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How College Men's Basketball and Football Stars Impact a School's Revenue



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by

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I hereby recognize and pledge to fulfill my responsibilities as defined in the Honor Code and to maintain the integrity of both myself and the College as a whole.

Andrew Patrick Dawson

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Abstract

The purpose of this paper is to analyze and compare the effects that collegian basketball and football players, who have either been selected to an all-conference team or been selected in their professional draft, have on an athletic program's total revenue. This will be done through theoretical and statistical analysis to determine their marginal revenue product (MRP). Additionally, other variables controlling for teams' success and what conference they play in were taken into account. Although prior work has previously been done on this topic, none compare "star" drafted players to the "star" college athletes whose talents do not translate to the professional level. The results indicate that players eventually drafted in the NBA or NFL generate $1.7 million and $2.4 million respectively in revenues for their schools. While all-conference players make some impact on total revenue, the influence is statistically insignificant and is indirectly related to revenue.

I. Introduction

Every men's basketball and football athlete in the National Collegiate Athletic Association (NCAA) shares the common goal of winning a championship. The crowd going crazy, confetti raining down, and the song "One Shining Moment" blaring in the background. These players are at the center of the sports world. They are on national television, everyone knows their names, and their jersey sales are through the roof. They are living every collegian basketball and football athletes dream. Commonly, these great championship teams have ultra-talented players on their rosters, some of which will play professionally at the next level. However, with all the exposure there is a question that arises; Do all premium college football and basketball players generate similar revenues in their respective sports?

When presenting this question numerous issues come to the forefront. Huge amounts of revenue are being generated for the schools, and in return the NCAA, based on their team's success. The basketball and football players themselves do not receive any of this money they helped generate. Rather, they are limited to the compensation of an athletic scholarship. Due to the money being generated, and the limit to compensation, this paper predicts that many college athletes are being exploited in terms of marginal revenue product (MRP). That is, if their MRP's exceed the value of an athletic scholarship. The question will not attempt to answer if and how college athletes should be paid, as this question is very ambiguous. Instead, the study will answer if collegian stars are exploited. And if so, if stars who do not play professionally have similar MRP's in college of the star players who do get drafted.

For instance, every March and January college basketball and football players respectively show off their talents in the postseason. The sports world is tuned in watching

some of the best teams in the country being led by high-level athletes. Often times these matchups of great teams will consist of great players with two completely different futures. One player is an elite athlete that the professional teams are coveting. The other is a college standout who dominates the competition, but whose talent does not translate well at the next level. However, while in school they are equals. Each player is a star. The only difference is one player is a future draftee while the other is not. The question then arises if this will drastically alter their individual MRP.

With the excitement, talent, and fanfare both these types of athletes can bring, the question remains unanswered. To completely answer this there are numerous factors that greatly affect the level of a player's MRP which will have to be observed. This paper, through theoretical and statistical analysis, hopes to answer the question if star players who do not get drafted are more or less exploited then future draftees in terms of their collegian MRP.

II. Literature Review

As already discussed, the purpose of this study is to analyze the effects that star college athletes have on their respective sport programs total revenue, in relation to the revenue generated by future professional draft picks. The literature review chapter will observe the work done by previous researchers concerning this topic. Ultimately, this section will make it easier to understand and answer the overall question of this study.

Kahn (2007) discussed evidence from Division I-A football and men's basketball teams that the National Collegiate Athletic Association (NCAA) displays cartel like power. The total ticket revenue for football and men's basketball were $757 million in 1999. None of the three major professional sports, baseball (MLB), basketball (NBA), and football (NFL), had higher ticket revenues. And the $564 million of broadcast revenue generated solely from the NCAA men's basketball tournament in 2005, along with college football's broadcast revenue, exceeded both the MLB and NBA broadcast revenues in the same year. Kahn (2007) described how big time college athletics and professional athletics share many characteristics (highly paid coaches, expensive facilities, etc.). However, investor groups own professional teams where the athletes are well compensated, whereas colleges and universities "own" college athletics and their main goal is not primarily athletics, and the athletes are not compensated (some receive free tuition, board, and small amount for living expenses on a full scholarship). Economists view the NCAA as a cartel producing rent while others believe the NCAA values amateurism and competitive balance. In addition to cartel like behavior, Kahn (2007) also used evidence on indirect effects of college sports on the rest of the university.

Furthering his research on the cartel theory of the NCAA, Kahn (2007) discussed the "Sanity Code". This was adopted by the NCAA in 1948 and limited financial aid for athletes to tuition and fees. Fearful of teams leaving, the NCAA allowed athletes to receive full scholarships in 1950. He continued by examining studies that showed college athletes scholarships are far below their competitive compensation. This was based on estimates of marginal revenue product (MRP) for individual players. These estimates were determined using regression analysis that held a school's total revenue of a sport as the dependent variable, and number of college athletes drafted in professional sports as the independent variable. These studies showed the MRP of a draft quality player for football in constant 2005 dollars is $495,000 and $1.422 million for basketball. Both these amounts far exceed the compensation provided from athletic scholarships (typically around $40,000).

The article also showed specific rules and regulations that enabled the NCAA to exemplify cartel like behaviors. One rule in both the NBA and NFL is of eligibility. To enter the NBA and NFL an athlete has to be 19 years of age and have one, and three years respectively, of post high school graduation. This decreases the elasticity of the supply of athletes and allows more time for extracting rents of these athletes. Along similar lines, student-athletes' MRP is also limited by rules prohibiting them from competition for one year if transferring schools. Another NCAA regulation, which was overturned in 1984, prohibited schools from negotiating separate television contracts. After the 1984 season pricing for televised games greatly fell with a sharp increase in the quantity of games televised. This indicates the NCAA was restricting output and raising the price; a common and prominent sign of monopolistic power.

After Kahn (2007) provided evidence and laid the foundation for the NCAA acting like cartels, he wanted to look at the financial effects that college sports have on the rest of the university. It has already been discussed how Division I-A sports programs generate mass profits and do not pay the athletes. The author raised the question of what happens to these funds? College football and basketball raised $4.25 million and $12.97 million in revenue respectively, per Division I-A school in 2003. Combined, the two sports grossed $7.95 million of accounting profit per school. This validates the assumption that big time sports do generate a direct surplus for the college or university. However, financial results in the article illustrated Division I-A athletic departments show a $600,000 loss before accounting for institutional support. Kahn (2007) explained accounting losses may not represent economic losses and that the financial results are likely to be affected by the universities accounting practices. Nonetheless, these losses were due to the revenue sports (football and men's basketball) funds being used to support nonrevenue sports.

Kahn (2007) concluded his research by stating that big time sports programs extract rent from the revenue producing athlete. This is done by limiting their pay, requiring a certain amount of years of amateurism, and using their generated revenue on facilities, nonrevenue sports, and coaches' salaries. In addition, college sports (in particular basketball and football) have positive indirect effects on public and private contributions to the college or university. For instance, successful sports teams appear to make universities more appealing to potential, and former students. This leads to a stronger student body applying to these schools, as well as increased donations from prior graduates.

Hunsberger and Gitter (2014) examined the MRP of a collegiate quarterback. This was done by using revenue and game level playing data from eight and nine seasons respectively. It was shown that the MRP for elite quarterbacks far outweigh the value of an athletic scholarship. Also, Hunsberger and Gitter (2014) used Total Quarterback Rating (QBR), a metric developed by ESPN, and created an estimate of a blue chip (a highly touted high school player) college quarterback. Additionally, in order to evaluate the value of a blue chip recruit, the same test was estimated to determine the differences between blue chip high school quarterbacks versus those who are not highly recruited

The article also shows the NCAA has notoriously acted like a monopoly in the past. Instead of giving an athlete what he is worth on the open market the NCAA has strict rules that limit pay to simply scholarships. By preventing professional status, collegian athletes are deprived of rights that would be given to workers in similar situations. An example of this is how the NCAA did not allow for multiyear contracts until 2013. Even since they have been allowed, many universities are hesitant to give them. Therefore, an athlete can lose his scholarship due to injury or unforeseen circumstances after a single year.

Back to the focal point of the research, Hunsberger and Gitter (2014) chose to concentrate on quarterbacks at BCS schools for a few reasons. The quarterbacks are arguably the most significant position in football where there is an abundance of data, the quarterback position receives the highest compensation at the professional level, and it was easier to compare players at similar football programs. After deciding to use strictly BCS quarterbacks, Hunsberger and Gitter (2014) used a two stage analysis to determine the amount of wins added to a team, which in return leads to additional revenue. The first stage examined quarterbacks

after their college careers by using their collegian statistics and team success. The second stage examined quarterbacks before their college careers. As opposed to the first stage, the players' college performances were not taken into consideration. Stage two's main goal was to predict a high school quarterbacks' future MRP before observing their collegian results. This was done by using the recruits high school measurements to estimate their future college quarterback ratings and winning percentage.

Once the two stage analysis was implemented, the study presented an econometric analysis with four parts. The first part estimated the relationship between a quarterback's performance and their team winning. Hunsberger and Gitter (2014) created a win probability model to calculate this relationship. This model took into account determinants that may influence if a team wins or loses a game. The second step estimated the value of a marginal win. A regression was used for this estimation and considered both wins for the current season and the prior season. The third used the first two steps' results to estimate a quarterbacks MRP. It was concluded that the MRP for a quarterback in a specific season is equal to additional predicted wins, multiplied by sum of current and future additional revenue per win estimates. Finally, the last step estimated a blue chip recruit's ability using their high school ranking. The recruit's ability was estimated using the same information in the previous step, but QBR was replaced with a lag measure of signing a blue chip athlete. Two different approaches are then used to examine the recruit's first year compared to his last two years. This is done because the last two years is where the most positive impact is shown.

The win probability probit regression results from step one recorded predictable results. The effect of QBR on win probability is statistically significant with a positive coefficient. At the

average QBR of 52.6, an additional point raises winning percentage 1 percentage point. This, as will be discussed momentarily, increases the quarterbacks market value. Finally, Hunsberger and Gitter (2014) used regression results to determine that their win probability model correctly predicts approximately 80% of games.

Next, the results of the marginal effect of change in QBR on winning percentage are examined. As hypothesized, QBR and win probability are positively correlated. In fact, average marginal effect of one unit of QBR is equivalent to a 0.9% increase win probability. This indicates that a quarterback with a higher QBR will win more games. Thus, will have a higher MRP. Similarly, results stayed true for the explanatory variables as well.

Finally, the last part of the MRP equation in this study is the marginal revenue estimate. The WINS and lagged WINS variables both lead to additional revenue. An additional win in the current season is equivalent to $420,000 in total revenue. An additional win in the previous season is worth roughly $340,000. The revenue regression analysis showed that an elite quarterback (QBR of 79.8) will produce a marginal product estimate of 3.1 additional wins more than an average quarterback (QBR of 52.6). After more calculations were perfromed, it was determined that marginal revenue from one additional win is worth about $740,000. These results show the MRP estimate of an elite quarterback to be $2.3 million more than an average quarterback. These numbers are staggering, especially taking into consideration that both an elite quarterback and average quarterback are awarded scholarships with the same monetary value (roughly speaking). This implies that elite quarterbacks are drastically exploited, as they generate tremendous amounts of revenue more than the next best player.

The final aspect of this study examined the individual and team estimates of blue chip quarterbacks. As already alluded to, the third and fourth year of a blue chip recruits career is typically the most positively impactful. This indicates a positive relationship between experience and outcomes. Blue chip athletes experience a higher QBR than non-blue chip recruits, which adds an additional .79 wins per season. Or economically speaking, an additional $555,000 in revenue. These results are similar to what was seen with elite and average quarterbacks. All recruits receive the same scholarships even though blue-chip recruits generate more money for their football program. Thus, like elite quarterbacks, are exploited by the schools and NCAA.

Past scholars have indicated that college football players generate immense amounts of revenue each year. Brown (2011) builds on these past articles using extremely detailed financial information of college athletics. Also, Brown's (2011) method accounts for endogeneity of a team's highly skilled players and its overall performance. These college athletes are identified as premium college football players if they are drafted in the NFL draft

As alluded to above, previous works have shown college football players generate revenue of over $500,000 and college basketball players closer to $1 million. However, at that time schools were less transparent about their athletic finances. Therefore, Brown (2011) provided a more modern view of the landscape of the economics of college athletics by using the aforementioned financial information. According to the research sample of 86 college football programs, 80 of them generated revenue of over $1 million. Ten teams received revenues of over $30 million, thirty teams had between $30 million and $10 million, and forty teams earned more than $1 million. These total revenues are higher than those shown in

previous studies by 82%. Reasoning for this may be that now schools have to complete a survey detailing their football revenues and expenses. These reports, which used to be private, became publicized in 2006. The reports allowed Brown (2011) to use a much larger sample size to better the estimation process, more easily decipher the revenues generated by an individual (rather than the team as a whole) due to the specific revenue categories provided, and examine a longer time period of about 20 years.

Past scholars have assumed that an individual player's skills make up the total skill of a team. However, an endogeneity problem exists in these models. Brown (2011) modified previous estimation methods agreeing that individual player skills impacts the team's overall success, but that both of these variables directly affect athletic revenues. In other words, the study uses a three stage system to calculate the MRP of players. The three equations are on premium players, team performance, and finally MRP.

Equation 1 determined the ability for teams to attract highly talented (premium) players. The number of players in the NFL Draft was the dependent variable with the independent variables being team's past success, if that team is nationally ranked or not, the recruiting pool of the school, the market or population surrounding the school, and the number of quality teams the school will play. Equation 2 used similar variables to estimate a team's overall performance based on their number of premium players, the opponents they play, and the coaching ability of the coaching staff. Finally, equation 3 estimated the MRP of collegian football players while accounting for endogeneity of the first two equations.

Brown (2011) concluded that the higher number of premium players on the roster increases the demand for the games which directly affects ticket revenues. Remember, premium players are the college athletes who eventually get drafted in the NFL. In fact, an additional future draftee increases tickets sales by $737,000. Altogether, of the 86 teams sampled, teams averaged 8.14 draftable NFL players which generated a MRP of $1.09 million. Similar to past results, Brown (2011) estimated premium collegian athletes market value far exceed their scholarship compensation, and thus generate large rents for their respective institutions. Moreover, the study shows college football revenues have grown by 34% (adjusted for inflation) compared to previous studies. This shows that recent athletes have generated more revenue than past athletes, thus having a higher MRP. Therefore, throughout the years a collegian athletes' market value in surplus of their scholarships has continuously increased.

Borghesi (2016) performed a study with his main goal examining the value of a high school basketball prospect. Differently than past studies, Borghesi (2016) attemped to answer how much a player should be paid if they were to be fairly compensated. To frame his argument, he discussed the popularity of college athletics and the revenues that accompany it. In 2010, CBS and Turner Broadcasting spent $10.4 billion on a 14-year contract for the Division I-A basketball tournament. In addition, a simple thirty second commercial cost more than $700,000 during the tournament. The NCAA made over $1B from the tournament alone with 96% of this revenue going to conferences and institutions, and none of it going to the athletes. Previous studies show the average net profit for college basketball players are $212,000 per year, with the top players netting over $1.5 million. These calculations were done based on the

perceived value the player had on his team's performance, and the financial value of each additional win.

However, Borghesi (2016) believed estimating a player's value based on wins was not the best approach. He discussed past articles that examined the economic impact of recruiting classes coming into college. Contrastingly, Borghesi (2016) used sport revenue and expense data to create a relationship between the quality of a recruit and the financial gains. This study calculated MRP of new recruits and estimated what a fair compensation for these athletes would be. In order to do this, he used data from the Equity in Athletics Disclosure Act (EADA). This data set provides purely athletic finances to the public. Then, rather than focusing on how much revenue a player generated after watching their careers, Borghesi (2016) focused on "How much should universities pay incoming freshmen?" Results indicate that five-star recruits generate $625,000, four-star recruits $166,000, three-star $91,000 and two-star $50,000. These numbers are what the athletes are worth via contractual obligation, but does not include the millions of dollars they bring to the universities via donations.

The author used three different models to answer his question about "How much should universities pay incoming freshmen?" Model 1 used determinants that might make a recruit go, or not go, to a respective school. This was done in order to see what impact colleges and universities may have on the quality and quantity of recruits (dependent variable). Some of the variables involved are the quality of previous recruiting classes, the performance of the team, cost of the attending the school, and student and metro population. Model 2 examined the impact that recruiting quality has on a team's overall performance. This regression estimated how many five-star, four-star, three-star, and two-star recruits a program has for the

current and previous year. And, as mentioned, how it impacts the team's overall performance. Lastly, Model 3 used both recruiting quality and team performance to determine the financial impact on a universities' basketball program.

Borghesi (2016) results show five-star and four-star recruits are responsible for $5.8 million and $3.1 million respectively. This was based on their overall quality of play and donations to the university. However, it was not taken into account in the study of how much freshmen should be compensated. In order to determine the revenue split for collegian athletes Borghesi (2016) used the 50/50 rule in the NBA (players and owners each receive 50% of the generated revenue). Based on financial data used in this article, Division I basketball revenues are $708,086,000. This would then mean freshmen would receive 15%, or $106,213,000 (the rest would be divided between upperclassmen and walk-ons). Also, to match their market value, five-star players would have to receive $739,000, four-star players $293,000, three-star players $114,000, and two-star players $73,000. Still, these calculations do not include the worth of a scholarship. After accounting for this, it was determined that major universities' scholarships average worth was $126,300, with smaller schools' scholarships being valued at $23,872. Therefore, after assuming these numbers in the calculations, it was determined college freshmen should be paid $613,000 if they were a five-star recruit, $166,000 if they were a four-star recruit, $91,000 for a three-star recruit, and with two-star recruits being compensated $50,000. As has been a common theme throughout, these values are more than the scholarship worth.

Lane, Nagel, and Netz (2012) research argued that the majority of college basketball players' MRP exceeds scholarship value. Not just the star players many believe. The findings

show that 60% of college basketball players MRP's are greater than the worth of the scholarship. Which supports the argument the authors wanted to validate. This was done by estimating the player's MRP using in game player statistics, information on professional salaries, and the player's future draft status.

To examine the MRP for Division I college basketball players Lane, Nagel, and Netz (2012) use two previous approaches that have been updated, along with one new approach. The first two approaches that have been used in previous literature observed the playing statistics of athletes, and utilized the distribution of NBA salaries with the results from the first approach. The third approach used information solely on the athletes that are drafted, and took into account school fixed effects. Results show the average MRP from the first approach is $90,000, and that number rose to $120,000 in the second approach. The third approach shows MRP's of players that are drafted to the NBA to be $150,000 - $275,000 for players at low revenue schools, and $1 million - $1.4 million at high revenue schools.

The article describes how a typical labor market hires employees until the MRP is equal to the MC of the next worker hired. College athletes share many of the same characteristics of employees in the work force. However, the NCAA does not operate like a typical market. They operate as a non-profit organization that does not have the profit maximization of its employees (the athletes) as a priority. Furthermore, a student-athlete does more than simply generate revenue. They may attract new potential students or generate additional donations from boosters. However, Lane, Nagel, and Netz (2012) explain it is difficult to estimate these amounts when calculating the MRP; therefore, it is left out.

The first approach the authors used, measuring MRP using player's playing statistics, is implemented in three steps. The first step performed a win-loss regression analysis using in game statistics of individual and team statistics (points, blocks, rebounds, steals, etc.), the ability of the coach, and the opponent's skill level. The second step estimated a revenue regression that takes into account overall team performance and demand for the program. The team performance's main indicator is the win-loss percentage calculated in step one. Other explanatory variables that indicate demand are the capacity of the stadium, the team's rank, and the number of televised games. To finish, step three involved the first two steps to estimate MRP. MRP is equal to the athlete's performance for the team multiplied by the overall team winning percentage multiplied by the effect winning, or losing, has on athletic revenues.

The second approach in this study estimated MRP of bench players, or players that do not record in game statistics. To do this Lane, Nagel, and Netz (2012) used the distribution of pro salaries in the NBA. The authors assumed that a NBA benchwarmer that receives a salary of 5% of the average NBA player, has a MRP of about 5% of the average NBA player. This is the position-decile-specific-ratio. The authors then ranked college basketball players according to their MRP's (including benchwarmers) and applied the position-decile-specific-ratio just as they did with the NBA.

The third and final approach in this study estimated MRP of each player using the player's future draft status. This was done by using a simple estimate model of team revenue. The explanatory variables are how many players on college rosters were drafted; along with

other determinants of revenue (such as how big their school was and what conference they played in).

Lane, Nagel, and Netz (2012) study showed results that lined up with their hypothesis. The first approach using athlete's playing statistics showed that 60% of all collegian basketball players exceed the monetary compensation of an average scholarship. Secondly, it was determined using the distribution of NBA salaries, that nearly 100% of star players (players drafted in the NBA) generate more revenue for their school then they are compensated by a scholarship. The average profit from these schools (athletes MRP being greater than worth of the scholarship) is approximately $400,000. Overall, the MRP of all college basketball players ranges from $5,000 to $400,000 at small schools, and $100,000 to $2 million at large colleges or universities. These results once again coincide with the findings of other studies in this chapter.

All of the articles and studies discussed in this section were directly related to the main topic of this paper, which once again, is attempting to answer if star players who do not get drafted generate comparable revenues to the future professional draftees. Although each article examined has their own nuances that distinguish themselves, they all support the claim that college basketball and football players are exploited. In particular, the players that are drafted in professional leagues, elite college quarterbacks, and highly rated high school recruits generate considerable amounts of revenue in excess of their scholarships. Throughout this analysis similar methods from these articles will be implemented. However, unlike these studies, this paper will go into detail in comparing the MRP's of collegian stars versus drafted stars.

III. Theory

In the previous chapter, other articles and studies pertaining to this paper's topic were discussed. Although this helped to better understand the argument, further information is required. This chapter will enhance the understanding of marginal revenue product as it pertains to the college athlete, as well as discussing monopoly theory in order to focus on how the NCAA displays cartel like behavior. It will set the rest of the framework for the comparison between the star football and basketball athletes who do and do not get drafted in the next couple chapters.

In recent years, college athletics' popularity has continued to rapidly grow. With the increased popularity there has been extraordinary high revenues accompanied with it. The NCAA and its schools are able to generate this money through promotion, exposure, negotiating contracts, among other methods. However, the NCAA or the colleges would not be able to generate this revenue without the student-athletes. They are the ones that are being promoted, or exposed, and without them there would be no television contracts to negotiate. In coincidence with this, one of the major pillars in creating this framework is to determine how much revenue is generated for the college from an individual athlete. Therefore, the first basic economic theory that will be discussed is that of marginal revenue product. Marginal revenue product (MRP) is the increase (change) in total revenue resulting from the employment of each additional labor unit (Brue, 2006, Pg. 132). An employer will always seek to hire additional workers as long as that worker will contribute more revenue than he/she costs. Just as the amount of total revenue gained by each individual worker is measured by marginal revenue product, there is also a way to measure total costs. This is referred to as marginal wage cost.

Marginal wage cost (MWC) is formally defined as the change in total wage cost resulting from the employment of one more labor unit (Brue, 2006, Pg. 133). It can then be concluded that, assuming a perfectly competitive market, the goal of a firm is to employ labor until MRP = MWC (Brue, 2006, Pg. 133). This ensures that every worker hired to this point is generating more revenue than he/she costs. For example, assume a pizza shop has thirteen workers. However, at thirteen workers their MRP is greater than their MWC. This implies they will be more profitable if they hire more workers (Brue, 2006, Pg. 133). Because of this they will choose to hire until their MRP = MWC. Nevertheless, it is important to note that MRP becomes smaller with each labor unit hired (Perloff, 2011, Pg. 182). Making it increasingly harder to achieve full labor.

Even though the theory of marginal revenue product within firms is being used in conjunction with college athletics in this study, there holds a major distinction that needs to be observed. The first of which is how firms will continually hire additional units of labor until their MRP = MWC (Brue, 2006, Pg. 133). Although this makes sense for firms it does not for colleges and universities. The NCAA limits each team to a certain number of athletic scholarships. College football teams and basketball teams are limited to eighty-five and thirteen scholarships respectively. Now, if we look at football it is possible in theory that all eight-five members of the team have MRP that is greater than, or at least equal to, the worth of their scholarship. In this case the firm, or the college team, would reach their goal of MRP = MWC. Nonetheless, this would be extremely rare for reasons that will be discussed later on. Additionally to the limit of scholarships, schools are not able to “hire” more athletes to gain the optimal amount of revenue.

Separate from the differences between MRP within in a firm and MRP within college athletics, the method in which labor (athletes) can affect their individual MRP's is similar. Understanding the way labor can alter their MRP is vital in the overall comprehension of this study. (Brue, 2006, Pg. 132). A firm may be able to increase revenues by positively impacting the productivity of workers through good leadership and management. In the same way, the productivity of a player may increase due to quality coaching and training. Although there are many different ways to calculate their MRP's, a common way is to look at the ability of the athlete or worker. This leads to a chain of events that in the end allows the labor to generate more revenue for the firm or university. For instance, consider this notion from the perspective of collegian athletes. If Alabama Football recruits an athlete that has tremendous ability to replace an average player, this will in return make the overall team better. The team being better will translate into more wins for the program. And as long as Alabama continues to win people will want to see this improved product, thus garnering more demand. Finally, the higher the demand will correlate to higher revenues for Alabama university. Thus, the athlete with tremendous ability will have a higher MRP because they contributed an additional X amount of wins than the player being replaced could have. To better understand the concept of marginal revenue product of individual collegian athletes a visual representation like the one on the following page may be helpful.

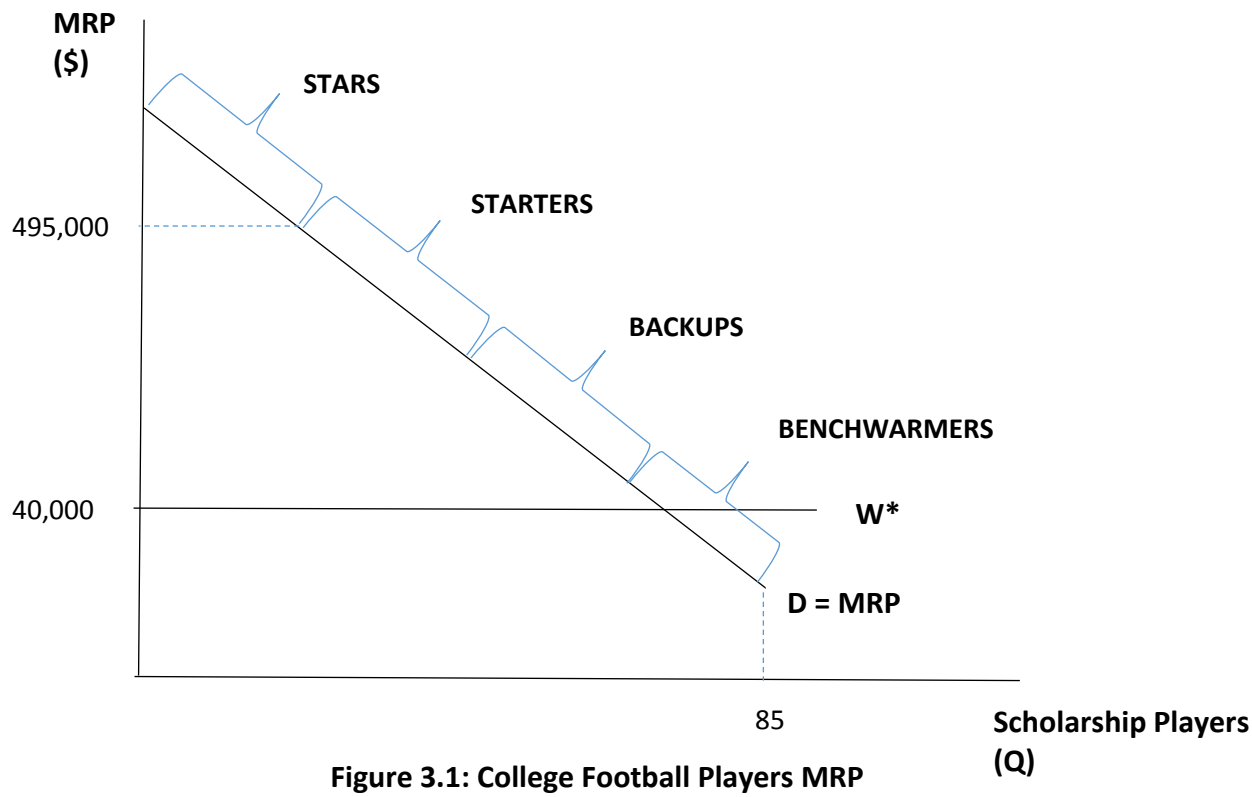


Figure 3.1: College Football Players MRP

Figure 3.1 shown above is a graphical representation of MRP (demand) for scholarship earning college football players. The vertical axis, or Y-axis ($), depicts total amount of MRP for an individual college football player. The horizontal axis, or X-axis (Q), represents the total amount of college students that earned a scholarship on the football teams roster. As seen on the graph there is a horizontal line labeled W*. This is where the concept of price ceiling is introduced. A price ceiling legally limits the amount that can be charged for a product (Perloff, 2011, Pg. 45). Or in other words, a legal maximum price for a good or service. Price limits, like the one in Figure 3.1, exist within college athletics because the NCAA does not allow players to be financially compensated. Regardless of potential, talent level, or MRP, the only compensation the players get is through their scholarship. This is illustrated in Figure 3.1 as regardless of what tier an athlete is in, and how much more their MRP is in excess of the worth

of a scholarship, everyone is compensated the same amount. Also illustrated by the graph, the scholarship typically averages around $40,000 and the average MRP of a draft caliber football player is $495,000 (Kahn 2007). It is important to note the $40,000 is the price ceiling and is the estimated cost for a college education. Not all schools have the same tuition.

Finally, the MRP (demand) curve is broken down into four sections, or tiers. The four tiers are star players, starters, backups, and benchwarmers. As depicted by the graph, star players are exploited the most as their MRP is much higher than the worth of an average scholarship. Often times, these players are widely regarded as top picks in the NFL draft. The next tier are the starters. They are the players that are very good in college but will probably be drafted in the late rounds, if at all. The casual fan may not know who they are, but they help their respective teams win, which in return leads to higher revenues. The third tier, the backups, still may have MRP's higher than their scholarship value, but not nearly to the extent of the star players and starters. Finally, the last tier are the benchwarmers. A majority of them are practice players who may not even dress on Saturdays. Theoretically, these players could achieve MRP higher than their W*. However, they are normally not exploited in terms of MRP as they rarely make an influence on team success.

Just as Figure 3.1 showed the MRP for scholarship earning college football players, Figure 3.2, shown on the following page, is a graphical representation of MRP (demand) for scholarship earning men's college basketball players. The graph remains extremely similar to that of college football, with just a few minor changes. The vertical axis, or Y-axis ($), depicts total amount of MRP for an individual men's college basketball player. The horizontal axis, or X-axis (Q), represents the total amount of college students that earned a scholarship on the

basketball teams roster. As can be seen on the graph there is a horizontal line labeled W*. This is the scholarship worth (the same amount as football) and creates a price ceiling. Also, the $1.422 million represents the average MRP of draft caliber basketball players.

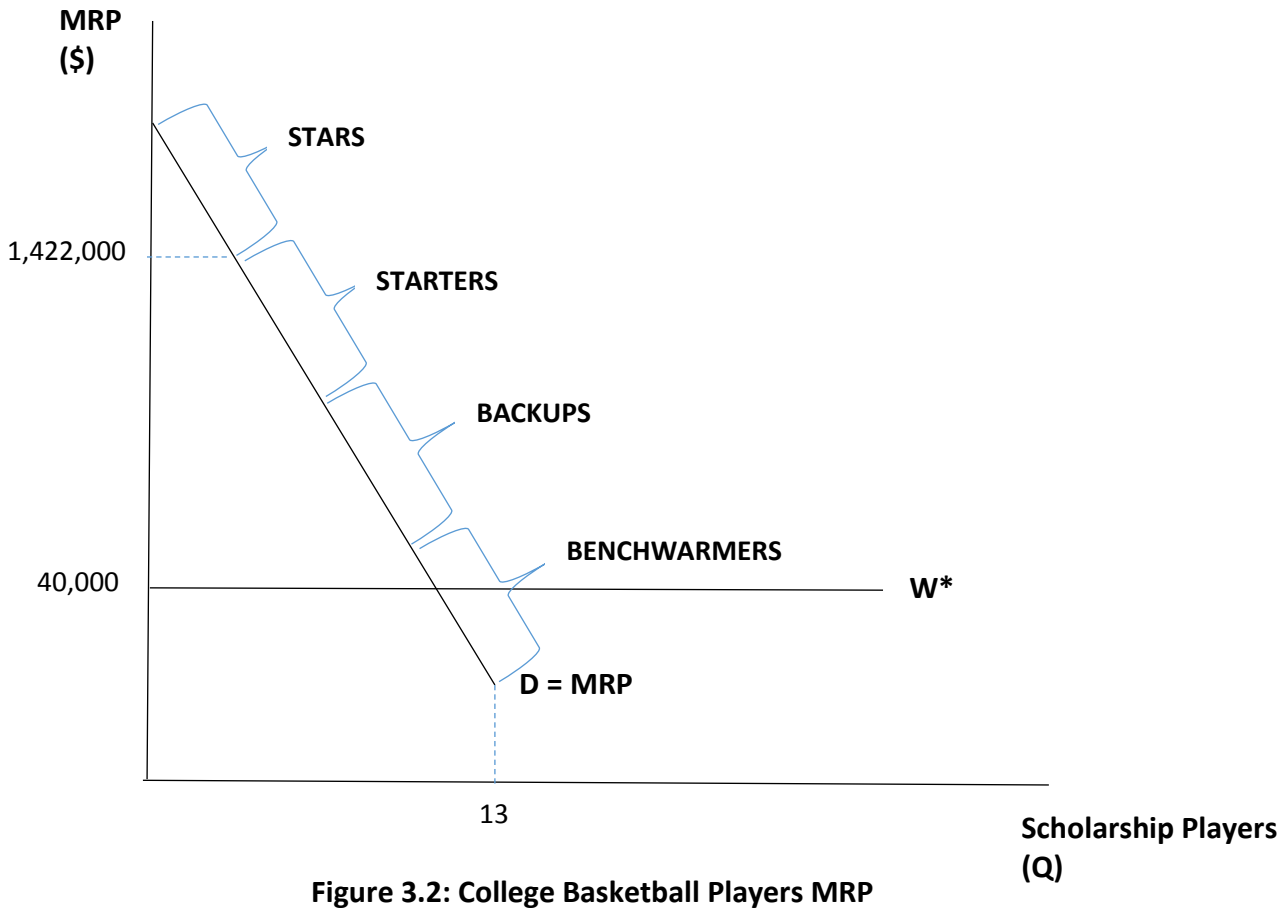


Figure 3.2: College Basketball Players MRP

As depicted by in Figure 3.2 there are only thirteen scholarships available for college basketball, compared to the eighty-five for college football. This is due to the roster sizes in basketball being considerably smaller than that of football. This directly leads to the reason why college basketball players' average MRP is higher than college football players' MRP. It is imperative to note that this holds true for the average MRP. A singular football player can have

a higher MRP of a basketball player as will be shown. But first, why is average MRP for basketball players higher even though college football generates more revenue than college basketball? A major reason is due to the smaller roster size, and smaller starting lineups (basketball starts five players and football starts twenty-two, eleven on offense and eleven on defense). In accordance with fewer athletes being on the playing surface at one time, a single player has more of a chance to impact the overall team performance in basketball. Yet, this is not always the case as there are exceptions. Once exception is a college football quarterback. A star quarterback at a major football school will produce a higher MRP than a star basketball player at a major basketball school. As already mentioned, college football makes more money than college basketball. The only reason the average MRP of basketball players is higher is because they have a greater opportunity to impact the game. A quarterback in football shares this same opportunity as they have the ball for essentially every offensive play (there may be a direct snap to another position player). Due to the fact football makes higher revenues and quarterbacks can have the similar, if not more, of an individual impact on a game than a star basketball player, they will garner a higher MRP. Lastly, holding injuries constant, backup basketball players also make more of an of an impact on a team's win probability. Unlike in football where a backup offensive lineman may only play if there is an injury, reserve players in the rotation may get minutes every game. Therefore, basketball teams have a higher portion of their roster making an impact on the game, and their singular ability effects the game more than a football player's singular ability.

After examining both the MRP's of college basketball players and football players and the graphs of both, the theory suggests that athletes will generate more money for their

universities then they are compensated with their scholarship. Therefore, if this is the case, the student athletes who fit these criteria are being exploited. Exploitation in this paper is an athletes' MRP in excess of the worth of a scholarship. To observe this think about the price ceiling implemented in the previous graphs. If the price ceiling did not exist players could continuously earn X amount of dollars until they received payment equal to their MRP. As the previous graphs show, the distance between the scholarship and MRP becomes larger as the demand curve increases. This indicates that although many athletes are theoretically exploited, star players and starters are exploited to higher extent.

Aside from marginal revenue product, another economic theory that can help provide the framework for this study is the economic theory of monopolies. In the past, the NCAA as an institution has displayed monopolistic characteristics. A monopoly exists when there is only one supplier of a good for which there is no close substitute (Perloff, 2011, Pg. 358). Just like any other firm, a monopoly's goal is to maximize profits (Perloff, 2011, Pg. 359). However, they have unfair advantages that other firms do not have. These can be seen in five common monopoly characteristics that will examined in this section. 1) Monopolies are the only seller in their industry, 2) in terms of products there are no close substitutes, 3) consequently of the first two characteristics, these firms are able to set their own prices, 4) they will not have to contend with any competitors because there is blocked entry, and 5) there is information that monopolies have that other firms do not (Perloff, 2011, Pg. 476). These five characteristics can be visually seen in Figure 3.3 on the following page.

Figure 3.3: Monopoly characteristics

	Monopoly	NCAA
Number of Firms	One	✓
Products	Homogenous	✓
Ability to Set Price	Price Maker	✓
Entry Conditions	No Entry	✓
Information	Specialized	✓

The table above is a visual representation of common monopoly criteria, and whether or not the NCAA have met these criteria in the past. As Figure 3.3 shows, the NCAA has indeed displayed all the characteristics of a monopoly that will be observed in this paper. In doing so, many economists see the NCAA as the cartel. Within their cartel they have the colleges as their employers. They are the ones who employ the labor (athletes), but still are controlled by the NCAA. In order to exemplify how the NCAA has done this, the Kahn study discussed in the literature review section will examined.

With regards to the first characteristic, the NCAA is in theory the only seller in their industry. There is no other company or institution that can "sell" collegian athletics. Literally speaking, this is the definition of a monopoly as described by Perloff. A monopoly exists when there is only one supplier of a good for which there is no close substitute (Perloff, 2011, Pg. 358). The latter half of this definition, no close substitutes, is directly correlated to their being only one seller. Because the NCAA is a conglomerate organization that governs the colleges, their product is homogenous. The colleges (employers) are putting out their product, but it has to be under the NCAA's standards. Thirdly, the NCAA may be seen as price maker. They have the power to influence the price it charges because there are no close substitutes. An example of this, as seen in the Kahn (2007) study, is of the NCAA old television deals. Before 1984 when

the NCAA had total control over television deals, their output of games was small while their revenue remained high. After 1984 their output increased, even though their revenue slightly decreased. According to Adam Smith's theory that firms have incentives to form cartels in order restrict output to raise prices, this is a perfect example how the NCAA is a price maker in a monopolistic industry (Perloff, 2011, Pg. 477). The fourth characteristic, blocked entry, can be exemplified through the NIT. Kahn (2007) discussed how the NIT basketball tournament used to be regarded higher than the NCAA tournament. To change this, the NCAA instituted a rule that required teams to put emphasis on the NCAA tournament over the NIT tournament. Instances like this have restricted competitors from entering the college sports market. Finally, the fifth characteristic is that of specialized information, or in this case incomplete information for the consumer. As seen in Borghesi (2016), it was not until just recently that the Equity in Athletics Disclose Act (EADA) data sets were implemented. EADA forces universities to publicly release sport-related financial data.

The work and economic theories provided above suggest that the majority of college athletes are monetarily exploited. While this is true in theory, it cannot be the sole determination in answering the question of this paper. This section also theorizes that the level of exploitation varies, with some not being exploited at all while others are at an alarmingly high rate. In conjunction with the rest of the paper, the following chapter will provide evidence through empirical data to support the claim star players, regardless if they play professionally or not, will be exposed to similar levels of exploitation.

IV. Empirical Analysis

To continue to further the analysis of the MRP of both star collegian athletes and professionally drafted athletes, the empirical results will be introduced and explained in this section. While the literature review and theory section each achieved specific purposes, presenting similar work from previous studies and an examination of economic theory as it relates to this topic, the results from this section will determine and compare the average revenue generated for each particular school by all-conference players and future draftees. This will be done through the use of two regression analyses; one determining the impacts of college football revenue among major conferences and the other college basketball revenue among power 6 schools. The conferences being observed will be discussed shortly.

Before analyzing the regression analysis the various variables used in the study will be described. This is done before examining and interpreting the actual data and results when performing the regression in order to fully understand the results. All of the data used in this study were compiled during the 2012-2013 and 2013-2014 college basketball and football seasons. The data consists of all teams that participated in any of the major conferences during the years the data was collected. Past scholars have utilized many different variables in performing similar work. This analysis will be analogous to those works, while some nuanced variables will be introduced to garner the best results. The first variable used in the analysis which is the dependent variable is total revenue generated from 75 basketball and football teams. This data was acquired from the Equity in Athletics Disclosure Act (EADA), which is a federal law that requires universities to publicly release sport specific financial information about their athletic programs. This includes revenues from appearance guarantees, and

options, an athletic conference, tournament or bowl games, concession, contributions from alumni and others, institutional support, program advertising and sales, radio, and television, royalties, signage and other sponsorships, sport camps, state or other government support, student activity fees, ticket and luxury box sales, and other any other revenues attributable to intercollegiate athletic activities during the two year period this study takes place.

Next, all the independent variables in the regression model will be described. The next two variables to be explained are all-conference and drafted. These variables, along with the dependent variable revenue, are essential in answering the main question being asked in this study. All-conference is determined by the number of players each team has selected to an all-conference team, whether it is first-team, second-team, or third-team all-conference. All-conference teams consist of the best players within the conference their team plays for. These athletes are selected based off individual performance throughout the season as voted on by division coaches. These are the players that are considered "stars" but are not selected in the professional draft (NBA or NFL). The impact all-conference has on revenue will be closely compared to that of the drafted variable. The drafted variable will simply be how many players each team had in the seasons in question that were eventually drafted professionally. That is, the first regression will take into account how many players were drafted into the NBA. The second regression will consider how many players were drafted into the NFL. Many of the collegiate athletes that are selected to all-conference teams or drafted have similar skill sets for their level of competition, with the distinct difference being their potential and ability to translate their skill set professionally. These variables are used to determine the average MRP

of “star” all-conference athletes and “star” players that are selected in the draft. However, there are other determinants of a school’s athletic revenue that need to be considered.

The next set of variables are all directly related to a team’s overall ability and success. They are winning percentage, lagged winning percentage, and opponents winning percentage. Win percentage was determined by the winning percentage each power conference team had during the 2012-2013 and 2013-2014 respectively. Winning percentage is calculated by dividing a team’s total number of wins by their total number of games players (wins plus losses). The more wins a team achieves the higher their winning percentage will be. This will be used to determine if a team’s ability to win games impacts the total revenue generated by their colleges or universities. Lagged win percentage is the winning percentage by a team in the season prior to the one being examined. For instance, for the 2013-2014 season the lagged winning percentage will be a team’s winning percentage during the 2012-2013 season, and the 2011-2012 winning percentage will be used for the 2012-2013 season. Lagged winning percentage is included in this analysis to determine if a team’s success in the prior year is correlated to generating revenue in the current year. In addition to winning percentage and lagged winning percentage, opponents winning percentage is also included. This variable is the combined winning percentage of all opponents that are on a team’s schedule. For example, if Michigan’s 2012-2013 basketball schedule consisted of only Penn State (10-21) and West Virginia (13-19) their opponents winning percentage would be 36%. Will a quality opponent lead to increased ticket sales or more nationally televised games? This variable will show if opponents success leads to increased total revenue.

Furthermore, other variables examined if a team was ranked or not at the conclusion of the season and whether or not they participated in the postseason. To determine if a team was ranked, data was observed from the Associated Press (AP Poll). These AP Polls were compiled through the votes of sportswriters and broadcasters. Each vote was weighted so a first place vote was worth 25 points, second place 24 points, and so on and so forth until the twenty fifth place vote. Essentially, the main point of this poll was to recognize the best 25 basketball or football teams in the nation. The ranking variable is an interactive variable that equals 1 if a team is ranked, and 0 if they are not. The next three variables, tournament, bowl, and BCS, will be used to analyze if a team's postseason appearance effects the dependent variable. All three are interactive variables that indicate whether or not a team made the postseason. The tournament variable equals 1 if a team is selected to the NCAA tournament, and 0 if they are not. Bowl and BCS are also dummy variables that equal 1 if they play in a bowl or BCS bowl respectively, and 0 if they do not. College football had 30 bowl games and 5 BCS games, including the National Championship, in the seasons in question. Typically, the BCS games consisted of superior teams to that of bowl games.

In order to see if the conference a team plays in influences revenue, a group of interactive variables were created. Data from all teams in the "Power 5" conferences were compiled. The Power 5 consist of the Atlantic Coast Conference (ACC), Big 12, Big Ten, Pac 12, and Southeastern Conference. In addition to the Power 5 this analysis included one more conference for each basketball and football. The football regression contained the American Athletic Conference (AAC) and the Big East for basketball. In 2012 the Big East was grouped with the Power 5, which was formerly known as the Power 6. However, due to nationwide

conference realignment many teams left the Big East in basketball and the league was completely disbanded in football; which lead to the creation of the AAC. The Big East was still involved in the analysis because still contains perennial powerhouses and historical programs such as Villanova and Georgetown. The AAC has recent upstarts such as Houston and Temple, and was included in order for both regressions to remain consistent with one another. Therefore, for the purposes of this paper the conferences have been referred to as the "Power 6".

Now that all the variables used in the regression have been introduced and explained, the results can finally be analyzed. The first model to be examined will be revenue generated in college basketball. Table 4.1 on the following page is made up of the statistical results for this regression. Lastly, the variables were observed as statistically significant at the 90%, 95%, and 99% confidence intervals. The model for this analysis is shown below:

$$\text{Revenue} = \beta 0 + \beta_1 \text{allconference} + \beta_2 \text{drafted} + \beta_3 \text{win} + \beta_4 \text{ranking} + \beta_5 \text{laggedwin} + \beta_6 \text{tournament} + \beta_7 \text{opponentwin} + \beta_8 \text{conf_ACC} + \beta_9 \text{conf_Big12} + \beta_{10} \text{conf_BigEast} + \beta_{11} \text{conf_Pac12} + \beta_{12} \text{conf_SEC}$$

Statistical Results: College Basketball Revenue

Table 4.1

	Revenue	
	Coefficient	**t-value**
All-conference	385236.3	0.58
Drafted	1736401**	2.40
Winning percentage	6168675	1.06
Ranking	2708994*	1.86
Lagged win percentage	8043354**	2.28
Tournament	-2213499	-1.44
Opponent win percentage	46100000**	2.38
ACC	43690.67	0.03
Big12	-3473371**	-2.22
BigEast	-3559417**	-2.26
Pac12	-4391570***	-2.95
SEC	-1039965	-0.69

Note: Statistical Significance as follows: *p<.10, **p<.05, ***p<.01

The first variables that will be evaluated are drafted and all-conference, which are the focal point of this study. The drafted player's variable was considered statistically significant at the 90% confidence interval. However all-conference was statistically insignificant. It was estimated the MRP of elite college basketball players who pursued NBA careers to be $1,736,401. The revenue produced by these student-athletes far exceed the average $40,000 worth of an athletic scholarship. In addition to these players having a potential impact on the team's overall ability, they also garner excitement and attention from fans. Even if the team is not performing well schools still may notice an increase in revenue due to the influence of the individual product (the athlete). They are appealing because of their potential to be one of the greats at the next level and a bit of a mystery with many of them being in the national spotlight for the first time. This is especially true today in the world of "One and dones". The fact that certain athletes will only attend the university for a short period of time may actually increase

their demand as their supply of games played will be relatively low. It is important to note here that although this theory raises the average MRP, there are still numerous upperclassmen that get drafted. Aside from NBA players, athletes that were named to an all-conference team were found to be insignificant in creating more monetary value for an athletic program. Yet, it does not necessarily imply that all-conference players do not effect total revenue. As the drafted variable was more inclined to assume the potential of a player, all-conference is a factor of their immediate talent to their current circumstances (playing collegiately). Therefore, it measures an athlete's current ability which is directly transferrable to a team's overall success. As will be discussed next, the variables that controlled for a team's success lead to increases in revenues. Although not evident when tested for, it is apparent that a collinearity exists between these control variables and all-conference.

Of all the team success control variables only winning percentage and if a team made the NCAA tournament were found to be statistically insignificant. At first, winning percentage not being significant was surprising. If a team's success increased revenue, then why would winning more games not be a factor? This is because the winning percentage variable measures the impact of only a small percentage increase. Often times an incremental increase in win total of just one is not of any importance. For example, the 2013 Penn State team with more than double the amount of losses than wins, would not benefit from improving their record from 10-21 to 11-20. The win would be irrelevant. However, it is important to note that saying team success does not matter is incorrect. Although the variance inflation factor (VIF) was measured to be less than 10, it is apparent there is still an effect of collinearity. Nonetheless, this is not too concerning as VIF is still less than 10. Playing in the NCAA

tournament being an insignificant factor is not entirely shocking. The main revenue from the tournament resides in the television contract with CBS/Turner. The contract currently makes the NCAA tournament with more than $1 billion dollars annually, with a portion of this money being distributed to the different conferences. However, each conference divides a portion of the money they receive to each school equally, completely non-dependent on if they make the postseason. Differently than winning percentage and tournament, ranking, lagged winning percentage, and opponents winning percentage were all significant. If a team is ranked or not is hypothesized to have the reciprocal impact of winning percentage as described above. It indicates that a team is considered one of the best 25 programs in the country, meaning each win could be the difference between winning a conference championship or finishing 2nd or 3rd. Lagged winning percentage implies that many predictions and attention are formulated about a team based off past results. This is best evidenced by the fact many of teams who generated the highest amounts of revenue are esteemed programs with rich histories. Finally, opponent winning percentage was shown to have the biggest effect on revenue. Reasoning for this is demand is highest for games that have national implications between two good, or great, teams. Ticket sales will soar for a game if an exciting and talented team like the number 1 ranked 2014 Florida Gators enters an opposing venue. Furthermore, playing a quality opponent increases the likelihood you will participate in a nationally televised game, which ensures more revenue for the school.

The final set of variables observes if being in a certain conference results in additional revenue for an individual school. The omitted variable, or base variable in which all the conferences are compared to in terms of revenue was the Big Ten. Other than their being no

significant difference in revenue generated between the Big Ten, ACC, and SEC, the Big Ten saw millions of more revenue than the Big 12, Big East, and Pac 12. This makes perfect sense as the Big Ten had rights to two different $1 billion television deals ($1 billion with ESPN and $2.8 billion with the already established Big Ten Network) and was the breadwinner of NCAA tournament receiving over $70 million in 2014.

After analyzing the results of the college basketball regression, it is time to do the same for college football. It is important to note that the explanation for some factors may not be in as much detail as the same reasoning holds true for the already discussed college basketball. Table 4.2 on the next page show the statistical results for this regression. The variables were observed as statistically significant at the 90%, 95%, and 99% confidence intervals. The model for this analysis can be seen below:

$$\text{Revenue} = \beta 0 + \beta_1 \text{allconference} + \beta_2 \text{drafted} + \beta_3 \text{win} + \beta_4 \text{laggedwin} + \beta_5 \text{bowl} + \beta_6 \text{BCS} + \beta_7 \text{opponentwin} + \beta_8 \text{conf_ACC} + \beta_9 \text{conf_Big12} + \beta_{10} \text{conf_AA} + \beta_{11} \text{conf_Pac12} + \beta_{12} \text{conf_BigTen} + \beta_{13} \text{Ranking}$$

Statistical Results: College Football Revenue

Table 4.2

	Revenue	
	Coefficient	**t-value**
All-conference	1103101	1.53
Drafted	2435873***	3.17
Winning percentage	18300000	1.61
Lagged win percentage	20800000*	1.89
Bowl	-3179522	-0.73
BCS	-2213499	-0.43
Opponent win percentage	34000000	1.06
ACC	-22700000***	-4.77
Big12	-8251790	-1.52
American Athletic	-36700000***	-6.12
Pac12	-13900000***	-2.98
BigTen	-6831844	-1.44
Ranking	-10100000**	2.29

Note: Statistical Significance as follows: *p<.10, **p<.05, ***p<.01

Comparable to the results observed in the basketball model, the football model also saw statistical significance in drafted players but not all-conference players. The premium players who continued their careers in the NFL were shown to have a MRP of $2,435,873. Once again, far exceeding the average monetary value of an athletic scholarship. Although the all-conference variable was statistically insignificant, it closely bordered the .10 significance with a .128 p-value. This implies that all-conference players may have some impact on revenue. Why do all-conference athletes in football have more of influence of a school's revenue than basketball players? Possibly due to the fact a lower percentage of players in football are selected to all-conference teams. A football player has to make even more of an in game impact and perform even better to make an all-conference team. Thus, all-conference football teams are comprised of higher quality collegian athletes as compared to the watered down all-conference basketball teams.

Winning percentage is extremely similar to the all-conference variable. Winning percentage is statistically insignificant but also lies right outside the 90% confidence interval with a p-value of .111. The main hypothesis for why this is more significant in the football model is the fewer amount of games. A college football season characteristically is only about 12-14 games. The small sample size of games leads to an increased importance in each and every game, something the NCAA prides itself in. Therefore, one more additional win may be of the utmost importance for a team. A one or two-win swing may very well be the difference in competing for a National Championship or participating in the AT&T Cotton Bowl Classic. The next variable in the model which will be analyzed is opponent winning percentage. This was deemed to be statistically insignificant. This can also be attributed to the short regular season. With each game being so important, there is not a major decrease in demand if a team is playing a lesser quality opponent. For instance, look at the 2013-2014 National Champions Florida State's schedule. The last game against a scuffling, albeit rival, Florida Gators team (4-8) to finish off an undefeated regular season was arguably just as important as their October 19 game against #3 ranked Clemson. The most unexpected result came from the analysis of if a team was ranked or not. This model indicates that teams that are ranked make over $10 million less in revenue than those who are unranked. This seems to be counterintuitive to the theories that have already been hypothesized. Possible reasoning may be there were no variables that accounted for a school's student population or the market of the city in which the college resided in. Nonetheless, more data may be needed to make a more informative hypothesis. Furthermore, although tested for, collinearity with ranking and other success control variables may exist. One final area of interest was playing in a BCS bowl did not have an

effect on the dependent variable. This was surprising as BCS games involve only elite teams and are the only games being broadcasted at that time. However, similar to the NCAA tournament, these bowl games are already pre-established contracts signed by the NCAA.

Lastly, the results of the variables pertaining to which conference a team is in will be examined. The base variable in which all the conferences are compared to in terms of revenue was the SEC. The teams in the ACC, AAC, and Pac 12 all experienced extremely less revenue than they would have had they been in the SEC, with the Big 12 and Big Ten not being of importance in comparison. Similar to the Big Ten in basketball, the SEC generates large amounts of revenues in TV contracts and bowl appearances. In fact, the SEC launched its new SEC Network for the 2014 football season. It is widely known as an ultra-successful television launch, and in August of 2014 it was already valued at an estimated $4.77 billion.

V. Conclusion

The overarching purpose of this paper was to estimate and compare the MRP of premium men's college basketball and football players, of which were drafted professionally and those who were selected to an all-conference team during the years this study takes place. The results suggest that drafted players directly impact the total revenue of a school while all-conference players have more of an indirect effect. Future NBA draft selections generated $1.7 million and NFL picks had a MRP of $2.4 million. Although both results are similar to previous studies in the fact they generate large amounts of revenue in excess of the monetary value of an athletic scholarship, it varies as NFL caliber players have a higher MRP than NBA caliber players. This is counter to the expectations set forth by the theory section. The chapter theorized basketball players will have a higher average MRP than football players due to smaller roster sizes leading to more of an opportunity to influence team performance. While this may still hold true if a wider time period of data was collected, the data in the particular years being observed in this paper refute this notion.

Theories for this include that in the seasons in question, the draft caliber players not only displayed immense potential but also produced on the field at the college level. This can be evidenced by the ultra-talented and deep 2014 NFL draft class, which has already seen 16 players (25%) drafted in the first two rounds become Pro Bowlers. The indication here is these players were not merely drafted for potential, but were already talented enough to perform well from day one. Additionally, the reverse could be said about 2013 NBA draft class. This class saw multiple high draft picks like 1st overall pick Anthony Bennett and top 10 selection CJ

McCollum come from smaller schools (UNLV and Leigh). Moreover, an influx of European talent like Giannis Antetokounmpo accompanied these smaller school athletes.

Finally, as already discussed in detail earlier, all-conference players do not have a direct effect on total revenue, but do indirectly influence the dependent variable by contributing to a team's overall ability and success. As both drafted and all-conference players impact total revenue differently, it is hard to compare if one makes more than another. However, it can be said that both sets of athletes, in addition to other factors that control for team success and the conference they are in, play a role in a college or universities ability to generate revenue.

In order to improve the model used to estimate the MRP of these athletes different methods could have been performed. For instance, to avoid collinearity less success control variables could be utilized. Once again, collinearity was not evident when tested for in this analysis (VIF<10), but the results indicated it may have existed. Nonetheless, the results were still used confidently as the variance inflation factor was below 10. To account for collinearity, certain success control variables could be replaced with variables such as the market in which the university is located in and student population. Also, the criteria for drafted and all-conference players could be altered. The model could be changed to see if being a first team all-conference player impacts revenue more so than a third team member. Or possibly even changing the all-conference criteria to some sort of national award. Similarly, the model could adjust to analyze the difference between revenue generated by future top 10 draft picks, 1st round draft picks, and 2nd round draft picks. By implementing these changes future research conducted may be a better estimator of total revenue generated.

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