference. This may suggest that institutions with smaller enrollments are more likely to be in APR trouble. There is a larger percent difference for basketball (25.8%) as compared to football (19.7%)

The average graduation rate for the institutions in Table 4 ranges from a low of 31.2 (University of Louisiana at Monroe) to a high of 87.0 (University of Southern California). The overall average graduation rate for the institutions in Table 4 is 50.9, compared to 67.0 for the rest of the data set, which is a 31.6% difference. However, the University of Southern California is an outlier in this dataset. The next highest average graduation rate amongst the institutions in Table 4 is 67.9 (Iowa State University). Therefore, if you take the University of Southern California out of the calculation, the overall average graduation rate for the institutions in Table 4 is 48.7, which is a 37.6% difference. Overall, this may suggest that institutions with lower graduation rates are more likely to be in APR trouble. However, the difference may be more acute in football, where the percent difference (45.2%) was greater than either of the calculations above (31.6 percent difference with University of Southern California and 37.6 percent difference without them).

Table 4: *Institutions in basketball APR trouble*

Institution	APR Average	Power 5?	Public or Private?	Average FTE enrollment	Average Graduation Rate
University of Louisiana at Monroe	880.09	No	Public	7327.0	31.2
Florida International University	886.91	No	Public	31298.5	47.7
California State University, Fresno	893.73	No	Public	19249	47.6
New Mexico State University	901.73	No	Public	14801.1	43.3
Louisiana Tech University	909.27	No	Public	9180.6	48.6
University of Alabama at Birmingham	913.91	No	Public	13663.9	41.4
University of Wyoming	915.09	No	Public	10753.7	54.9
East Carolina University	915.64	No	Public	22311.6	55.7
University of Louisiana at Lafayette	916.91	No	Public	14689.5	40.4
Arkansas State University	917.73	No	Public	9692.7	37.4
San Jose State University	919.09	No	Public	25347.2	43.8
University of Houston	919.73	No	Public	30615.8	43.3
University of Southern California	921.55	Yes	Private	32896.4	87.0

Institution	APR Average	Power 5?	Public or Private?	Average FTE enrollment	Average Graduation Rate
University of Texas at El Paso	922	No	Public	16092.9	32.5
Auburn University	922.55	Yes	Public	22113.1	65.2
Louisiana State University	924	Yes	Public	28318.6	59.7
The University of Southern Mississippi	926.73	No	Public	13407.3	46.5
Iowa State University	927.27	Yes	Public	25964	67.9
Colorado State University	927.45	No	Public	24993.2	63.5
University of Idaho	929.09	No	Public	10586.7	54.7
Ball State University	929.09	No	Public	18568.8	56.7

Regression Analysis

The regression analyses for this dissertation are based on the sample of 119 Division I Football Bowl Subdivision institutions that compete in football and men's basketball. They are based on APR scores as the dependent variable, and a variety of academic, organizational, and financial factors as the independent variables. The regression analyses are geared toward answering my research question 2, which focuses on discerning which factors are associated with differences in institutions' APR scores.

Table 5 shows the results of the OLS regression with the non-financial factors. The football APR rate is the dependent variable in this model. The graduation rate and time variables are significant in this model. In the context of this model, a one-unit increase in graduation rate is associated with, net of other factors, a 0.6-point increase in the football APR rate. Based on the time variable, with each additional year, the football APR rate increased, net of other factors, by 2.6 points.

Table 5: *OLS regression of football APR rate with the non-financial factors*

VARIABLES	Football APR rate
Percent of applicants admitted	0.07
	(0.14)
Percent of admitted applicants enrolled	-0.08
	(0.17)
FTE enrollment (in 1000s)	-0.26
	(0.52)
Graduation rate	0.61**
	(0.24)
Time	2.61***
	(0.46)
Constant	903.50***
	(23.31)
Observations	929
Number of institutions	118
R-squared	0.11

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6 shows the results of the OLS regression with the financial factors included. The football APR rate is the dependent variable in this model. The graduation rate, time, and the log of athletic spending per athlete variables are significant in this model. In the context of this model, a one-unit increase in graduation rate is associated with, net of other factors, a 0.6-point increase in the football APR rate. Based on the time variable, with each additional year, the

football APR rate increased, net of other factors, by 2.1 points. In addition, a 1 percent increase in athletic spending per athlete is associated with a 15-point increase in the football APR rate.

Table 6: *OLS regression of football APR rate including financial factors*

VARIABLES	Football APR rate
Percent of applicants admitted	0.04
	(0.16)
Percent of admitted applicants enrolled	-0.01
	(0.19)
FTE enrollment (in 1000s)	-0.46
	(0.56)
Graduation rate	0.63**
	(0.27)
Time	2.10***
	(0.75)
Log of academic spending per FTE	17.14
	(10.65)
Log of athletic spending per athlete	15.02*
	(8.45)
Log of institutional funding for athletics per athlete	-1.50
	(2.49)
Constant	588.20***
	(133.90)
Observations	719
Number of institutions	95
R-squared	0.15

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7 shows the results of the OLS regression with the non-financial factors included. The basketball APR rate is the dependent variable in this model. Time is the only significant variable in this model, as opposed to the football version of this model (Table 5), where graduation rate is also significant. Based on the time variable, with each additional year, the basketball APR rate increased, net of other factors, by 5.9 points, which is larger than the 2.6-point increase in the football model.

Table 7: *OLS regression of basketball APR rate with the non-financial factors*

VARIABLES	Basketball APR rate
Percent of applicants admitted	0.10
	(0.29)
Percent of admitted applicants enrolled	0.49
	(0.36)
FTE enrollment (in 1000s)	-0.01
	(1.1)
Graduation rate	0.28
	(0.51)
Time	5.92***
	(0.96)
Constant	873.90***
	(48.83)
Observations	937
Number of institutions	119
R-squared	0.09

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8 shows the results of the OLS regression with the financial factors included. The basketball APR rate is the dependent variable in this model. Time and the log of institutional funding for athletics per athlete variables are significant in this model. Although the time variable is significant in both the football and basketball versions of this model, in the football version (Table 6), the other significant variables are the graduation rate and the log of athletic spending per athlete.

Based on the time variable, with each additional year, the football APR rate increased, net of other factors, by 4.9 points. This is a much larger increase than the 2.1-point increase in Table 6. In addition, a 1 percent increase in institutional funding for athletics per athlete is associated with a 12.2-point increase in the basketball APR rate.

Table 8: *OLS regression of basketball APR rate including financial factors*

VARIABLES	Basketball APR rate
Percent of applicants admitted	0.11
	(0.33)
Percent of admitted applicants enrolled	0.65
	(0.40)
FTE enrollment (in 1000s)	-0.69
	(1.20)
Graduation rate	0.00
	(0.56)
Time	4.93***
	(1.59)
Log of academic spending per FTE	21.58
	(22.22)
Log of athletic spending per athlete	20.10
	(17.92)
Log of institutional funding for athletics per athlete	12.20**
	(5.28)
Constant	351.00
	(281.10)
Observations	727
Number of institutions	96
R-squared	0.11

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9 shows the same model as Table 6, but it includes the interactions of the independent variables and the APR Trouble dummy variable. Time and the log of institutional funding for athletics per athlete variables are significant in this model. Based on the time variable, with each additional year, the football APR

rate increased, net of other factors, by 2.7 points. In addition, a 1 percent increase in institutional funding for athletics per athlete is associated with a 42.8-point decrease in the football APR rate.

Table 9: *OLS regression of football APR rate with the financial factors and including interactions*

VARIABLES	Main Effect	Main Effect x Football APR Trouble	Jointly Significant?
Percent of applicants admitted	-0.05	0.30	No (p = 0.49)
	(0.09)	(0.24)	
Percent of admitted applicants enrolled	0.14	-0.43	No (p = 0.37)
	(0.12)	(0.29)	
FTE enrollment (in 1000s)	0.00	1.27**	No (p = 0.18)
	(0.17)	(0.63)	
Graduation rate	0.26*	-0.14	No (p = 0.19)
	(0.14)	(0.44)	
Time	3.17***	2.70**	Yes (p = 0.00)
	(0.49)	(1.27)	
Log of academic spending per FTE	3.370	-1.212	No (p = 0.47)
	(4.409)	(16.77)	
Log of athletic spending per athlete	0.73	21.64	No (p = 0.13)
	(3.73)	(13.29)	
Log of institutional funding for athletics per athlete	0.81	-42.81***	Yes (p = 0.00)
	(1.16)	(11.36)	
Football APR trouble	166.40	-	-
	(172.40)	-	-
Constant	867.50***	-	-
	(65.50)	-	-
Observations	719	-	-
Number of institutions	95	-	-

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10 shows the same model as Table 7, but it includes the interactions of the independent variables and the APR Trouble dummy variable. All the independent variables, except graduation rate, are significant in this model. Those are much different results than those from the football model (Table 9), where only the time and log of institutional funding for athletics per athlete variables are significant.

A one-unit increase in percent of applicants admitted is associated with a decrease in the basketball APR rate of 0.09 points. A one-unit increase in percent of admitted applicants enrolled is associated with a decrease in the basketball APR rate of 0.9 points. A one-unit increase in FTE enrollment is associated with a small decrease in the basketball APR rate of 0.001 points. Based on the time variable, with each additional year, the basketball APR rate increased, net of other factors, by 8.1 points.

As for the financial variables, a 1 percent increase in academic spending per FTE is associated with a 32.1-point decrease in the basketball APR rate. In addition, a 1 percent increase in athletic spending per athlete is associated with a 7.6-point decrease in the basketball APR rate. Finally, a 1 percent increase in institutional funding for athletics per athlete is associated with a 9.5-point decrease in the basketball APR rate.

Table 10: *OLS regression of basketball APR rate with the financial factors and including interactions*

VARIABLES	Main Effect	Main Effect x Basketball APR Trouble	Jointly Significant?
Percent of applicants admitted	0.33**	-0.09	Yes (p = 0.02)
	(0.13)	(0.36)	
Percent of admitted applicants enrolled	0.50***	-0.94*	Yes (p = 0.00)
	(0.17)	(0.50)	
FTE enrollment (in 1000s)	0.60**	-1.3*	Yes (p = 0.00)
	(0.23)	(0.72)	
Graduation rate	0.06	0.53	No (p = 0.12)
	(0.19)	(0.54)	
Time	3.99***	8.14***	Yes (p = 0.00)
	(0.93)	(2.19)	
Log of academic spending per FTE	21.85***	-32.13**	Yes (p = 0.01)
	(6.45)	(16.20)	
Log of athletic spending per athlete	7.89	-7.60	Yes (p = 0.07)
	(5.24)	(14.25)	
Log of institutional funding for athletics per athlete	4.93***	-9.51	Yes (p = 0.02)
	(1.812)	(7.68)	
Basketball APR trouble	449.50**	-	-
	(206.70)	-	-
Constant	524.20***	-	-
	(95.64)	-	-
Observations	524.20***	-	-
Number of institutions	(95.64)	-	-

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Regression analyses with lags

Table 11 shows the same model as Table 6, but with each of the independent variables lagged one year and with the addition of the lagged football APR rate as an independent variable. Percent of applicants admitted, percent of admitted applicants enrolled, and the time variables are significant in this model. Although the time variable is significant in both models, the other two variables that are significant in Table 6 are graduation rate and the log of institutional funding for athletics per athlete.

A one-unit increase in percent of applicants admitted is associated with a 0.3-point increase in the football APR rate. In addition, a one-unit increase in percent of admitted applicants enrolled is associated with a 0.4-point increase in the football APR rate. Finally, based on the time variable, with each additional year, the football APR rate increased, net of other factors, by 3.9 points, which is larger than the 2.1-point increase in the Table 6 model.

Table 11: *OLS regression of football APR rate with all independent variables lagged one year*

VARIABLES	Football APR rate
Percent of applicants admitted	0.31**
	(0.15)
Percent of admitted applicants enrolled	0.39**
	(0.18)
FTE enrollment (in 1000s)	-0.61
	(0.54)
Graduation rate	0.30
	(0.25)
Time	3.85***
	(0.72)
Log of academic spending per FTE	4.32
	(10.13)
Log of athletic spending per athlete	3.77
	(8.05)
Log of institutional funding for athletics per athlete	-2.71
	(2.37)
Lagged football APR rate	0.04
	(0.04)
Constant	795.50***
	(129.10)
Observations	719
Number of institutions	95
R-squared	0.16

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 12 shows the same model as Table 11, but with each of the independent variables lagged two years instead of one. Percent of admitted

applicants enrolled, time, and the lagged football APR rate variables are significant in this model. Although the percent of admitted applicants enrolled and time variables are significant in both models, the other variable that was significant in Table 11 was percent of applicants admitted.

A one-unit increase in percent of admitted applicants enrolled is associated with a 0.4-point increase in the football APR rate, which was the same increase that was in Table 11. Based on the time variable, with each additional year, the football APR rate increased, net of other factors, by 4.4 points, which is slightly larger than the 3.9-point increase in the Table 11 model. Finally, a one-point increase in the football APR rate two years ago is associated with a slight decrease in the football APR rate of 0.07 points.

Table 12: *OLS regression of football APR rate with all independent variables lagged two years*

VARIABLES	Football APR rate
Percent of applicants admitted	0.14
	(0.16)
Percent of admitted applicants enrolled	0.37*
	(0.19)
FTE enrollment (in 1000s)	-0.34
	(0.64)
Graduation rate	0.23
	(0.27)
Time	4.41***
	(0.81)
Log of academic spending per FTE	-11.74
	(11.13)
Log of athletic spending per athlete	-0.07
	(8.63)
Log of institutional funding for athletics per athlete	-2.24
	(2.50)
Lagged football APR rate	-0.07*
	(0.04)
Constant	1,104.00***
	(139.50)
Observations	631
Number of institutions	94
R-squared	0.12

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 13 shows the same model as Table 12, but with each of the independent variables lagged three years instead of two. Graduation rate, time,

log of institutional funding for athletics per athlete, and the lagged football APR rate variables are significant in this model. Although the time and lagged football APR rate variables are significant in both models, the only other variable that is significant in Table 12 was percent of admitted applicants enrolled.

A one-unit increase in graduation rate is associated with a 0.6-point increase in the football APR rate. Based on the time variable, with each additional year, the football APR rate increased, net of other factors, by 4.2 points, which is slightly smaller than the 4.4-point increase in the Table 12 model. In addition, a 1 percent increase in institutional funding for athletics per athlete is associated with a 5.2-point increase in the football APR rate. Finally, a one-point increase in the football APR rate threes year ago is associated with a decrease in the football APR rate of 0.2 points, which is larger than the 0.07 decrease in Table 12.

Table 13: *OLS regression of football APR rate with all independent variables lagged three years*

VARIABLES	Football APR rate
Percent of applicants admitted	0.01
	(0.18)
Percent of admitted applicants enrolled	0.24
	(0.21)
FTE enrollment (in 1000s)	0.27
	(0.72)
Graduation rate	0.55**
	(0.27)
Time	4.17***
	(0.93)
Log of academic spending per FTE	2.21
	(11.96)
Log of athletic spending per athlete	-7.45
	(9.53)
Log of institutional funding for athletics per athlete	5.18*
	(2.71)
Lagged football APR rate	-0.17***
	(0.04)
Constant	1,057.00***
	(150.00)
Observations	541
Number of institutions	93
R-squared	0.15

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 14 shows the same model as Table 8, but with each of the independent variables lagged one year and with the addition of the lagged basketball APR rate as an independent variable. Time and the log of institutional

funding for athletics per athlete variables are significant in this model. These same variables are significant in the model for Table 8. Based on the time variable, with each additional year, the football APR rate increased, net of other factors, by 5.8 points, which is larger than the 4.9-point increase in the Table 8 model. In addition, a 1 percent increase in institutional funding for athletics per athlete is associated with a 9.4-point increase in the football APR rate, which is less than the 12.2-point increase in the model for Table 8.

Table 14: *OLS regression of basketball APR rate with all independent variables lagged one year*

VARIABLES	Basketball APR rate
Percent of applicants admitted	-0.03
	(0.31)
Percent of admitted applicants enrolled	0.04
	(0.38)
FTE enrollment (in 1000s)	-1.04
	(1.14)
Graduation rate	0.36
	(0.53)
Time	5.81***
	(1.53)
Log of academic spending per FTE	11.48
	(21.12)
Log of athletic spending per athlete	-20.94
	(17.04)
Log of institutional funding for athletics per athlete	9.40*
	(5.04)
Lagged basketball APR rate	-0.03
	(0.04)
Constant	993.20***
	(267.40)
Observations	727
Number of institutions	96
R-squared	0.08

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 15 shows the same model as Table 14, but with each of the independent variables lagged two years instead of one. Time and the lagged

basketball APR rate variables are significant in this model. Although the time variable is significant in both models, the only other significant variable in Table 14 was the log of institutional funding for athletics per athlete. Based on the time variable, with each additional year, the basketball APR rate increased, net of other factors, by 4.3 points, which is smaller than the 5.8-point increase in the Table 14 model. In addition, a one-point increase in the basketball APR rate two years ago is associated with a small decrease in the basketball APR rate of 0.1 points.

Table 15: *OLS regression of basketball APR rate with all independent variables lagged two years*

VARIABLES	Basketball APR rate
Percent of applicants admitted	-0.05
	(0.33)
Percent of admitted applicants enrolled	-0.24
	(0.40)
FTE enrollment (in 1000s)	-0.81
	(1.30)
Graduation rate	0.40
	(0.54)
Time	4.35***
	(1.66)
Log of academic spending per FTE	-10.78
	(22.27)
Log of athletic spending per athlete	7.74
	(17.64)
Log of institutional funding for athletics per athlete	1.77
	(5.12)
Lagged basketball APR rate	-0.12***
	(0.04)
Constant	1,057.00***
	(277.90)
Observations	638
Number of institutions	95
R-squared	0.06

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 16 shows the same model as Table 15, but with each of the independent variables lagged three years instead of two. Time and the lagged

basketball APR rate variables are significant in this model. Those same variables are significant in Table 15. Based on the time variable, with each additional year, the basketball APR rate increased, net of other factors, by 5.3 points, which is larger than the 4.3-point increase in the Table 15 model. In addition, a one-point increase in the basketball APR rate three years ago is associated with a decrease in the basketball APR rate of 0.2 points, which is slightly higher than the 0.1 points in Table 15.

Table 16: *OLS regression of basketball APR rate with all independent variables lagged three years*

VARIABLES	Basketball APR rate
Percent of applicants admitted	0.51
	(0.34)
Percent of admitted applicants enrolled	0.27
	(0.41)
FTE enrollment (in 1000s)	0.49
	(1.39)
Graduation rate	-0.53
	(0.53)
Time	5.28***
	(1.82)
Log of academic spending per FTE	32.42
	(22.88)
Log of athletic spending per athlete	1.04
	(18.66)
Log of institutional funding for athletics per athlete	-4.33
	(5.30)
Lagged basketball APR rate	-0.17***
	(0.04)
Constant	791.30***
	(283.60)
Observations	547
Number of institutions	94
R-squared	0.09

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 17 is the same model as Table 9, but with each independent variable lagged one year. In this model, the percent of applicants admitted, FTE

enrollment, and time variables are significant. Although the time variable was significant in both models, the only other significant variable in Table 9 was the log of institutional funding for athletics per athlete.

A one-unit increase in percent of applicants admitted is associated with an increase in the football APR rate of 0.6 points. In addition, a one-unit increase in FTE enrollment is associated with a slight increase in the football APR rate of 0.001 points. Finally, based on the time variable, with each additional year, the football APR rate increased, net of other factors, by 1.7 points, which is one point less than the 2.7-point increase in the Table 9 model.

Table 17: *OLS regression of football APR rate with all independent variables lagged one year, including interactions*

VARIABLES	Main Effect	Main Effect x Football APR Trouble	Jointly Significant?
Percent of applicants admitted	-0.04	0.56**	Yes (p = 0.09)
	(0.09)	(0.23)	
Percent of admitted applicants enrolled	0.17	0.03	No (p = 0.29)
	(0.12)	(0.28)	
FTE enrollment (in 1000s)	0.05	1.46**	Yes (p = 0.08)
	(0.17)	(0.63)	
Graduation rate	0.19	0.41	No (p = 0.19)
	(0.14)	(0.43)	
Time	3.53***	1.68	Yes (p = 0.00)
	(0.47)	(1.23)	
Log of academic spending per FTE	1.33	2.43	No (p = 0.63)
	(4.39)	(16.51)	
Log of athletic spending per athlete	-1.01	-12.53	No (p = 0.42)
	(3.72)	(13.06)	
Log of institutional funding for athletics per athlete	-0.47	-14.79	No (p = 0.37)
	(1.14)	(11.05)	
Football APR trouble	-0.03	-	-
	(0.09)	-	-
Constant	921.20***	-	-
	(65.07)	-	-
Observations	719	-	-
Number of institutions	95	-	-

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 18 is the same model as Table 17, but with each independent variable lagged two years instead of one. In this model, only the time variable is significant. Although the time variable is significant in both models, the only other significant variables in Table 17 are percent of applicants admitted and FTE enrollment. Based on the time variable, with each additional year, the football APR rate increased, net of other factors, by 0.7 points, which is one point less than the 1.7-point increase in the Table 16 model.

Table 18: *OLS regression of football APR rate with all independent variables lagged two years, including interactions*

VARIABLES	Main Effect	Main Effect x Football APR Trouble	Jointly Significant?
Percent of applicants admitted	-0.10	0.42*	No (p = 0.39)
	(0.10)	(0.25)	
Percent of admitted applicants enrolled	0.14	0.21	No (p = 0.34)
	(0.13)	(0.29)	
FTE enrollment (in 1000s)	0.07	1.21*	No (p = 0.28)
	(0.18)	(0.68)	
Graduation rate	0.15	0.69	No (p = 0.17)
	(0.14)	(0.45)	
Time	3.54***	0.66	Yes (p = 0.00)
	(0.54)	(1.40)	
Log of academic spending per FTE	-2.56	-0.23	No (p = 0.73)
	(4.63)	(17.16)	
Log of athletic spending per athlete	-3.13	-6.19	No (p = 0.87)
	(3.91)	(13.67)	
Log of institutional funding for athletics per athlete	-1.08	-10.30	No (p = 0.55)
	(1.19)	(11.48)	
Football APR trouble	63.34	-	-
	(177.20)	-	-
Constant	999.70***	-	-
	(68.55)	-	-
Observations	631	-	-
Number of institutions	94	-	-

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 19 is the same model as Table 10, but with each independent variable lagged one year. In this model, all variables are significant except for the log of institutional funding for athletics per athlete. In the Table 10 model, all variables are significant except for graduation rate.

A one-unit increase in percent of applicants admitted is associated with a decrease in the basketball APR rate of 0.03 points, which is less than the 0.09-point decrease in Table 10. A one-unit increase in percent of admitted applicants enrolled is associated with a decrease in the basketball APR rate of 0.7 points, which is less than the 0.9-point decrease in Table 10. A one-unit increase in FTE enrollment is associated with a small decrease in the basketball APR rate of 0.001 points, which is the same decrease in Table 10. In addition, a one-unit increase in graduation rate is associated with an increase in the basketball APR rate of 0.9 points. Based on the time variable, with each additional year, the basketball APR rate increased, net of other factors, by 7.8 points, which was slightly less than the 8.1 points from Table 10.

As for the financial variables, a 1 percent increase in academic spending per FTE is associated with a 38.1-point decrease in the basketball APR rate, which is six points larger than the 32.1-point decrease in Table 10. In addition, a 1 percent increase in athletic spending per athlete is associated with a 7.4-point decrease in the basketball APR rate, slightly different from the 7.6-point decrease in Table 10.

Table 19: *OLS regression of basketball APR rate with all independent variables lagged one year, including interactions*

VARIABLES	Main Effect	Main Effect x Basketball APR Trouble	Jointly Significant?
Percent of applicants admitted	0.26**	-0.03	Yes (p = 0.05)
	(0.13)	(0.34)	
Percent of admitted applicants enrolled	0.31**	-0.70	Yes (p = 0.04)
	(0.16)	(0.47)	
FTE enrollment (in 1000s)	0.50**	-1.11	Yes (p = 0.02)
	(0.22)	(0.68)	
Graduation rate	-0.02	0.92*	Yes (p = 0.06)
	(0.18)	(0.51)	
Time	3.12***	7.80***	Yes (p = 0.00)
	(0.88)	(2.08)	
Log of academic spending per FTE	18.64***	-38.07**	Yes (p = 0.01)
	(6.12)	(15.37)	
Log of athletic spending per athlete	3.50	-7.42	Yes (p = 0.08)
	(4.97)	(13.52)	
Log of institutional funding for athletics per athlete	1.76	-8.28	No (p = 0.14)
	(1.72)	(7.29)	
Basketball APR trouble	465.30**	-	-
	(196.10)	-	-
Constant	664.10***	-	-
	(90.75)	-	-
Observations	727	-	-
Number of institutions	96	-	-

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 20 is the same model as Table 19, but with each independent variable lagged two years instead of one. In this model, the graduation rate, time, academic spending per FTE and log of institutional funding for athletics per athlete are significant. In the Table 19 model, all variables are significant except for the log of institutional funding for athletics per athlete.

A one-unit increase in graduation rate is associated with an increase in the basketball APR rate of 1.5 points, which is a larger increase than the 0.9 points in Table 18. Based on the time variable, with each additional year, the basketball APR rate increased, net of other factors, by 4.6 points, which was less than the 7.8 points from Table 19. In addition, a 1 percent increase in academic spending per FTE is associated with a 32.8-point decrease in the basketball APR rate, which is smaller than the 38.1-point decrease in Table 19. Finally, a 1 percent increase in institutional funding for athletics per athlete is associated with a 14.1-point increase in the basketball APR rate.

Table 20: *OLS regression of basketball APR rate with all independent variables lagged two years, including interactions*

VARIABLES	Main Effect	Main Effect x Basketball APR Trouble	Jointly Significant?
Percent of applicants admitted	0.21	0.27	No (p = 0.19)
	(0.13)	(0.35)	
Percent of admitted applicants enrolled	0.13	-0.45	No (p = 0.69)
	(0.16)	(0.48)	
FTE enrollment	0.46**	-1.26*	No (p = 0.10)
	(0.23)	(0.71)	
Graduation rate	-0.17	1.53***	Yes (p = 0.03)
	(0.19)	(0.51)	
Time	2.76***	4.63**	Yes (p = 0.00)
	(1.01)	(2.32)	
Log of academic spending per FTE	15.88**	-32.77**	Yes (p = 0.04)
	(6.24)	(15.49)	
Log of athletic spending per athlete	2.93	-7.43	No (p = 0.87)
	(5.06)	(13.53)	
Log of institutional funding for athletics per athlete	-1.83	14.12*	Yes (p = 0.09)
	(1.73)	(7.58)	
Basketball APR trouble	152.50	-	-
	(196.40)	-	-
Constant	759.00***	-	-
	(92.69)	-	-
Observations	638	-	-
Number of institutions	95	-	-

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

I also ran models that were lagged three years for both the football and basketball APR rates. Only the time variable was significant in those models, so I did not present the tables in full here.

CHAPTER 6

CONCLUSION

This chapter provides the concluding arguments for this dissertation. It begins with a discussion of the research questions and hypotheses and how they are connected to the results in Chapter 5. I then discuss the limitations of this study, the possibilities for future research in this area, and the implications of this study for policy and practice. Finally, I give concluding thoughts on the APR and its overall implications for athletic departments and institutions.

Conclusions Based on Research Questions and Hypotheses

To revisit, Table 21 shows the research questions and the hypotheses that go with each research questions.

Table 21: *Research questions and hypotheses*

Research Questions	**Hypotheses**
1. What are the characteristics of institutions that are most/least likely to have lower APR scores?	*Hypothesis 1: Those teams in APR trouble will have strong similarities in conference strength, institutional control, size, and academics.*
2. What organizational and financial factors are associated with institutions' APR scores?	*Hypothesis 2: The overall APR rates will increase over time* *Hypothesis 3: Universities that lack a historically strong academic reputation will be more likely to have teams with low APR scores.* *Hypothesis 4: Institutions with fewer financial resources are more likely to have lower APR scores.*
3. Will institutions in APR trouble experience greater improvements from financial investment as compared to those that are not in APR trouble?	*Hypothesis 5: Institutions in APR trouble will experience greater improvements from financial investment as compared to those that are not in APR trouble.*
4. Do APR scores appear to change based on earlier financial investments?	*Hypothesis 6: Earlier financial investments are associated with a change in later APR scores.*

In regards to the first research question and hypothesis, the results mostly supported this hypothesis. Out of the 38 total teams listed in APR trouble in Tables 3 and 4, 34 are part of a "Group of 5" conference, suggesting that teams with fewer resources than the "Power 5" conferences might be more likely to be in APR trouble. In addition, out of the 38 total teams listed in APR trouble in Tables 3 and 4, 35 are fully public universities, suggesting that institutional control may play a role in APR trouble. For the size of institutions, the football teams in APR trouble are 19.7% smaller than the rest of the Division I FBS

institutions and in basketball, they are 25.8% smaller. Overall, this suggests that smaller institutions might be more likely to be in APR trouble. Finally, using graduation rate as a proxy for academic strength, the football APR trouble teams had graduation rates that, on average, are 45.2% smaller than the rest of the football teams, and for basketball, the difference is 31.6%. This suggests that teams that are not as strong academically may be more likely to have football and basketball teams in APR trouble.

The second research question focused on the factors that are associated with institutions' APR scores. I used OLS regression analysis to attempt to answer this question. I developed three hypotheses to go with this question. Hypothesis 2, which posited that APR scores would rise over time, showed the strongest results. Every regression model I ran had "time" as a significant variable and each time it showed an increase. This suggests that time may influence APR scores in both football and men's basketball.

Hypothesis 3 suggests that the overall academic strength of an institution may influence APR scores. Tables 5-8 are the focus of the second research question and this hypothesis. Percent of applicants admitted and percent of applicants enrolled are not significant variables in any of these models. Graduation rate is not a significant variable in either of the basketball models (Tables 7-8). However, graduation rate is a significant variable in both football models (Tables 5-6), suggesting that an institution's overall graduation rate may influence a football team's APR rate. Theoretically, the academic standing of an institution as a whole influences a football team's APR score because the

institutional culture pressures of the more elite institutions mean that a low APR score in football is less acceptable.

Hypothesis 4 suggests that financial factors of an institution and/or an athletic department may influence APR scores. Tables 6 and 8 are the focus of the second research question and this hypothesis. The log of academic spending per FTE is not a significant variable in either Table 6 or Table 8. Although the log of athletic spending per athlete is not significant in Table 8, it is significant in Table 6, which suggests that this variable may influence the APR rate of football teams. In addition, although the log of institutional funding for athletics per athlete is not significant in Table 6, it is significant in Table 8, which suggests that this variable may influence the APR rate of basketball teams.

The third research question and fifth hypothesis focus on the possibility that teams in APR trouble will see greater improvement from financial investment as compared to those that are not in APR trouble. Tables 9 and 10 are the focus of the third research question and fifth hypothesis and the two financial factors that focus on athletic spending are the variables I am looking at specifically. For the football model (Table 9), the log of athletic spending per athlete is associated with positive influence on APR scores, but it is not a significant variable. In contrast, the log of institutional funding for athletics per athlete is associated with a surprisingly negative influence on APR scores, and it is a significant variable. For the basketball model (Table 10), the log of athletic spending per athlete and the log of institutional funding for athletics per athlete is associated with a surprisingly negative influence on APR scores, and are both significant in this

model. Overall, these results contrasted with the expected hypothesis. In the case of the institutional funding for athletics per athlete variable, there is the possibility that a negative result makes sense, given that the institutions that are more likely to have to transfer a lot of money to an athletic department budget are those with fewer resources for academic issues in athletics. However, it still seems that, as the amount of the money transferred increases to potentially cover the cost of academic staff for athletes, there should be an increase in APR scores.

The fourth research question and sixth hypothesis focus on the possibility that earlier financial investments are associated with a change in later APR scores. Tables 11-16 are the focus of the fourth research question and sixth hypothesis and the two financial factors that focus on athletic spending are the variables I am looking at specifically. The log of athletic spending per athlete is not a significant variable in any of the six models. The log of institutional funding for athletics per athlete is significant in Table 13 and Table 14. That means that institutional funding three years earlier may positively influence the football APR rate and institutional funding one year earlier may positively influence the basketball APR rate.

Finally, the models for Tables 17-20 are sort of a hybrid for the third and fourth research questions and the fifth and sixth hypotheses, as they tested both APR trouble institutions and looked at earlier financial investments. For the two football models (Tables 17-18), neither of the variables related to athletic spending are significant. For Table 19, the log of athletic spending per athlete is

significant, but it is associated with a negative effect on APR scores, which is the opposite of the hypotheses. However, in Table 20, the log of institutional funding for athletics per athlete is significant. That means that institutional funding two years earlier may positively influence the basketball APR rate, which is in agreement with the fifth and sixth hypotheses.

Overall, although the result are mixed, I believe the takeaway from these results for practitioners is to increase the money spent on academic help for athletes. This includes academic centers, academic advisors, tutors, and mentors that can help a student-athlete outside of the class. Student-athletes have many demands on their time and sometimes even miss classes because of these demands. The more help they can receive, some results of this study suggest that an athletic department will see higher APR scores in football and men's basketball.

Limitations and Implications for Further Research

The overarching limitation with my study was in the availability of more precise data that would correlate with what I was studying. Overall, for the various models that I ran, the R-squared was relatively low. This can be explained by realizing that most of the data that was available to me was not specific to the athletic teams that produce the APR scores. For instance, if I was able to get a variable such as an average SAT/ACT score for incoming student-athletes on each team, that would give me a much more accurate idea of the academic potential of an individual team as opposed to only using institution-

level academic factors. In addition, the availability of funding levels for individual sports rather than the athletic department as a whole also would have yielded more accurate results for the research questions and hypotheses that focused on the financial factors. This could include the amount spent on academic staff (advisors, tutors, mentors, etc) as well as other academic expenses (computer labs, books, etc). That also could help explain more of the differences between results for football and men's basketball, which is more challenging to do in my current study. If variables like these were included in my model, I am confident that there would be a rise in the R-squared.

Another possible variable to add for a future study is one related to success of the team on the field. This could help explain if there is a correlation between success on the field and success in the classroom, or if that relationship is actually an inverse one. If a typically successful team struggles for a year or two, would they sacrifice classroom success to improve the on-field product?

Another potential issue that could cloud some of the results in my study is cheating. In recent years, we have seen cheating scandals involving student-athletes, tutors, and even professors, including a recent case at the University of North Carolina at Chapel Hill. If some institutions are being caught, there might be other institutions where cheating is occurring. Obviously, this sort of cheating would skew APR scores and there would be no way for me to test for it.

Another potential issue lies in the rigorousness of majors. Studies have shown that institutions commonly have major clustering among their athletes, into a major that is "athlete-friendly" (Suggs, 2003). This can cause academic

advisors to discourage student-athletes from choosing difficult majors because they do not want academics interfering with athletics and they want a top student on a team to take an easy major and get a good grade to buoy the athletes that are not as successful in the classroom. All of these issues also present a challenge to any findings I have on the APR. Is the institution doing a good job educating their athletes or are student-athletes aided by cheating, taking easy classes, and/or majoring in easy subjects?

A possible different research model for the future could be one done at one institution using student-level data. If a researcher could get an institution to agree to give a researcher student-level data on student-athletes, a researcher could use that in conjunction with a control group of non-athlete students to compare a variety of inputting variables that are specific to each student (SAT/ACT scores, high school GPA, Pell eligibility, etc.), environmental factors at an institution (class size, tutoring, mentoring, etc.) and output variables (APR rate, graduation, etc.). The researcher could use Astin's production function model (1970) to measure these inputs, environmental factors, and outputs. This potential study could be replicated for a variety of institutions and teams at a given institution.

Implications for Policy and Practice

Academic staff in athletics should be aware of the general characteristics that those institutions with football and men's basketball teams in APR trouble tend to have. Based on the data in Tables 3-4, those institutions that are in APR

trouble typically are part of the Group of 5, are public institutions, have smaller enrollments than their counterparts that are not in trouble, and have lower institutional graduation rates, on average, than their non-trouble counterparts This knowledge would allow staff to be extra vigilant in monitoring student progress, communicating with professors, providing mentors, and providing tutors, when needed.

Although the results from my models are mixed, there is some evidence that additional financial investment into athletic departments with football and/or men's basketball teams in APR trouble could help raise APR scores. That money could be spent on things that tend to help student-athletes improve, including additional academic advisors, mentors, tutors, and other academic resources (Carodine et al, 2001).

Final Thoughts

The APR has filled an important gap in relation to academics in athletics. Previously, student-athletes were measured as they came into institutions, using the NCAA's minimum high school GPA and SAT/ACT score requirements. The NCAA also measured academic success of student athletes through the graduation success rate (GSR). However, there was no formal measurement that allowed institutions or the NCAA to monitor student-athlete academic progress along the way. The APR does this, and by doing this, it will theoretically improve the academic success of student-athletes.

The APR has led to several unintended consequences for student-

athletes, athletic staff, and institutions as a whole, both positive and negative. To respond to meeting the APR rate requirements, some athletic departments have built buildings on their campuses dedicated to student-athletes academics, such as the Stephen M. Ross Center, built on the University of Michigan's campus in 2006. Athletic departments have also hired more academic staff to help student-athletes improve their grades (Carodine et al, 2001).

In general, this makes sense and is positive, but sometimes, this can lead to negative consequences, as was the case at Florida State University, when a rogue tutor provided student-athletes with test answers for an online course (Dinich, 2009). Also, athletic academic staffs at these various institutions, likely at the behest of coaches, cluster athletes into the most favorable majors on that campus, sometimes that the protest of a student-athlete (Suggs, 2003). Finally, all of this new spending related to student-athlete academics, along with other non-academic athletic spending costs, has led to massive increases in athletic expenditures. In 2010, 94 out of the 119 institutions in this study took a loss in athletics, at an average of $9.9 million per institution (Perko, 2010).

Given that athletics are an integral part of the college experience, it is important to ensure that they remain a legitimate and positive part of a university. Helping student-athletes succeed in the classroom without using nefarious tactics and increasing already massive athletic budgets should be the goal of each of these institutions. The APR provides the way to hold these institutions and teams accountable as they educate these student-athletes over four or more years.

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