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MARGINAL REVENUE PRODUCT OF DIVISION I SWIMMERS

A Thesis

Presented for the

Master of Science

Sport and Recreation Administration

The University of Mississippi

Olivia Raxter

May 2018

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ABSTRACT

To date, the National Collegiate Athletic Association (NCAA) has undergone an excessive amount of reforms including topics such as student-athlete well-being, academics, enforcement, resource allocation, and so forth. However, despite the constant stream of policy reforms there has been a significant lack of effective reform initiatives with reference to the economic state of the NCAA. This void is partially due to the lack of sufficient empirical evidence surrounding the economic discussion of college athletics, specifically in regards to the discussion of the potential for performance based compensation for student-athletes. Past research for such compensation has focused primarily on large revenue producing sports such as football and men's basketball (Brown, 1993; 2011; Brown & Jewell, 2006). However, by only examining two of the almost ninety NCAA recognized sports it has created a large gap in the literature necessary to examine things further.

Considering this, the current research intends to expand the scope of the literature by using an econometrics approach to investigate the current state of the NCAA non-revenue producing sport of swimming. The research will use public NCAA economic revenue and expenditure reports to create a revenue function and conduct a multiple regression analysis. The attempt of such research is to determine the marginal revenue product (MRP) and economic value of a Division I swimmer.

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CHAPTER I

INTRODUCTION

Sport literature has continuously produced evidence supporting the theory that the NCAA operates as a cartel (Fleisher, Goff, & Tollison, 1992) restricting production and competition (Eckard, 1998; Kahn, 2007). That is, the NCAA falls into the classic definition of a cartel in undertaking certain actions such as monitoring the behavior of member institutions, levying sanctions against programs which violate regulations (Zimbalist, 1999), as well as imposing monetary restrictions on student-athlete compensation, employee salaries, and recruiting expenses (Fleisher et al., 1992). At the same time, the overall revenue pool for the NCAA and its member institutions has continued to increase, driven by the growth in revenues derived from various sources such as television broadcast rights (Fort, 2006; Sandy & Sloane, 2004). Thus with the development of the NCAA as a large business, one major criticism which has emerged has been the exploitation and underpayment of student-athletes (Lanter & Hawkins, 2013). Indeed, while the NCAA has continued to evolve rules governing the definition of what types of compensation are acceptable for student-athletes, it is the case that many of these individuals produce economic value well in excess of the cost of attendance provided by their schools (Brown, 2011).

As a result, such restrictions on the allowed compensation of student-athletes has limited the effective pay for a top performing athlete to a maximum of \$36,000. These restrictions have caused student-athletes to use their media publicity to actively campaign for reform initiatives

within NCAA financial compensation (Farrey, 2013). They have continued to fight for their identification as employees of their respected universities in an effort to receive some form of performance based compensation, commonly referred to as pay for play.

Many economists believe that it is through such control of player income that the NCAA has become a monopsony power in the player-recruitment market. The primary approach that has been used to examine the rents generated by student-athletes in the NCAA has been to estimate the MRP of top-level student-athletes through modeling changes in revenue for athletic departments by taking into factors such as: the number of players drafted, market potential, team performance, and so forth (Brown, 1993; Brown & Jewell, 2006). Notably, previous research on the MRP of premium college athletes has centered mainly around high revenue producing sports such as football and both men's and women's basketball (Brown, 1993; 1994). Such studies have shown that elite college players can generate a marginal revenue product that far exceeds their effective compensation which therefore produces a substantial economic rent for their respective institutions (Brown, 1993; 1994).

Given this, to date there has still been limited empirical examinations of the value created by student-athletes who compete for NCAA institutions (Brown and Jewell, 2006). However, as the NCAA continues to grow further away from the Collegiate Model and deeper into the commercialization of big business, the compensation of student-athletes will progress to the forefront of potential collegiate reforms (Southall & Staurowsky, 2013; Benford, 2007). Despite this, current research has excluded non-revenue generating sport from the evaluation of athletic department commercialization thus omitting them from the potential context for NCAA economic reform. In consequence, this exclusion has allowed the NCAA to avoid initiating such

reforms due to their inability to include all athletes. This discourse has created a divide between revenue and non-revenue generating sport.

Considering this, the focus of the current research is to try and provide an alternative viewpoint in the discussion of the economic value and potential for performance based compensation for student-athletes. As no prior research has tried to put a monetary value on the MRP that is produced by athletes outside of basketball or football this study will attempt to expand the literature by examining the economic value of NCAA swimmers. NCAA swimmers are a group who is classified by the NCAA as being a non-revenue generating sport and thus is often ignored in the discussion of player compensation reform.

In concluding, the current study attempts to make a number of important contributions to the sport economic literature. First, by considering a context outside of football or basketball, this study attempts to extend the understanding of the value generated by student-athletes outside of the realm of the sports producing the majority of revenues in the NCAA. Second, this study also provides further theoretical consideration of the cartel nature of the NCAA in regards to capturing rents from student-athletes extending beyond the realm of football and basketball. That is, if a swimmer who is able to make it to the Olympics is able to produce additional revenues for their program, then cartel theory argues that there would be incentive to violate recruiting regulations to secure the talents of these elite athletes. In other words, the findings have important implications in not only understanding how much revenue that student-athletes may produce for schools, but also in regards to the setting of regulations in college athletics. Finally, as the NCAA, athletic conferences, and member institutions continue to examine how much stipends should be paid to college athletes, the estimates from the Generalized Least Squares

(GLS) regression models may provide further discussion in considering what is an appropriate level of compensation for student-athletes.

CHAPTER II
LITERATURE REVIEW
Formation of the NCAA

The roots of intercollegiate athletics can be traced to colonial America where student loyalties to their “class” commonly superseded those to their university (Flowers, 2009). At this time, sport was often used as a tool of indoctrination for incoming freshmen, and served as a basis for the beginning of student led administration of college athletics (Sack & Staurowsky, 1998). Integral to this introduction to class allegiance was a sporting event known as “Bloody Monday,” which was a mix between soccer and rugby that ultimately resembled what we recognize today as football (Lucas & Smith, 1978). From this, these competitions held in the early 1800’s served as the impetus for future collegiate sport contests throughout the academic year such as baseball and field hockey (Richardson, 1932).

In the early 1800’s, colleges were isolated due to limited communication and transportation systems which significantly restricted the ability for inter-collegiate competition to develop (Lucas and Smith, 1978). However, upon the introduction of the railroad which gave universities the opportunity to travel easily and therefore instilled a desire for competitive conquest, this concept of class based intra-collegiate sport competition quickly developed into intercollegiate athletics (Flowers, 2009). This eagerness to compete sparked the first official intercollegiate sporting competition between the Harvard and Yale crew teams in a rowing regatta in 1852 (Flowers, 2009).

Throughout the years, intercollegiate athletics continued to thrive off of this highly competitive spirit and expanded from crew into other sports such as baseball and football. By the 1880s football had superseded crew to become the college sport of greatest interest to both competitors and fans (Oriard, 2012). As intercollegiate sport continued to grow further away from the once student led organization that it originated as and deeper into a highly competitive enterprise, an apparent need for inter-institutional athletic regulation arose (Smith, 1983). The first college faculty athletic committee was organized at Princeton in the early 1880's to settle athletic based disputes. Other universities formed similar committees in response to varying issues as they arose within the athletic departments. However, none of these independent committees worked together to initiate intercollegiate policies which caused a lack of cooperation within the management of college athletics (Smith & Abbott, 1983). Thus, when a group of Midwestern university presidents gathered in January of 1885 to discuss the regulation and control of intercollegiate athletics, this meeting was an important turning point towards the growth of institutional control of sport within U.S. colleges. In the following year, this group would be officially founded as the Intercollegiate Conference of Faculty Representatives, the first organized group of intercollegiate athletic authorities (Smith & Abbott, 1983).

Undeterred by the formation of a semi-national governing body for intercollegiate athletics, the ever growing violence in football caused by brutal formations and war-like tactics led to increasing public outrage over the game. Based on this, U.S. President Theodore Roosevelt intervened, demanding that colleges become involved in the organization and operation of athletics to provide athletes with more protection (Oriard, 2012). This presidential intervention sparked a revision of the rules governing football in attempt to make the game safer for the athletes as the evidence of long-term consequences pertaining to traumatic head injuries were on

the rise (Oriard, 2012). These reforms were initiated by a group of 62 higher-education institutions who formed the first charter of the Intercollegiate Athletic Association of the United States (IAAUS) which was renamed in 1910 as the National Collegiate Athletic Association (NCAA, 2012a). Thus the NCAA was formed which shifted the control of college athletics away from the students and into the possession of university administration.

Commercialization of College Sport

Despite the recent boom of big business in intercollegiate athletics in America, the commercialization process dates back to the earliest sport competitions between universities. That is, even as far back as the mid-1800's, corporations and universities saw the potential benefits that could be drawn from partnerships which monetized the popularity of sport contests between students (Smith, 1990). The earliest example of this was in the 1852 Harvard-Yale Regatta which was sponsored by the Boston Montreal Railroad Company who provided free passage to any part of Lake Winnepesaukee and covered the travel expenses of all student competitors (Smith, 1990). In this, the Boston Montreal Railroad Company's vision was that by hosting the first official sport competition between two of the most prestigious universities in the world, they would in turn garner a large number of spectators who would purchase railroad tickets to attend the event. While the initial Harvard-Yale Regatta in 1852 drew only about 1,000 spectators, by 1859, the competition had grown to around 20,000 attendees (Lewis, 1967), indicating that there was indeed lucrative financial potential for hosting large scale intercollegiate sporting events.

Over the years universities have harnessed the commercial potential that intercollegiate sport offers and have allowed their athletic programs to act as commercial enterprises used to increase enrollment and public support via large scale marketing opportunities (Flowers, 2009).

Universities originally fought back against the idea of organized athletics, with the belief that athletic participation strayed too far from the academic mission of higher education (Davis, 2007). It was not until intercollegiate athletics was shown to provide new student recruitment opportunities and increase the overall esteem of the university, were they universally accepted by institutional leaders (Lucas & Smith, 1978).

This venerated view of intercollegiate athletics has grown throughout the years into something that no longer holds any resemblance to the once student led organization it began as (Staurowsky, Maxcy, Karcher, Southall, Berri, & Otto, 2015). Continued commercialization movements across the NCAA have uprooted the college athletic industry and morphed it into a money making machine in which the student-athletes are denied basic rights (Staurowsky et. al., 2015). Evidence of this ever growing commercialization can be noted in almost every facet of college sport, apparel and logo contracts, advertising of outside investor companies at arenas, to even the exploitation of a student's image in video games (Benford, 2007).

Arguably, the most apparent form of commercialization within college sport is the unceasing arms race between top level athletic facilities at different university programs. This highlights the disparity between the once student-led organization that was college athletics and the big business model that it is becoming. As institutions use each other as competitive benchmarks to build new facilities or renovate old ones there will remain a never ending chain of who has the biggest, best, and most up-to-date amenities for their teams and fans. Reformists have highlighted how this arms race focused on generating revenue to build new athletic infrastructure often causes increases in student fees that can therefore no longer be used to benefit the university's academic programs (Sperber, 2000; Shulman & Bowen, 2001).

In addition to the physical arms races in regards to athletic facilities, there is an ever increasing market for coaching salaries. To highlight the dissonance between university focus on academics and athletes it is important to note the common occurrence of coaches receiving higher salaries than faculty and even in some cases the presidents and chancellors of big time universities (Benford, 2007). James Duderstadt (2000), the former president of the University of Michigan, exclaimed that among the community members of a university the coaches are the only ones who personally profit from the reputation and activities (Benford, 2007). In fact, between the 2006 and 2010 seasons average football coaching salaries continuously increased across all conferences (Humphreys, Soebbing, & Watanabe, 2011). Additionally, within that five year span, the average wage for a head football coach increased by over \$363,000 dollars (Humphreys et al., 2011).

While the commercialization of college athletics is often focused on building the newest facilities or paying coaches and administrators the highest wages, it is the case that the core sport product is being produced by unpaid student-athletes. From this, student-athletes not only serve the college sport industry but they also generate substantial revenue for other industries such as gambling, apparel, television, and tourism (Staurowsky et al., 2015; Marino, 2015). For example, the 2015 NCAA March Madness tournament generated over double the amount of money for the American Gambling Association than the National Football League Super bowl (Marino, 2015). These industries have a trickledown effect in which each one affects another one. The gambling bets placed on the March Madness tournament were substantial which in turn led to an increase in views, increasing the amount of advertising that was circulated by broadcasting companies, and thus an increase in sales and tourism surrounding the event (Staurowsky et al., 2015; Alesia, 2015). While a large amount of athletic revenue generation has been highlighted within the

literature, it has primarily been focused on what the NCAA deems as revenue generating sports, such as football and basketball (Brown; 1993; Brown and Jewell, 2006). The exclusion of non-revenue generating sports has left them out of the context of economic reform and therefore has allowed the NCAA to avoid initiating such reforms due to the proposed reforms inability to include all athletes. In consequence, this discourse has created a divide between revenue and non-revenue generating sports that needs to be addressed if there is to be any hope of a successful economic reform initiative in the NCAA.

Additionally, this continued excessive commercialization of collegiate athletics has all together created a new industry in which many sports reformers refer to as the “edutainment” industry. The rampant growth of college sports within the entertainment industry has kept up to par barring technological advancements (Sperber, 1990). While this edutainment industry has brought substantial amounts of revenue to athletic programs across the country it has distorted the priorities of the governing leadership threatening the reputations of these academic institutions (Zimbalist, 1999; Benford, 2007). Duderstadt (2000) fears that these communities who were initially formed to serve and promote an academic culture have been neglected by administrations who favor intercollegiate athletics due to their revenue generation abilities as they continue to grow further and further towards the industry of big business. The fear that this blur of academic and athletic alliances will negatively impact the reputation of higher learning institutions is ever present (Benford, 2007).

Amateurism as the Discursive Hurdle for Reform

Starting with the 1906 constitution of the NCAA, the national office defined the role of students in college sport by the declaration that student-athletes were amateur athletes (Freedman, 2002). This amateurism required that for student-athletes to be eligible for

competition within the association they must be pure of intent to play, and not have had received outside financial compensation for their athletic talents (Freedman, 2002). The NCAA bylaws state that student-athletes should be motivated by education and not exploited by professional or commercial enterprises (NCAA, 2012b). Therefore the challenge of college sport reform lies within the struggle to systematically deconstruct how college sport is no longer an amateur endeavor due to massive commercialization, and to address the budding need to determine universal implications of economic incentives for student-athletes.

Moreover, upon the establishment of the one year athletic grant in aid (GIA) which was essentially a form of financial compensation awarded to student-athletes, there was concern that this financial compensation would infringe upon the NCAA's principle of amateurism and players would be viewed as employees of the university (Staurowsky & Sack, 2005). In the wake of this concern the term student-athlete was coined as a way to highlight the amateurism of these athletes by not just merely calling them athletes (Byers, 1995). The term student-athlete itself is a form of selective language used to propagate the belief that these individuals are students first and athletes second, highlighting the claimed importance that the NCAA holds for higher education. This term was essential in swaying workers' compensation boards and the general public that athletes who were receiving a GIA were no different than any other scholarship student (Staurowsky & Sack, 2005).

The attempt to relate student-athletes to the general student population is theoretical at best. The existence of the NCAA itself creates a divide between student-athletes and other extracurricular involved students (Staurowsky, 2014a). There lacks a national governing body for the majority of scholarships received by students that would dictate the number or amount of scholarships that the student is able to obtain like the NCAA does with its scholarship recipients.

In accordance with that, there is a sheer lack of other extra-curricular participating students, outside of student-athletes, who have sought recognition as employees of the university in court (Staurowsky, 2014a). The trouble with attempting to compare student-athletes to other extra-curricular students lies within the fact that other students do not generate revenue for the university and are merely part of the educational experience without having economic ties. Additionally, student-athletes do not have the freedom to transfer schools at their own will that other students are allowed (Staurowsky, 2014a), their property rights are owned and governed by their coaches who have the authority to initiate and allow school transfers. If those arguments are not enough to clearly make a distinction between an average student and a student-athlete, facilities such as the \$41.7 million John E. Jaqua Academic Center for Student Athletes (University of Oregon) will do the job. These student-athlete exclusive facilities are some of the facets that display how a clear, physical divide between students and student-athletes is in place.

Precise language, such as the term student-athlete, has been used as a form of propaganda by the NCAA to control messages and broadcast the viewpoints that the NCAA national office deems as fostering and supportive of the Collegiate Model (Southall & Staurowsky, 2013). Myles Brand, the former NCAA President, repeatedly focused his State of the Association Addresses on the amateurism of student-athletes and how profit based models are what differ collegiate and professional athletics (Southall & Staurowsky, 2013). Brand (2004) claimed that members of the Collegiate model are merely students enrolled in academic programs whereas professional athletes, participants in the Professional Model, are members of a revenue generating labor force. However, past research on the MRP of college athletes has substantially supported the idea that student-athletes of certain sports, most obviously football and basketball, are key players in the revenue generating labor force of collegiate athletic programs which in

turn challenges the claim of amateurism that Brand was attempting to make with such statements (Brown, 1993; Brown & Jewell, 2006; Brand, 2004).

The above arguments further nullify the claim that student-athletes are no different than any other scholarship student. It is through such selective language and propaganda that the Collegiate Model has created a discursive hurdle for the NCAA to have any chance at effective reform. The creation of this institutional hegemony and the draconian views of what defines a student-athlete make it difficult to conceptualize any sort of alternative to the current college-sport logic (Southall & Staurowsky, 2013). By failing to identify these athletes as employees, it strips them of the rights to bargain collectively and propose salutary changes (Staurowsky et al., 2015).

College Sport Reform

In 1883, concerns of professionalization, commercialism, and corruption sparked the first proposed reforms in NCAA history which were forwarded to 21 east coast institutions and only approved by two (Benford, 2007). Over the years faculty associations, private foundations, and sport organizations have formed in response to similar concerns. For example, in 1929, the Carnegie Foundation filed a reform report claiming that college football had significantly deviated from the student's game it once was to instead resemble a highly organized commercial enterprise (Benford, 2007). However, despite the continuous cycle of reform activity and extensive reports, there has been a significant lack of effective change within the governance of the NCAA (Benford, 2007). The current state of the NCAA can be blamed on the robust commercialization and current political economy of college sport (Sack & Staurowsky, 1998; Zimbalist, 1999). Arguably, the issues of failed college sport reform, which have been used to

address the state of the NCAA, will be resolved when college athletes are recognized for their labor and are compensated appropriately (Staurowsky et al., 2015).

One important focus of college sport reform needs to lie within the meaningful change of business practices that currently govern the NCAA through targeting efforts to give basic rights to college athletes. Such changes would include the identification of student-athletes as revenue generating employees of the university and therefore lead to their adequate compensation for such a position, access to a fair and legitimate education experience, and ultimately to receive the respect and recognition from the NCAA that they have earned by being awarded such rights (Staurowsky et al., 2015). The difficulty with initiating these fundamental economic changes, commonly referred to as pay for play, lies within the amateuristic identification of student-athletes. For such a change to occur, a conceptual breakthrough regarding the athletes' identities as employees of the university would be necessary. Without the recognition of the association between athlete labor status and the actual economic disruption of the inequality of pay in athletics the distribution of revenue will remain the same and therefore future reform efforts will be nonexistent. While athletes themselves are considered amateurs, there is nothing amateur about the big time collegiate athletic programs for which they generate revenue (Buzuvis, 2015).

Since the 1930s, football and basketball players have challenged their institutions to recognize their status as employees of the university through the provision of fair compensation and recognition for their work (Staurowsky, 2015). Recently, in 2014, Northwestern University football players attempted to unionize by authorizing the College Athletes Players Association to represent them as players in collective bargaining with university administration (Staurowsky, 2014b). The movement was initially awarded a momentous decision when a regional-level member of the National Labor Relations Board (NLRB) ruled in favor of the players and agreed

that they were being treated as employees (Buzuvis, 2015). The director fundamentally focused on the compensation aspect when organizing the analysis of his decision and centered his ruling on the common law definition of an employee, which is a person who performs services for another while subject to their control and in return for payment. To the players' dismay, Northwestern University appealed the decision in federal court and the NLRB ultimately ruled against the players and therefore in favor of the university (Buzuvis, 2015).

Additionally, players from varying universities have banded together to initiate change within the context of college sport. The All Players United movement began with less than two dozen football players from three universities who were searching for a way to support fellow student-athletes. The athletes they were supporting, had agreed to be plaintiffs in two different lawsuits against the NCAA regarding the lack of player compensation and failure to protect the health of student-athletes by withholding information regarding concussions (Staurowsky, 2014b). These players offered their support through handwriting the letters "APU" on their wristbands, symbolic for the term All Players United. While the movement was barely discernible and widely unknown to the general public, even to fellow players and coaches, the attention brought about by the media revealed the depths to which student athletes are manipulated and exploited by university administrations (Staurowsky, 2014b). The ESPN broadcast *Outside the Lines* spoke with Ramogi Huma, the National College Players Association (NCPA) president, who admitted that the APU gesture was months in the making. Huma discussed how the players have strategically used their visibility on national television and popularity on social media outlets to draw attention to their movement (Farrey, 2013).

Outside of player initiated movements, groups such as the Knight Commission of Intercollegiate Athletics and the College Athletes Rights and Empowerment Faculty Coalition

(CARE-FC) have formed to combat unjust regulations made against student athletes. The Knight Commission has publically called for the NCAA to establish new guidelines that distribute revenue generated from the March Madness tournament to better support athlete education and health (Perko, 2016). The current guidelines limit the amount of tournament revenue dedicated to athlete education and health to a mere twenty-five percent. The Knight Commission continues to persuade the NCAA to reward academic outcomes as well as athletic ones. The commission has chastised the NCAA for their lack of policy change over the last quarter century given the significant increase in athletic revenue.

Overall, most large-scale athletic movements have received national recognition due to the popularity surrounding football and men's basketball which are considered revenue generating sport. It is commonly argued that non-revenue generating sport rely on the profits made by revenue generating sport to function, and therefore are conceptually viewed as burdens to pay-for-play. In contrary, non-revenue sport arguably offer value to the university given their availability for participation, publicity opportunities, enhanced alumni relations, and Title IX compliance (Staurowsky et al., 2015). In the context of sport, Title IX requires that an institution receiving federal funds must provide proportionately equal opportunities to all genders. In the context of athletics, this includes equivalent access to: facilities, equipment, coaching staff, academic services, and so forth. However, those drafting the regulation realized that this interpretation of the law would produce nothing but hypothetical equality therefore it was altered via a regulatory provision that governs athletics since the athletic departments do not directly receive federal aid (Staurowsky et al., 2015). This regulatory provision required that athletic departments must demonstrate gender equality in which outcomes rather than opportunities are

equalized through the number of opportunities in sport provided to each sex, the overall quality of the programs, and the compatibility of scholarship dollars awarded to athletes of each sex.

Furthermore, this interpretation of Title IX in the context of athletics depends on an institution meeting one of three standards set out by the Department of Education (Buzuvis, 2015). That is, in order to be considered compliant in regards to Title IX, an athletic department must either show: proportionate opportunities and resources for each gender based on institutional characteristics, a history of program expansion to provide opportunities for underrepresented genders, or that the interests and abilities of the underrepresented gender is fully accommodated (Staurowsky et al., 2015). In this manner, institutions can remain Title IX compliant by slowly expanding opportunities for female student-athletes, rather than attempting to provide equal resources for both genders.

In turn, Title IX creates a perceived legal roadblock to pay-for-play, due to the fact that all female sport are considered non-revenue generating. If pay-for-play were to be initiated the general perception is that female athletes would need to be compensated equitably in relation to their male counterparts, without this the university would not be Title IX compliant (Staurowsky et al., 2015). The NCAA argues that paying athletes in revenue sport coupled with the commensurate obligation under Title IX to pay females athletes would be prohibitively expensive for college athletics (Buzuvis, 2015). This roadblock has brought the pursuit to address pay-for-play in the NCAA to a halt.

Instead of true pay-for-play, the NCAA has allowed schools to modify their definition of cost-of-attendance. This change was brought forth due to the outcome of the O'Bannon vs. the NCAA case in which the court ruled that student-athletes could receive increased payments towards covering the cost of attendance. Courts typically require market-based evidence for a

procompetitive justification. However, to date, no such evidence exists supporting the idea that consumer interest in NCAA sport is dependent upon the player's classification as amateurs. Furthermore, sports such as tennis, rugby, and the Olympics were used as justification that consumer demand was not impacted by changing the status of athletes from amateurs to professionals (O'Bannon vs. NCAA, 2015). Nevertheless, the Court ruled that this evidence was not sufficient in the case of the NCAA, as college sport represented an entirely different product.

Moreover, the Ninth Circuit Court believed that payment to athletes that was untethered to education would cause consumers to lose interest in the sport (O'Bannon vs. NCAA, 2015). Such discrepancy highlights the importance that courts need to place on empirically-produced research as opposed to assumptions when it comes to determining the procompetitive value of amateurism. Blatantly, procompetitive justification for the NCAA's rules that restrict student-athlete compensation should not persist out of blind imitation of the past (O'Bannon vs. NCAA, 2015).

Recently, Gabe Feldman made a proposal that would redefine the term amateur through the rights of players to use their names, images, or likeness (NIL) for financial gain. The Knight Commission has agreed to explore such NIL endorsement opportunities but admits that there are many stipulations that would need to be addressed, such as the fact that such a change would most likely generate major enforcement challenges that would need to be thought through and addressed before implementation (Perko, 2016). The commission has also recognized that such an endorsement deal would only affect a small percentage of college athletes, most likely those in high revenue generating sport.

However, this paper argues that the question of athlete compensation needs to be revisited due to the many factors in the equation that are merely taken for granted such as non-

revenue sport relying on revenue sport income without the necessary empirical evidence to make such a claim. From this, the current study attempts to advance the literature by considering how revenues and expenses are determined for a non-revenue sport. Specifically, this paper will focus on NCAA Division-I Swimming due to the existence of elite level Olympic swimmers, as well as both female and male teams. This will be accomplished through empirically examining what factors are important in determining the revenue and expenses for NCAA swimming programs.

The extensive history of reform and the sheer number of organizational actors within it make it particularly complicated for reform-minded citizens and analysts alike to agree upon meaningful reform initiatives (Staurowsky et al., 2015). Thus, in order to consider the determinants of revenues and expenses for college athletes, there is need to first consider the economic literature on pay and performance in professional sport. In the following, the research on economics within professional sport is analyzed, with special focus on the guidance that it can provide for future research on college athletics.

Pay and Performance Theory

While the arguments supporting the idea that student-athletes are a complete entity of their own and deserve some sort of financial recourse outside of a GIA for the contributions they make to the university's revenue generation, the challenge lies within how such a program would be facilitated (Staurowsky, 2014b; Staurowsky & Sack, 2005). To best model how performance based compensation may work in the NCAA it is important to look back upon the history of pay and performance in professional leagues. The labor market of professional sports has experienced a plethora of rule and regulation adjustments throughout the years, similar to the reforms seen in the NCAA. These changes, along with outside factors, have affected the dispersion of talent and labor across many sport leagues. Baseball in particular has been the

primary context for many early studies that examine this dispersion of labor due to the excess of data available to researchers regarding the productivity and salaries of individual players (Scully, 1974).

Rottenberg's (1956) seminal work is seen as the cornerstone for sports economists due to his numerous contributions to developing a theoretical understanding of the economics of professional sport teams and leagues (Fort, 2005). Among his many contributions, one that stands out is the development of the invariance principle (IP), which has helped to predict the effect of free agency on the labor market and overall competitive balance in professional baseball. Notably, Rottenberg (1956) highlights the idea that the revenue generated from the property rights of a player will not be affected by the distribution of talent within a league. That is, in sport, the owners of a property right usually have the intent to increase their revenue generation and produce positive league outcomes. Therefore, both players and owners as property right holders will make decisions that optimize their revenue generation potential (Rottenberg, 1956; Fort, 2005).

Moreover, there is also risk involved when investing in talent, in the sense that players are like oil wells (Rottenberg, 1956). That is, sometimes the player becomes a productive member of the team and fulfills the overall investment, whereas other times the player is a dry well and falls short of expectations. Thus, this theorization of the risk that comes from investing in human capital in professional sport can help to explain the difference in MRP and player compensation in collegiate sport (Fort, 2005).

It is also worth noting that Rottenberg does not believe that the allowance of player negotiation and potential increases in compensation will lead to a bidding war between the large monopsonistic league powers in attempt to attain the highest quality of talent. To support this

belief, Rottenberg uses the reserve clause in professional baseball, which has been shown that with or without the clause player talent is worth the same amount and therefore the monetary amount of investment should not change (Rottenberg, 1956; Fort, 2005). Rottenberg believes that things such as roster limits, revenue sharing, and individual player salary caps are more likely than potential varying player compensation offers to cause the allocation of league talent to change (Fort, 2005).

Despite Rottenberg's (1956) support of free agency, the reserve clause maintained status quo in professional baseball due to the U.S. Supreme Court ruling in 1922 that held professional baseball exempt from federal antitrust statutes because Major League Baseball did not have a constitutionally defined article of commerce. For years the government had been attempting to pass a comprehensive bill that would hold all four major professional sports associations to the same antitrust statutes. At the time, teams had the ability to implement reserve clauses which bound athletes to a given team until the contracts terminated or the players were sold to another team. Furthermore, leagues also had control over their own territorial rights which gave them the right to organize a team within a certain radius of their home field. Thus partnerships between leagues and broadcasting networks, that were exempt from antitrust laws, benefitted the leagues by allowing them to reap the proceeds of said contracts. The teams argued that these antitrust exemptions were necessary for them to maintain public honesty and to equalize player strengths amongst the teams. It was argued that due to articles such as the reserve clause the sport of baseball was truly kept alive by equally spreading athletic competition amongst teams as opposed to it becoming an economic competition between which teams can pay the most for the most talented athletes (El-Hodiri and Quirk, 1971).

However, El-Hodiri and Quirk (1971) determined that even with the reserve clause and draft system acting as restraints on an economic based market the rules permitting player contract sales lead to a disruption of competitive balance due to the differentiation of economic revenue generating potential between the cities in the league. Although, if teams were to prohibit the sale of player contracts and over time equal out player strengths they would violate antitrust laws due to the necessity of all teams in the league needing to participate in joint action. By decentralizing the control of the teams, possibly through free agency, El-Hodiri and Quirk (1971) believed that player strengths between teams would equalize and therefore maximize overall league profit.

Fort and Quirk (1995) decided to analyze how various changes in the economic structure of the MLB such as, free agency, salary caps, the rookie draft, and television revenue sharing could have on profit maximization both at the team and player level as well as the overall market equilibrium. In regards to free agency, they used the win-percent model to highlight how the change from a reserve clause system to free agency would not have an effect on overall win distribution throughout the league. A downfall of the switch to free agency would be the decrease of subsidies attained by weak-drawing teams when they sell talent. These subsidies may have helped to increase the weak-drawing teams' chances of survival. However, Fort and Quirk reported that no MLB teams went out of business given the switch to free agency and the drop of subsidies for weaker-drawing teams.

Salary caps have also been investigated as a way to control competitive balance amongst sport leagues (Fort and Quirk, 1995). Fort and Quirk compared the National Basketball Association (NBA) win percentages and league championships pre and post salary cap initiation. The win-percent model did not report a significant change in win percentage after the salary cap

had been active for nine years. Adversely, the inequality of the distribution of championships increased almost eleven percent after the introduction of the salary cap. By just looking at these results it could be argued that salary caps fail to promote competitive balance and cause a skewed distribution of championships amongst teams. However, it is important to investigate these claims further to get a better understanding of the true cause of failure in the professional league salary cap system in the hopes to initiate an improved system in NCAA sport.

Fort and Quirk (1995) believed that the failure of this salary cap theory, for the NBA, was largely due to its inability to actually control and equalize the spending on talent amongst teams. Grandfather clauses were in place in the early stage of the salary cap which exempted the highest-salary teams from complying. This made it impossible for other teams to match those salaries and restricted their abilities to be competitive options for the top players and actually caused a negative effect on competitive balance. These strong-drawing teams were highly incentivized to violate the salary cap policies to acquire higher profit for their team. A true portrayal of the effect of salary caps on competitive balance will not be possible in the NBA until the distortion of the data caused by this grandfathering has alleviated.

Ultimately, it is through these reforms within professional sport that we can begin to formulate a sense of the implications that would accompany the introduction of performance based compensation in collegiate athletics. Salary caps, team revenue potential, and the transfer of property rights from coaches to players were all shown to not have a significant effect on the competitive balance of the professional leagues (Fort and Quirk, 1995; Rottenberg, 1956; Coase, 1960). By seeing how such implications have affected professional sport leagues, NCAA reformists can begin to piece together an idea of how such an initiative would look like within collegiate sport.

Considering the above literature, there has been a sufficient lack of empirical examination into the monetary value of collegiate athletes. In response to this lack of empirical evidence, Brown (1993) attempted to estimate the marginal revenue product generated by premium college football players through a regression function of their team's skill level, quality of opponent, and various market characteristics. He then compared this revenue to the maximum payments allocated by the NCAA to determine how much rent players generated for their university. Specifically, he regressed the 1998 team revenues on the number of players that were drafted into the professional league, holding constant the team's market potential and opponent's skill levels using a two-stage least squares regression model.

While Brown's contributions have greatly broadened the scope of collegiate sport economic literature, they have focused primarily on revenue generating sport, leaving non-revenue sport out of the conversation. From this, the purpose of the current proposed research is to broaden the understanding of the financial workings of non-revenue sport within the NCAA. Specifically, the current study attempts to make significant contribution to the literature by examining the revenue and expenses for Division I NCAA swim programs over a seven year time span. Furthermore, this research has important implications for the management of college athletics, especially in considering the disproportional dynamic between revenue and non-revenue sport.

CHAPTER III

METHODOLOGY

To begin with, this study utilizes an econometric approach to investigate the finances of NCAA Division I swim programs. As prior noted, this study considers swimming programs as they are non-revenue sports that have both male and female teams, and most often share coaches and facilities. Along these lines, a revenue function was developed to model the factors which are important in determining revenue for NCAA swim programs. This function was then analyzed by running a multiple regression analysis to produce results. The proposed function takes the form of:

$$\text{Revenue} = f(P_{it}, M_{it}, A_{it})$$

In this, the equation suggests that revenue is a function of team performance (P), the local market characteristics (M), as well as characteristics of the athletic department (A) which sponsors the program.

Model Specification

In order to estimate a full model, the variables used to represent the characteristics within the revenue function were defined, the variables can be found in Table 1. First, beginning with the dependent variables, both revenues and expenses were collected for all NCAA Division-I swim programs. This financial data was collected from the Equity in Athletics Database (EADA), an online website which hosts athletic department financial data as part of their compliance with The Higher Education Amendment Act of 1992. As, the data is used as part of

the Title IX reporting system, the revenues and expenses are separated out for both men's and women's swim programs, allowing for models to be estimated for each gender.

Next, considering the independent variables, the performance of teams is measured using the total number of points (*Points*) a team earned in the NCAA Swimming Championships. While previous studies which have examined determinants of revenue for sport teams have widely utilized team performance in their estimations, this is most commonly done by calculating the percentage of games a team wins (Brown 1993; 1994). However, due to the complex nature of NCAA swimming which combines time trials, qualifiers, dual/tri/quad meets, conference and NCAA championships, win percent is not a reliable measure of determining the quality and performance of swim programs. Furthermore, as swim competitions are individualistic in nature, and often have swimmers from the same team competing against one another, the potential to earn the maximum number of points in a competition is limited.

Thus, from all of this, the present research utilizes the variable *Points*, as it provides a more valid measure of team performance when competing against the best teams within college swimming. Specifically, in the NCAA championships, only the top 16 swimmers in each event can earn points for their team, with the team's dual meet record from the season having no bearing on their standing in the NCAA championship meet. Thus, the *Points* variable takes the form of the team's composite score which will be calculated by allocating points based off final standings in each specific event. In addition to points, the strength of conference opponents (*OpponentsPoints*) was also included to control for the strength of teams which a swim team will most often compete against. In order to calculate the number of points earned by opponents at the NCAA Championships, the total conference scores were summed together, and then the

scores for each school were subtracted to develop a measure which reflects only the other teams they competed against.

Moving to the market variables, the research has theorized the importance of regional and state-level characteristics in determining the interest that fans may show in a program. Since a team's ability to attract spectators, and therefore revenue, has been shown to be a decreasing function of distance, Metropolitan Statistical Area population (*MSAPop*) and total state population (*StatePop*) are included as controls as is done in prior studies (Brown, 1994). MSA and state population data was gathered from the Bureau of Economic Analysis (BEA) data site, with the MSA areas being defined as areas that are larger than cities, which often encompass several counties and are considered to be a better definition of the true size of a local sport teams market (Brown, 1993; 1994). Also, due to the fact that a few schools within the dataset have a small local area populations (e.g., Lewisburg, PA), both micro and metropolitan area data were collected via the BEA site to control for market population.

Last, considering athletic department specific controls, the number of the total number of participants (*Participants*) and total number of swimmers (*Olympians*) who competed in the 2010 and 2016 Summer Olympic Games were gathered. The number of participants is provided by the EADA database, while the Olympic swimmers were gathered by going through the list of Olympic athletes that is published on the NCAA website. In this manner, this study is able to control both for the number of total individuals who are on a team, as well as the presence of any elite level Olympic swimmers. In previous studies, the number in which a player was drafted into the professional league has been used a measure of eliteness (Brown, 1993; Brown and Jewell, 2004). Therefore, in this study, Olympic competitor status is used as a determinant for professional level of competition within the context swimming. Finally, the revenues of the

football and basketball programs at each University were gathered from the EADA site to control for the revenue generation capability of each school.

Table 1 Variable Description

Variable	Description
BasketballRevM	Total revenue generated by men’s basketball at the team’s institution
ChampPointM	Number of points earned by male teams in the NCAA Championships
ChampPointW	Number of points earned by female teams in the NCAA Championships
EFTotalCount	Total number of participants who compete for the team
FootballRev	Total revenue generated by football at the team’s institution
MSAPop	Total state population for the state the team’s University is located in
Olympians	Total number of Olympians who compete for the team
OppPointM	Number of points earned by other male teams in the NCAA Championships
OppPointW	Number of points earned by other female teams in the NCAA Championships
StatePop	Total population of the metro/micro area that the team is located in
yele	State population in 2011
yfive	State population in 2015
yfour	State population in 2014
ysix	State population in 2016
ythir	State population in 2013
ytwl	State population in 2012

Note. NCAA = National Collegiate Athletic Association

From this, these variables allow for the examination of the relationship between the popular belief that non-revenue generating sport, such as swimming, rely on revenue generated from football and basketball. These variables will then be used to form the following equation which is estimated using regression analysis:

$$\text{Revenue} = f(\text{MSAPop}, \text{StatePop}, \text{Olympians}, \text{EFTotalCount}, \text{BasketballRevM}, \text{FootballRev}, \text{yele}, \text{ytwl}, \text{ythir}, \text{yfour}, \text{yfiv}, \text{ysix}, \text{ChampPoint}, \text{OppPoint})$$

Estimation of Data

In order to estimate the factors that are important in determining revenue for NCAA swimming, there is first need to consider the nature of the data and methods of estimation. To

begin with, the data were composed of repeated observations of the same schools over time.

Thus, this data must be treated as a panel data set, which requires adjustments and corrections to the regressions such as using a panel estimator.

Next, in order to estimate results from the panel data set, the STATA statistical software were utilized to estimate several regression models. Considering the panel nature of the data, the regressions were estimated with both fixed and random effects. Following this, a Hausman test was conducted to estimate whether there were statistical differences between the coefficients of the fixed and random effects models. Initial results from the Hausman pilot test suggested that a GLS regression with fixed effects was suitable to estimate the final results for all intended models. From this, four models were estimated, two models examine revenue, one for men and one model for women, as well as another two models to estimate total expenses, one for men and one for women.

Another reason that the use of GLS was used instead of an Ordinary Least Squares (OLS) regression is due to the potential lack of efficiency. Furthermore, the use of GLS is also better suited to this study, as there are several variables which are time-invariant and thus present estimation issues for OLS regressions using fixed effects. Specifically, having variables that do change in observation for each panel during a dataset would cause them to be omitted from an OLS regression preventing their use as controls. Thus, a GLS regression with fixed effects provides the most suitable analysis for this study.

CHAPTER IV

RESULTS

Table 2 and Table 3 represent the models examining total team expenses for male and female teams respectively. The R^2 values given for the expense models range from 0.114 to 0.182, indicating that the models explain about 11% to 18% of the variation in the data. For the revenue models, Table 4 which represents the male teams and Table 5 which represents the female teams, the R^2 values are between 0.006 and 0.204, indicating that the models account for less than 1% to 20% of the variation in the sample. The differences in the R^2 values between may be due to the fact that the models are not congruent, that is two of models use revenue data while the other two use expense data. After the addition of football and basketball revenues to the models the R^2 values increase. This increase indicates that the data fit the model better which shows that the addition of these variables helps to better predict the expenses and revenues for swim teams. However, the R^2 values across all models are still relatively low, possibly as a function of not being able to control for other factors such as coach salary.

Table 2 Men's Team Expense Regression Results

Variable	Coefficient	SE
<i>MSAPop</i>	-0.274	.1317**
<i>StatePop</i>	0.0387	0.0363
<i>Olympians</i>	5,143	5,576
<i>EFTotalCount</i>	-8.288	8.838
<i>BasketballRevM</i>	0.0169	.0053***
<i>FootballRev</i>	0.0052	.0017***
<i>year_2011</i>	27,654	26,097
<i>year_2012</i>	64,409	27,201***
<i>year_2013</i>	74,561	28,790***
<i>year_2014</i>	102,359	30,209***
<i>year_2015</i>	84,285	32,840***
<i>year_2016</i>	108,056	36,168***
<i>ChampPointM</i>	359.14	191.78**
<i>OppPointM</i>	170.01	39.66***
<i>_cons</i>	406,908	301,218

Note. SE = standard error.

* $p < .10$. ** $p < .05$. *** $p < .01$.

The revenue models estimate similar increases for *MSAPop*, for every one increase in the metropolitan statistical area, revenue generation for both men's and women's teams are expected to decrease. The findings in Table 5 conflict with previous studies that have shown significant effects of metropolitan statistical area (MSA) on women's basketball revenue (Brown & Jewell, 2006). The lack of MSA significance for women's team revenue in the current study could be due to a lack of general market potential for women's swimming compared to women's basketball. Following previous research, MSA is used in conjunction with state population to compose a rounded picture of the team's potential market (Brown & Jewell, 2006). In this study state population follows a similar trend across all four models, on average the *StatePop* results for male and female teams are miniscule and not significant.

After establishing a cohort of variables that help to create an estimate of the market potential for a team, the need to establish the talent and competitive stature of a team arose. The

first variable that is used as a way to measure a team's elite talent is *Olympians*, which accounts for the number of Olympic participants on each team. It was found that having swimmers who competed in the Olympic Games did not have a significant impact on team revenues. Such finding conflicts with previous studies which have shown that elite level talent has a positive significant effect on revenue for both male and female teams (Brown, 1993; Brown and Jewell, 2006). In the expense model, Table 3, the variable of *Olympians* is negative and significant. Considering the coefficient, for every additional female Olympian a team is expected to have a \$8,966.62 decrease in expenses. This finding is surprising since one would think that *Olympians* drive expenses in the form of building high level training facilities or employing well paid top level coaches to attract Olympic level athletes. Specialization is the hiring of full-time coaches for both a female and male team of the same sport. This is believed to occur at institutions looking to become more competitive or seek national recognition and in turn is expected to drive up annual operating expenses (Thelin, 2015). However this may not be the case when it comes to institutions that attract Olympic level talent, such as the University of Michigan. In which their male and female teams are both coached by Mike Bottom, allowing the female Olympians to train with the same coach as the males, thus a decrease in operating expenses. Ultimately, it seems that Olympians are unexpectedly going to schools that spend less. An explanation of this finding could be that the institutions attracting Olympic talent already have top-level staff and infrastructure in place and therefore are not actively spending money on establishing them. Unlike their female counterparts, the men's expense model was positive but not significant, indicating that there is an increase in expense per each additional male Olympian. This finding could indicate that at institutions where the teams have the same coach, the salary is actually being placed on the men's teams operating expenses as opposed to the females.

To further contribute to factors that may influence team stature, competitive potential, and market potential *EFTotalCount*, or number of athletes on a team, was added as a variable. However *EFTotalCount* fails to prevail as a contributing factor to team revenue and expenditures by being found insignificant in all models. One could argue that for a given sport industry to survive the competitive talent within that industry must be of approximately equal (Rottenberg, 1956). As such, the invariance principle states that revenue generation from players will not be affected by the distribution of talent within a division. Thus one would not expect to see a significant effect of team size on expense or revenues (Rottenberg, 1956). Athletes may or may not fulfill the overall investment that was spent on them, causing a risk that could negatively affect team revenues. Therefore the talent within the league should be dispersed equally so that teams make up investments that were lost on revenue lacking athletes with high revenue generating teammates. El-Hodiri and Quirk believe that true athletic competition is kept alive through the equal dispersion of players and talent throughout a division as opposed to it becoming an economic expense race between teams (1971). The competitive balance of a league may lead to generalized team symmetry amongst the league and therefore lack of significance of team size on revenue and expenditures.

Table 3 Women's Team Expense Regression Results

Variable	Coefficient	SE
<i>MSAPop</i>	-0.1379	0.1316
<i>StatePop</i>	0.0308	0.0347
<i>Olympians</i>	-8966.62	5392.71*
<i>EFTotalCount</i>	6.81	8.455
<i>BasketballRevM</i>	0.0119	0.0051**
<i>FootballRev</i>	0.0049	0.0016***
<i>year_2011</i>	49731	2534*
<i>year_2012</i>	98358	26440***
<i>year_2013</i>	125619	27924***
<i>year_2014</i>	162581	29296***
<i>year_2015</i>	177597	31869***
<i>year_2016</i>	274433	35011***
<i>ChampPointW</i>	220.48	216.92
<i>OppPointW</i>	19.64	40.38
<i>_cons</i>	384703.7	289603.8

Note. SE = standard error.

* $p < .10$. ** $p < .05$. *** $p < .01$.

Given that swimming is considered a non-revenue generating sport, it allowed for an opportunity to see the effects that high revenue generating sport, which has been extensively studied in the previous MRP research, may have on a less procuring sport (Brown; 1993; Brown & Jewell 2006). Thus the variables measuring football and men's basketball revenue were factored into the equation. Across all four models, football and men's basketball revenue variables are significant. In the expense models, results indicate that as football and basketball revenue increase swim programs are estimated to spend more, possibly showing that more revenue from the larger sports is being allocated to other teams for expenses. In the revenue models, Tables 4 and 5, *FootballRev* and *BasketballRevM* are negative and significant which indicates that as football and men's basketball revenue increase by \$1.00 swimming revenue is expected to decrease by about \$0.01. The potential reasoning here could be that fans are being drawn to attend football and basketball games over swim meets, thus revenue is being generated

by those programs instead. The expense models are both positive and significant. Tables 2 and 3 show that for every dollar increase in basketball revenue men's and women's expenses are expected to increase by \$0.01 to \$0.02. Whereas football revenue is expected to increase revenue only by about a half of a cent. This could highlight the idea that income from the large revenue-generating programs of football and basketball are being allocated to swim programs to help cover expenses. Taken together, this impact supports previous literature showing that football and basketball programs contribute large rents to their universities (Brown, 2011; Brown, 1993).

All four models indicate results of the yearly population increases, 2011 through 2016, as being significant and positive. These variables were added in to show the overall trend of revenues and expenses across the years in this study. This could indicate that as the market potential for swimming grows so do operating expenses and revenues.

Table 4 Men's Team Revenue Regression Results

Variable	Coefficient	SE
<i>MSAPop</i>	-0.1193	0.1446
<i>StatePop</i>	0.021	0.0383
<i>Olympians</i>	1,286	5,882
<i>EFTotalCount</i>	-2.436	9.321
<i>BasketballRevM</i>	-0.0144	0.0056*
<i>FootballRev</i>	-0.0074	0.0017***
<i>year_2011</i>	24,511	27,526
<i>year_2012</i>	92,668	28690***
<i>year_2013</i>	157,638	30366***
<i>year_2014</i>	175,102	31863***
<i>year_2015</i>	175,022	34638***
<i>year_2016</i>	226,503	38148***
<i>ChampPointM</i>	641.89	202.28***
<i>OppPointM</i>	126.56	41.83***
<i>_cons</i>	428,794	317,708

Note. SE = standard error.

* $p < .10$. ** $p < .05$. *** $p < .01$.

The *ChampPointM* variable is positive and significant in Table 4. As estimated, if there is a one point increase in points scored at the men's NCAA Division I Championships, teams are expected to generate an increase of about \$641.89 in revenue. This could tie into the market potential point made above, that the more popular or competitive a sport is the more attention in the market it draws therefore leading to increases in revenue. Teams are gaining money from possible ticket or merchandise sales the more competitive their division is. On the contrary, the *ChampPointW* variable in Table 5 is negative and not significant. This represents a loss in revenue per each increase in points scored at the Women's NCAA Division I Championship. The coefficient on *ChampPointM* for the men's expense model is found to be positive and significant. This could represent the idea that teams are investing in making themselves competitive, therefore their expenses are increasing the more points they earn, Expenses on more successful teams could be due to higher coach salary since one would expect the most productive coaches to be found in the highest level of competition where salaries are the highest (Brown, 2011). The coefficient on the women's expense model is also positive but not found to be significant, reporting an increase. Points were used as a measure of overall team performance as opposed to win percentage due to the better ability of the point measure to fully capture variations in productivity across teams (Brown, 2011).

Table 5 Women's Team Revenue Regression Results

Variable	Coefficient	SE
<i>MSAPop</i>	-0.0098	0.1799
<i>StatePop</i>	0.0286	0.0475
<i>Olympians</i>	437.93	7372.44
<i>EFTotalCount</i>	6.575	11.56
<i>BasketballRevM</i>	-0.0127	0.007*
<i>FootballRev</i>	-0.0071	0.0022***
<i>year_2011</i>	45765	34645
<i>year_2012</i>	144268	36147***
<i>year_2013</i>	185486	38176***
<i>year_2014</i>	195040	40052***
<i>year_2015</i>	243914	43569***
<i>year_2016</i>	294830	47864***
<i>ChampPointW</i>	-481.55	296.55
<i>OppPointW</i>	109.56	55.19**
<i>_cons</i>	218565.6	395920

Note. SE = standard error.

* $p < .10$. ** $p < .05$. *** $p < .01$.

Another measure of the level of competition within a division is the opponent point variable which measures how many points a team's opponents scored during the championships. Both the men's and women's revenue models indicated that the opponent point variables were significant and positive. In Table 4, men's revenue is expected to increase by \$126.56 for every one increase in opponent point. Similarly, women's revenue is expected to increase by \$109.56 for every opponent point earned. This could should that as divisions become more competitive there is an increase in revenue generation, similar to the statement made about championship points above. The significance of the *OppPointM* variable in Table 2 indicates that for every one point increase in an opponent's score a team is expected to spend \$170.01 more on their team. A competitive division could lead teams to spend more money on top-level training or high quality suits. Additionally it may highlight the idea that teams are spending money to win, possibly in the form of recruiting techniques, facilities, and coaching staff. The stronger the conference

competition is the more money a program spends. These data are similar to the marginal revenue product of men's football player research conducted by Brown (2011). In which, Top-25 Point Rankings, which measure the performance of a team in comparison to their conference opponents, was found to be a significant factor in football revenue generation. The coefficient of *OppPointW* for the women's expense model was not significant and noticeably lower.

CHAPTER V

CONCLUSION

As the discussion of the potential for performance based compensation for student athletes grows, the need for more extensive literature on the monetary effects that student athletes have on their institutions will become ever-present. The pay for play conversation will always be limited until the scope of the literature is broadened to include more than just revenue generating sports. Thus this research intends to expand the MRP literature by contributing an estimate of a non-revenue generating sport to the conversation of a player's economic worth.

Specifically the results indicate a few key findings and mixed results that could help to spark future research or conversation. First, all four regression results indicate that both football and men's basketball are significant variables in the revenue and expenditures of Division I swim programs. This would lead one to believe that athletic departments in general may highly rely on the success of their large revenue generating sports to determine the budgeting procedures for other less revenue heavy teams. It would be intuitive to think that the revenue produced by football or basketball is being shared amongst the athletic department as a whole to aid other sports in their survival and potential for increased revenue generation (Brown, 2011; Brown, 1993). In other words, the findings suggest that NCAA programs may not be determining how they allocate expenses based on program specific needs and competition but rather are determining how much is allocated to a program based on their football, basketball, and overall revenue generation capability.

Additionally the variable of Olympians has a significant effect in the women's expense regression. Contrary to initial thoughts on this variable, the effect of having an Olympian on a women's team created a decrease of almost \$9,000 in expenses. This would indicate that for women's teams Olympians do not drive expenses, but in turn are attending schools that spend less money. Such a finding could affect future recruiting practices.

Despite the NCAA's argument that paying athletes in revenue generating sports coupled with the commensurate obligation under Title IX to pay female athletes would be prohibitively expensive for athletic departments, this study found that there was no significant effect of participant counts on team expenses (Buzuvis, 2015). This presents the argument that participant numbers are not a significant factor in determining swim team expenses and therefore would not be expected exceed the expense capability of the athletic departments. Thus, if pay for play were to be initiated, the equality of outcome in paying for both male and female participants cannot be argued as a significant factor on expenses.

Another thing to take into consideration when examining this study is the relationship between revenues and expenses. This relationship can be explained by the revenue theory of cost in which it is theorized that the expenses of an institution are determined by the revenues it generates (Bowen, 1980). Due to many universities non-profit status, they will spend the revenue that they generate to break even. This in turn creates a positive correlation between revenue and expenditures. Thus in the NCAA data used in this study there may not be a large difference between revenue and expenses since the institutions in this study fall into this revenue-to-cost spiral which leads their revenues grow in line with their expenses.

As the college athletic industry continues to grow economically, the duality of student athlete's roles at their universities will persist to fragment in two, their label as amateurs yet their

contribution as laborers. Under the shield of amateurism, these athletes lack the fundamental rights that would accompany the acknowledgement of their labor contribution to the economic growth of their institutions (Staurowsky et. al, 2015). The argument that paying student athletes would unhinge college sport at its core and result in fans to disengage has not been supported by empirical evidence, thus the importance of broadening the literature surrounding college athletic revenues and expenses is ever present (Southall & Staurowsky, 2013). Institutionally, the NCAA holds power through its monosporic nature and spontaneous consent among members who are often cornered into the inability to conceptualize an alternative to the current college-sport logic (Huma & Staurowsky, 2011). The reliance upon the Collegiate Model of Athletics has led the NCAA administration to propagate a disillusioned state of order and equality within college sport economics (Southall & Staurowsky, 2013).

When discussing this study's contribution to the existing literature it is important to note how it provides a new model of athletic economic variables that helps to create a more comprehensive understanding of the existing MRP research. A large roadblock when attempting to drive pay for play initiatives lies within the lack of literature surrounding the topic. The absence of non-revenue generating sports in the MRP empirical literature creates an immediate excuse for the lack of data-driven initiatives. Thus, being the first research to examine a non-revenue generating sport allows the gates for future research to expand with these findings and help complete the picture of overall athlete worth and impact. While ultimately the ability of both male and female swim programs to generate revenues is small in comparison to the research done on football and basketball programs it highlights the idea that there is more to involve in the discussion that just two sports (Brown, 1993; Brown & Jewell, 2006).

With this in mind, future research could expand upon these findings to estimate revenue and expense models for other non-revenue generating sports as a comparison. More variables, such as coach salary, could be added into the existing set of variables to examine the issue of expenditures and revenues in swim programs.

Limitations

One of the biggest limitations of this study is the inability to account for the salary of the head coach, coaching staff, and any other assistants. This is a potential issue because it is possible that the total expenses for NCAA swim programs may be significantly affected by the salary of their coach, as in the last decade non-revenue sport coaching salaries have doubled and non-coaching staff salaries have grown by 69% (Humphreys et al., 2011). We believe that the continued rising of coach salaries highlights that there is an excess of revenue somewhere within the athletic department that allows it to afford these increases in salaries. It is not an issue of how much revenue swimming generates but rather that the NCAA cannot easily make the assumption that paying athletes will be so prohibitively expensive that they could not afford it.

Additionally, the revenue and expense data acquired from the EADA website is not perfect and has been found to have discrepancies between other data sources (Rascher, 2017). However, in most cases the public data does correspond well with the data provided to the NCAA, so it would seem to be a good data source for most sports. In this manner, due to the way that the Department of Education requires the NCAA to report their revenues and expenses, it is possible that a great deal of the expenses that are encumbered by swimming programs may be to actually pay staff and coaches. Therefore, it may be the case that the reported expenses are not actually reflective of the cost and value of operating a non-revenue sport such as swimming, but are more a function of total athletic department revenue.

Thus, it could be argued that the NCAA's accounting and reporting procedures do not provide a clear picture. In turn it makes it difficult to understand the value of non-revenue sports and the distinction between revenue and non-revenue sports and the monetary value of their athletes. In the end, this shows that swimming itself may not be the financial roadblock to pay for play but rather that the discussion should be centered on the definition of athletes as amateurs and the lack of clear monetary reporting procedures to support such a claim.

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VITA

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EDUCATION

University of Michigan - Literature, Science & Arts · Ann Arbor, MI, 2012-2016
Concentration: B.A. Biopsychology Cognition and Neuroscience, Overall GPA: 3.36
Combined Program in Education and Psychology Lab

WORK EXPERIENCE

University of Mississippi, University, Mississippi

Coordinator of Aquatics

July 2017-Present

- Provide daily leadership and guidance to program staff compliant with departmental policies
- Participate in processes concerning development of operational budgets and monitor expenses for program area
- Establish short-term and long-range departmental goals including compilation of data and reporting of programmatic statistics
- Create and coordinate the planning and administration of recreation swimming, swim lessons, lifeguard training, and special event programming on an internal and external basis
- Directly oversee the professional development and daily operations of the Aquatics Graduate Assistant
- Conduct quarterly hiring processes involving interviews, training, and onboarding of new staff
- Evaluate and supervise 40 undergraduate employees quarterly in accordance with the professional attributes put forth by the department
- Coordinate facility schedule and services for multi-departmental allocation of resources and space

Adjunct Professor

January 2018-Present

Education Department of Higher Education – Transfer Student Experience

- Develop course curriculum that provides guidance to new students on university administrative processes
- Introduce students to the missions, values, and constituencies of a comprehensive public university
- Offer guidance to social and ethical concerns that students may face as members of the university
- Communicate opportunities for career, professional, and academic development
- Advise students on university scheduling procedures and course selection

Health and Exercise Learning – Lifeguarding

- Teach students emergency response skills in accordance with American Red Cross Lifeguard standards
- Create semester course curriculum coinciding with the American Red Cross Lifeguarding Manual and university requirements
- Assess student progress and content retention on a bi-weekly basis

Graduate Assistant, Aquatics

August 2016-July 2017

- Maintained an administrative role in the daily functions of the natatorium
- Supervised and scheduled 40 undergraduate staff members in accordance with American Red Cross certifications and facility specific policies
- Organized and facilitated over 40 weekly group and individual swim lessons

- Increased program area revenue through the improvement of the individual swim lesson registration process
- Conducted department-wide training on the safety standards set forth by the American Red Cross
- Experienced with budget projection, payroll administration, and purchase allocation

Goose Creek Country Club, Oxford, Mississippi

April 2017-July 2017

Aquatics Director

- Directly evaluated, trained, and hired 20 aquatic staff members in accordance with American Red Cross policies and procedures
- Developed staff expectations and facility emergency response policies from the ground up
- Supervised operations of pool maintenance and daily upkeep
- Coached a semi-competitive swim team with a focus on stroke technique and development
- Conducted individual swim lessons for all ages and skill levels
- Initiated inclusive programming to create a positive atmosphere that promotes member safety and engagement
- Experienced with the Schedule Fly online programming system

University of Michigan Recreational Sports, Ann Arbor, Michigan

August 2012-August 2016

Club Sport Program Assistant

- Trained new supervisors in the responsibilities involved in monitoring 7 different athletic facilities
- Scheduled 8 supervisors for 80 weekly practices and events in athletic facilities using WhenToWork software
- Led bi-weekly supervisor meetings
- Tracked the submission and approvals of each athlete's motor vehicle record
- Facilitated the travel for over 275 trips annually
- Provided guidance and served as a resource for 31 Club Sport teams regarding travel procedures and policies
- Reviewed and monitored over 100 travel billing reconciliations bi-monthly

LEADERSHIP AND INVOLVEMENT

University of Mississippi

Emergency Response Committee

August 2016-Present

- Coordinate department-wide mock emergency situation testing on over 150 employees
- Develop quarterly emergency action plan skill review quizzes for undergraduate employees
- Certify new staff members in American Red Cross CPR, First Aid, and AED skills

ProRec Leadership Committee

August 2016-Present

- Coordinate fundraising efforts with fellow Campus Recreation employees to increase professional development funds
- Organize community involvement events of 150+ participants
- Contribute program area specific knowledge and updates to better connect the 6 departments of Campus Recreation as a whole

Risk Management Coordinator and Section Leader, Rebel Trail Challenge

November 2015-Present

- Create and implement a risk management plan for over 150 participants
- Responsible for strategically placing and preparing 35 support crew members to respond to emergencies
- Ensure EMS access routes and first aid tents throughout the 5-mile course

University of Michigan Student Life Ann Arbor, Michigan

Vice President of Student Life Advisory Board

August 2015-August 2016

- Provided insight from a student perspective to the Vice President of Student Life on issues regarding diversity, equity, and inclusion with the help of 25 other selective and representative students

Alpha Chi Sigma, Professional Chemistry Fraternity, Ann Arbor, Michigan

August 2012-August 2016

- **Females Excelling More in Math Engineering and the Sciences** - Facilitated science experiments with over 100 elementary students to promote the advancement of females in the many fields of hard science
- **Historian (2013-2014)** - Documented over 15 professional events involving the fraternity over the course of 30 weeks

UBELONG Student Volunteer

Summer Intern, Cendi Alegria, Merida, Mexico

May 2015-July 2015

- Committed over 180 hours to the care of children, ages 4 months to 4 years
- Planned daily classroom lessons across the span of 6 weeks which involved teaching the Spanish alphabet and basic grammar lessons
- Implemented sensory connection tasks with the younger children to promote adequate cognitive development

Summer Intern, Jatun Sacha, Galápagos Islands

July 2014-August 2014

- Participated in a number of conservation programs to help rid the island of invasive species by promoting and improving the complex ecological systems in the Galápagos
- Conducted reforestation efforts at 15 local farms to boost the productivity of local agriculture
- Secured the survival of the giant tortoise species through volunteering 182 hours of help at the Galápagos National Park Service Tortoise Breeding Center

Summer Intern, Pordac Non-Governmental Organization, New Delhi, India

May 2014-June 2014

- Created new marketing ideas to help increase the donation revenue by \$100 every two weeks
- Developed a curriculum for a 6-week summer workshops that serviced 20 students
- Facilitated different children's workshops each day such as art therapy, sensory activities, group therapy, music/dance therapy, and basic computer skills

PROFESSIONAL MEMBERSHIP AND INVOLVEMENT

North American Society for Sport Management

August 2016-Present

- 2017 NASSM Conference Abstract Submission

NIRSA Leaders in Collegiate Recreation - Member

November 2015-Present

- 2015 Region III Lead-On presenter

American Red Cross

- Lifeguard Instructor Certified

December 2015-Present

- Lifeguarding/First Aid/CPR/AED

September 2011-Present