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Statistical Analysis of the National Basketball Association's Age Minimum: Financial and Cultural Outcomes Associated with Collectively Bargained Draft Eligibility Rules

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Statistical Analysis of the National Basketball Association's Age Minimum:
Financial and Cultural Outcomes Associated with Collectively Bargained Draft
Eligibility Rules

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B.S.E, University of Kansas, 2011

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Master of Arts Thesis

Statistical Analysis of the National Basketball Association's Age Minimum:
Financial and Cultural Outcomes Associated with Collectively Bargained Draft
Eligibility Rules

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Abstract

This study is a statistical analysis of drafted players in the National Basketball Association before and after the 19-year age minimum, implemented as part of the 2005 Collective Bargaining Agreement. These statistical analyses are aimed at determining the effects that the age minimum has had on both potential draft entrants, as well as the teams that are making personnel decisions. Research was then narrowed to three primary questions.

1. Have changes to the 2005 CBA, in regards to the age limit, significantly affected the age of players drafted? How do the average draft, first round, and lottery ages compare before and after the implementation of the 2005 age limit?

Analysis- The first question resulted in an analysis of the age of drafted players by each of the 14 years surrounding the age minimum. T-tests were used to determine the level of significance of these relationships.

2. Have changes to the 2005 CBA, in regards to the age limit, influenced additional early entrants picked in the NBA Draft?

Analysis- The second question resulted in an evaluation of the education of each player drafted during this same period of time.

3. Have changes to the 2005 CBA, in regards to the age limit, effected the on-court development of NBA players in the first five years of their careers? Are the rule changes affecting first round and lottery picks disproportionately?

Analysis- The final questions resulted in a statistical analysis of the on-court contributions of each of these 14 draft classes.

Introduction

The National Basketball Association (NBA) has had a long lasting debate over an acceptable age for its draft entrants. Unlike other professional leagues, the NBA's eligibility rules have changed several times over its existence. Teenage players have proven that they can be highly successful at the NBA level. This has only fueled the debate over player eligibility. This thesis is an analysis of the draft selections that surrounded the implementation of the 19-year age minimum in the 2005 Collective Bargaining Agreement. This rule change included a mandatory provision that players must also be at least one calendar year removed from their high school graduation (2005 Collective Bargaining Agreement, 2009).

The purpose of the research is to explore the effects that the age minimum has had on several characteristics of the draft pools, as well as the development of the players selected. This analysis primarily focuses on characteristics like age, education level, as well as each player's level of contribution. Before laying out the details of the research methods, findings and discussion, it is important to have an understanding of the history of the NBA Draft, and the collectively bargained rules associated with it.

The NBA has an extensive history of serving as the paramount motivator of amateur basketball players across North America, as well as the rest of the world. The allure of multi-million dollar contracts and the glamour of the "NBA lifestyle" aids in attracting the most talented basketball prospects. In 1947, the Basketball Association of America, later rebranded the National Basketball Association, began utilizing the amateur draft to distribute eligible rookie talent (Berri, Brook & Fenn, 2011). In 1958, the league instituted the reverse order draft. The purpose of this change was to promote competitive balance, especially among many of the league's small market franchises (Berri et al., 2011). At this time, the amateur draft exclusively

consisted of collegiate players (DatabaseBasketball, 2012). The similarity in age and experience among these early draft pools minimized the need for additional draft rules.

In 1970, Spencer Haywood challenged the NBA's previous eligibility requirement of being at least four-years removed from high school graduation. He did so with the support of Seattle SuperSonic's (now Oklahoma City Thunder) owner Sam Schulman. This case was infamously referred to as *Haywood v. National Basketball Assn.*, 401 U.S. 1204 (1971)(U.S. Supreme Court, 1971). It ended in a settlement that opened the door for amateur players to apply for entry into the NBA Draft before their college class reached graduation. Early entrants were still expected to apply for a "hardship" exemption (Zola, 2012). This "hardship" exemption created an additional option for many NBA prospects.

Darryl Dawkins leveraged Spencer Haywood's aforementioned favorable ruling to enter the draft directly out of Maynard Evans High School (FL). Dawkins was eventually selected as the fifth overall pick in the 1975 NBA Draft (Basketball-Reference database, 2012). Despite his successful career, the NBA would go 20 years before another high school basketball player would apply for entry into the NBA Draft (Basketball-Reference database, 2012). Teams continued to draft players who had completed at least their junior year of college. These decisions were in trepidation of signing players whose Marginal Revenue Product (MRP) did not equal their wages (Groothuis, Hill & Perri, 2007). In 1995, the Minnesota Timberwolves made Kevin Garnett the fifth pick in the NBA Draft. Garnett's immediate success convinced NBA executives that North America's elite high school talent was finally capable of both competing and developing at the NBA level (Litman, 2010).

Literature Review

After *Haywood v. National Basketball Assn.* was settled, early entrants in the draft rose from one in 1970 to seven in 1995 (Groothuis et al., 2007). Although some college juniors and college sophomores experimented with early entry applications, totals were only modestly increasing (Groothuis et al, 2007). Due to such an insignificant increase, these new entrants had little economic or social impact. During this 26-year period (1970-1995) the NBA had heavily invested in developing basketball internationally, and league executives were focused on collecting the dividends of those foreign projects (Eschker, Perez & Siegler, 2004).

International players had been identified and developed through the National Collegiate Athletic Association (NCAA) since the early seventies. Some of the most prominent examples included Hakeem Olajuwon of Lagos, Nigeria and the University of Houston, Patrick Ewing of Kingston, Jamaica and Georgetown University, and Detlef Schrempf of Leverkusen, Germany and University of Washington (Yang & Lin, 2012). In 1985, the selection of Fernando Martin Espina by the Portland Trail Blazers opened the door for internationally developed foreign talent (Basketball-Reference database, 2012). Other memorable European based talent that shortly followed included 1985 draftees Drazen Petrovic of Croatia and Georgi Glouchkov of Bulgaria (Basketball-Reference database, 2012). In the 2005 Collective Bargaining Agreement (CBA), the franchise owners and National Basketball Players Association (NBPA) agreed on new arrangements that allowed all players to enter the draft and stay with foreign professional clubs while their rights remained with the NBA team who selected them (Zola, 2012). This rule change resulted in an inundation of primarily European and South American talent. The majority of these players had been developed by foreign professional basketball clubs, as well as specialized sport academies in Europe and Asia. Unlike college student-athletes, most international

prospects had not been considered amateur athletes, as they had typically been paid modest playing wages at young ages.

Currently, the NBA acquires international talent through intercollegiate programs, prep schools, domestic professional leagues, international basketball academies, foreign professional clubs and their youth developmental programs. Regardless of where these players develop, they all must enter the league through the draft. The number of international players in the NBA has increased from 57 players on the opening-day of the 2000-2001 season to 109 players on the opening-day of the 2007-2008 season (Chiba, 2012). Based on the opening-day rosters of the 1997-1998 season, international players were being paid more than American players who had similar on-court performances, personal characteristics and player-team characteristics (Eschker et al., 2004). The most contemporary research has discovered that international players are actually being paid less than equally qualified domestic talent (Yang & Lin, 2012). The common explanation is an example of the “winner’s curse.” NBA teams now have an established system for scouting internationally and are conservatively investing resources on international prospects. As the supply of international players continues to rise, and the NBA’s demand for players remains stable, the NBA will continue to establish market power (Yang & Lin, 2012). The number of international prospects selected in the NBA Draft has actually decreased by 1.61% since the institution of the 2005 CBA (Basketball-Reference database, 2012).

The 1983 CBA instituted a team salary cap. This cap was actually below the payroll of five current teams. Each of these franchises had their payrolls frozen until their player salaries were able to drop below the new salary cap (Groothuis et al., 2007). This new salary cap, combined with the subsequent payroll freezes, created an incredibly inconsistent market for rookie contracts. Some teams had an abundance of salary cap space and as a result could offer

large rookie contracts. Other teams had frozen payrolls and had little salary cap space to offer annual draft selections. The disparity led to gross inconsistencies in rookie salaries, and eventually the creation of the rookie salary scale in the 1995 CBA (Groothuis et al., 2007). Prior to the implementation of the rookie salary scale, top picks were signing enormous rookie contracts. For example, in 1994 Glenn Robinson signed a rookie contract worth \$68.15 million over 10 years (Arel & Tomas, 2012).

The institution of the rookie salary scale changed the way amateur student-athletes approached entry into the NBA. Most research attributes the incorporation of high school draft entrants to the utilization of a rookie salary scale that the NBA implemented as part of the 1995 CBA. The rookie salary scale provided a predetermined salary slot for every pick in the first round. Each first round selection was slotted for the first two years of their career (Jessop, 2012). A third year team option was also included in the scale. Teams can pay rookie players anywhere from 80 to 120 percent of this predetermined 3-year guaranteed contract. It has become standard practice that first round picks are offered the salary at 120% of the original value (Johnson, 2012). In 1998, the rookie scale was extended an additional year and the team option was pushed back to the fourth year. The NBA did this in an attempt to prevent monumental fourth year salaries like the one that made Kevin Garnett the fourth-highest paid player just his fourth season in the NBA. Individual salary caps were also implemented in 1998. These changes had a significant effect on the salary equality in the NBA (Hill & Jolly, 2012). One study found that 59 percent of all players on NBA opening-day rosters in 2009 were in the first five years of their career (Arel & Tomas, 2012). The actions of top prospects would suggest that they are compelled to enter the league as soon as possible and reach the open market as early as league rules will allow.

The NBPA agreed to many of these changes to the CBA because the new regulations aided in the creation of a system where the most seasoned players have the highest earning potential (Groothuis et al., 2007). The additional salary scale year only further encouraged elite prospects to forgo college eligibility to enter the NBA Draft (Groothuis et al., 2007). After the implementation of the salary scale, teams were more likely to pick early entrants in the draft. This contributed to a decrease in the level of investment required to develop these early entrants. In 2005, this progression continued as the new individual salary cap stated that teams were only allowed to offer their own free agents a 12.5% raise from their previous years contract, and offer other teams' free agents a 10.0% raise from their previous salary (Groothuis et al., 2007). This rule change had the support of both veteran players and league executives, as it favored players who choose to stay with their current teams. It was also primarily beneficial to veteran players (Groothuis et al., 2007). Although Groothuis did not study the effects of an age minimum, they have published studies evaluating other aspects of the CBA. These articles include an evaluation of the rookie salary scale. Groothuis used average draft class age and college experience to evaluate a contrast between draft results (Groothuis et al., 2007). They also looked at the level of contribution of players before and after the CBA was implemented (Groothuis et al., 2007).

After these agreements, the number of high school draft entrants escalated rapidly. Although many of these high school superstars were prepared for the NBA, many required additional development. Success stories included household names like Kevin Garnett, Kobe Bryant, LeBron James and Dwight Howard. On the other end of the spectrum, 14 high school players have entered the NBA Draft and gone un-drafted throughout the entire draft (Groothuis et al., 2007). Each of these players had to forgo their amateur status. Most of these prospects would go on to play in foreign leagues or North American minor leagues. Arel and Tomas

dissected the last five NBA Drafts using a put option analysis; they determined that only projected top ten picks should enter the draft early (Arel & Tomas, 2012). Most student-athletes use the 14th pick, last pick of the lottery, as a projected benchmark.

As early entrants continued to go un-drafted, talk of an age-limit began to progress. Perhaps the most highly anticipated draft day exemption was Lenny Cooke. Cooke was considered one of the all-time best basketball players from New York City. He entered the 2002 NBA Draft directly out of high school, but went un-drafted through both rounds (Basketball-Reference database, 2012). Cooke was once considered the top rival of LeBron James. He, and many others, operated in a world of shoe executives, runners, and agents. This culture devoured his promise as a prospect, and after several minor leagues, foreign countries and knee injuries, Cooke's basketball career ended at 25 years of age. His last stop was the Continental Basketball Association (CBA), a third-tier professional league in North America (Araton, 2012). In 2005, David Stern infamously explained that, "Players aren't going to walk away from the pressure and the promise, and teams aren't going to walk away from the potential. So we (the NBA) wind up trying to legislate it." (Jenkins, 2005).

The NBA's most infamous owner, Mark Cuban, echoed these sentiments by saying, "I just think there's a lot more kids that get ruined coming out early or going to school trying to be developed to come out early than actually make it. For every Kobe (Bryant) or (Kevin) Garnett or Carmelo (Anthony) or LeBron James, there's 100 Lenny Cookes." (Shetler, 2012).

The NBA is not alone in the concern that player's careers are being affected by premature exposure to the pressures of professional athletics. The World Tennis Association Tour formed an Age Eligibility Commission in 1994 (Rodenberg & Stone, 2010). This commission led to the development of a multi-faceted development program. Programs included a "Pro U" and guides

players on how to minimize the stressors that go along with being a professional tennis player (Rodenberg & Stone, 2010). They have also implemented a 14-year age minimum from all professional tournaments. Additional tournament restrictions are placed on teenagers in ascending order, until they are 18 years old (Rodenberg & Stone, 2010).

In 2006, the NBA and the NBPA re-evaluated eligibility rules. They determined that eligibility for the draft would start a calendar year from the player's high school graduation. They also implemented an age minimum of 19 years of age for all incoming players (Boudway, 2012). These new eligibility rules were aimed at preventing players from entering the draft directly out of high school. With the exception of Brandon Jennings, who spent the year playing professionally for Lottomatica Roma in Italy, top domestic talent had continued to develop in college or the National Basketball Association Development League (D-League). Another high school star, Latavious Williams competed in the D-League for a year before gaining draft eligibility. He was later drafted in the second round of the 2010 NBA Draft (Basketball-Reference database). The overwhelming majority of these elite high school players have gone to top NCAA basketball programs. Additionally, many student-athletes are leaving after a year or two.

In the six years prior to the age limit, 134 early entrants were drafted in the first or second round; 29 of these were high school players. In the six years after the draft rules, 188 early entrants were drafted in the first or second round of the NBA Draft (Basketball-Reference database, 2012). This increase in early departures led to an abundance of speculation as to whether the NBA has had the best interest of the players, coaches, programs and universities in mind. Statistics like these have led many to question the intentions of the NBA's age minimum.

Ever since the 2005 CBA was instituted, playing-time in college basketball has been the primary motivation behind an increase in player mobility. This increase in the movement of student-athletes exists despite NCAA rules stating that any division-1 transfer must sit out an entire year. There are few exemptions to this rule, but some student-athletes are exempt from sitting out an entire season. These cases occur when student-athletes are provided with a hardship exemption by the NCAA, or have already graduated from their previous institution and have chosen to enroll in a graduate program not offered by their previous institution. It has been estimated that 40 percent of division-1 basketball players have transferred within the first two years of their college basketball careers (Durando, 2012). This statistic is likely an indication of the importance of showcasing talent for the NBA Draft. Premier student-athletes are in a rush to get the four-year rookie scale started. Players are no longer willing to wait for playing time until their junior or senior years of college. Instead they are more interested in transferring to schools where they can be the star and showcase their talent. This increase in transfers is beneficial to players according to Berri, Brook and Fenn's (2011) research. They suggest NBA teams weight scoring and individual awards above rebounding, assists and steals when evaluating college players (Berri et al., 2011).

In recent months, NBA Commissioner David Stern has expressed interest in increasing the age-minimum to 20 years of age, and at least two years removed from high school graduation. Some maintain that this was his original intention before negotiating the age minimum (Wurth, 2004). Many in the media have expressed interest in a system similar to the one being used by the MLB and NFL. In the MLB, players are free to enter the draft out of high school, but must stay in college at least three years before regaining eligibility into the MLB Draft (Wolverton. 2007).

Many feel that this proposed age limit is part of a larger league strategy. They feel that the NBA is implementing these rule changes to clean up their image (Aschburner, 2012). The NBA has a long history of collectively bargained rule changes with image as their primary motivation. One of the most recent examples was the implementation of a dress code before and after league games. NBA Commissioner David Stern even admitted that image was a factor in the creation of an age-minimum in 2005 (Araton, 2005). Alternatively, he continues to assert that the rule changes were business decisions regarding player development.

It should be noted that what works for the NCAA is not necessarily what is best for the NBA. Any changes to the NBA's CBA will be in the best financial interests of the NBA. In 2009, David Stern said, "This is not about the NCAA. This is not an enforcement of some social program. This is a business decision by the NBA. We like to see our players in competition after high school," when discussing the 19-year-old age minimum (Garcia, 2009). Although everybody seems to have an opinion of the NBA's age minimum, most opinions and claims lack statistical based analysis.

When the age limit was collectively bargained in 2005, the goal was to cut down on development costs and reduce the gamble that was associated with drafting premier talent. Kwame Brown, who was selected as the number one overall pick in 2001, never amounted to be anything but a bench player. Kwame became the poster-child for the age limit. Maturity concerns plagued Brown's career and even resulted in numerous suspensions in his first three years (Jenkins, 2005). Brown's suspension in combination with repeated legal problems led to speculation about his level of maturity. As exemplified in the Washington Wizards' selection of Brown in the 2001 NBA Draft, one missed draft pick can substantially affect the future success of an NBA organization. The Portland Trail Blazers' selection of Greg Oden, in 2007, proved

that uncertainty would be present in the draft regardless of the age limit. When Greg Oden was a senior in high school, an anonymous NBA general manager said, “I’d sign him today. He’d be on the floor tomorrow” (Deveney, 2006). Under the previous rules, Oden would have been eligible to enter the NBA directly out of high school. Instead, he played one year of basketball at Ohio State University before being selected first overall in the 2007 NBA Draft. Oden would rarely see the floor in the NBA due to continual knee problems, seeing minutes in only 82 games after four seasons. Disappointing draft selections like this extend far beyond the value of wasted assets. Challenging young players often threatens the stability of hierarchy among team members. Research shows that this threat can greatly affect a team’s productivity on the court (Halevy, Chou, Galinsky & Murnighan, 2012). Poor performance on the court can lead to a poor front office performance. Oklahoma City Thunder superstar Kevin Durant was selected with the second pick in 2007, behind Oden. He recently led the Oklahoma City Thunder to the 2012 NBA Finals. He is widely regarded as one of the best players in the NBA, and has led the league in scoring three years in a row (Basketball-Reference database, 2012). The NBA has designed the reverse order draft to give the least successful teams the highest picks. Drafting a player like Greg Oden over a player like Kevin Durant can set a team back for years. A franchise’s success rate with these top picks is crucial to their overall success as an organization.

The NBA also saw the age minimum as an opportunity to increase both the physical and mental maturity of its eligible draft pool. This rule was successful in that teams are able to evaluate a potential prospect’s performance in college, or other professional leagues. The number of first round picks whose team options were picked up illustrates this benefit. Team options are in the 4th year of the rookie salary scale. Teams have control over whether or not they are interested in exercising these options. Since the rule change, either the team who drafted them or

another who had since acquired their contracts, tendered an average of 23 of these 30 first round picks' options. This average compares favorably to the seven years prior to the rule change in which an average of 21.42 of the fourth-year options were tendered (Basketball-Reference database, 2012).

It was anticipated that the age minimum would be addressed during 2012 CBA negotiations. The owners instead prioritized the distribution of the Basketball Related Income (BRI), making the age limit a "B-list" issue (Hill & Jolly, 2012). By the time the NBPA and owners reached an agreement on A-list issues, they were already several weeks into the NBA schedule (Berri, 2012). In an attempt to end the lockout promptly, none of the B-list issues were extensively negotiated as part of the new agreement. The NBPA was unwilling to adjust the age limit without further salary cap concessions from the league office (Associated Press, 2012). Franchise owners and leagues executives did not want to further prolong the start of the season.

Theory

Theory of Reasoned Action

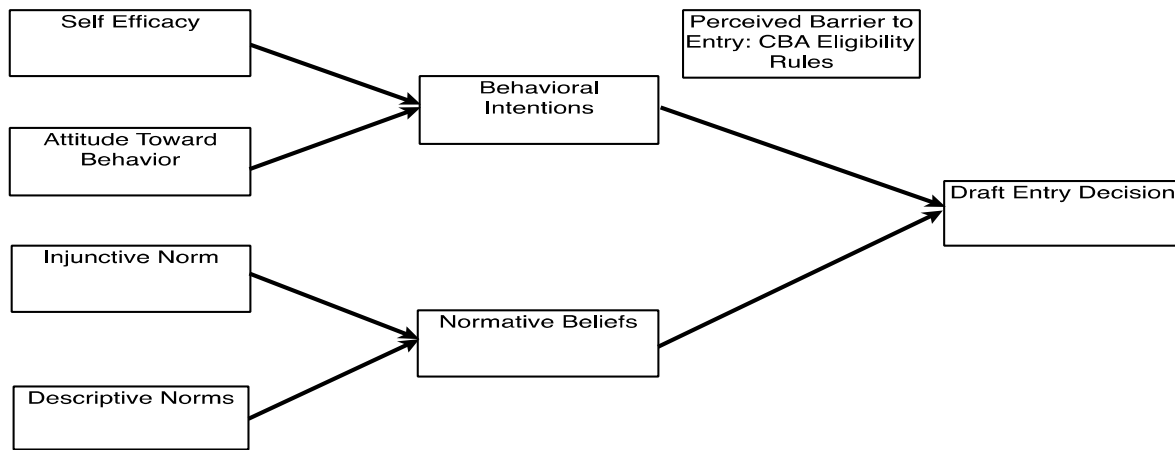
The decisions of potential NBA selections tend to be influenced by numerous individual factors. The combinations of these factors all contribute to the prospect's eventual behavior as to whether or not he will enter the draft. The theoretical framework of this behavior is similar to the Theory of Reasoned Action, which is typically used to identify the factors that go into personal behaviors. Martin Fishbein and Icek Ajzen developed the Theory of Reasoned Action in 1975. Its purpose was to predict human social behavior (Roberto, Murray-Johnson & Witte, 2011). NBA prospects take many of the same factors into account when making draft entry decisions. For example, a person's self-efficacy and attitude toward behavior contribute to their behavioral

intention. This behavioral intention combined with current descriptive norms; result in an individual's eventual decision (Roberto et al., 2011). The exact structure for these draft-entry decisions is not uniform throughout all professional sports. The framework is affected by some of the specific characteristic of each sport and league.

For example, in this scenario a student-athlete's self-efficacy includes his personal beliefs and self-identification as a player who is talented enough to be effective in the NBA. It also includes his personal confidence that his skills, talent level and physical characteristics will effectively translate into success (Hollenbeck & Hall, 2004). This is a factor that typically stirs up debates in the months leading up to the draft. Teams, media and fans often question whether certain players can be as effective as they were in college due to a lack of size, strength, and versatility. Numerous players have been selected after disappointing college careers, because general managers, owners and coaches feel that their physical attributes are more suited for the NBA. Not all college superstars are projected NBA selections (Eisenberg, 2012).

As part of this framework, it is important to note that not all players want to enter the NBA as early as they can. Some student-athletes have different goals, like education, family, other careers, military service, or civic duties. Attitudes toward entering the draft are different among all draft prospects, student-athletes included. Early entry candidates often face the decision of whether to enter the draft early, or return to their school or international club for at least another year, in order to raise their draft value. At times, players enter the draft knowing that their "stock" is unlikely to reach the same level. Each of these social factors influences a player's behavior intention regarding whether or not to move forward with entering the draft. This behavioral intention is based on the belief that the action will lead to favorable consequences (Ryan & Bonfield, 1975).

Figure 1. Theory of Reasoned Action



Presented above is the proposed research model. Elements of this model were taken from a decomposed Theory of Reasoned Action that was aimed at explaining intention to use Internet stock trading among Malaysian Investors (Ramayah, Rouibah, Gopi & Rangel, 2009).

The third and most fluid factor is the normative beliefs about entering the draft. Normative beliefs can be defined as, “a person’s subjective probability that a particular normative referent wants the person to perform a given behavior” (Ajzen, 2012). Normative beliefs also include injunctive and descriptive norms (Ajzen, 2012). Injunctive norms come from inferring what other important individuals want the individual to do, and descriptive norms are the observed or inferred actions of important social referents (Ajzen, 2012). Injunctive norms primarily focus on the evaluation of acceptable behavior. In the example of NBA prospects, injunctive norms come from the decisions of general managers, scouts, coaches and owners who have shaped what is considered acceptable draft entry behavior. Descriptive norms are primarily based on the opinions of those around a prospect; this includes family, friends, peers and fans. In this context, descriptive norms would come from past and present peer prospect decisions, and the outcomes that followed these decisions.

For many years, these factors were the primary contributors to early entry decisions, but in 2006, the age minimum emerged in the model. The age minimum has prevented some players who would otherwise apply for early entry to take alternative pathways to the NBA.

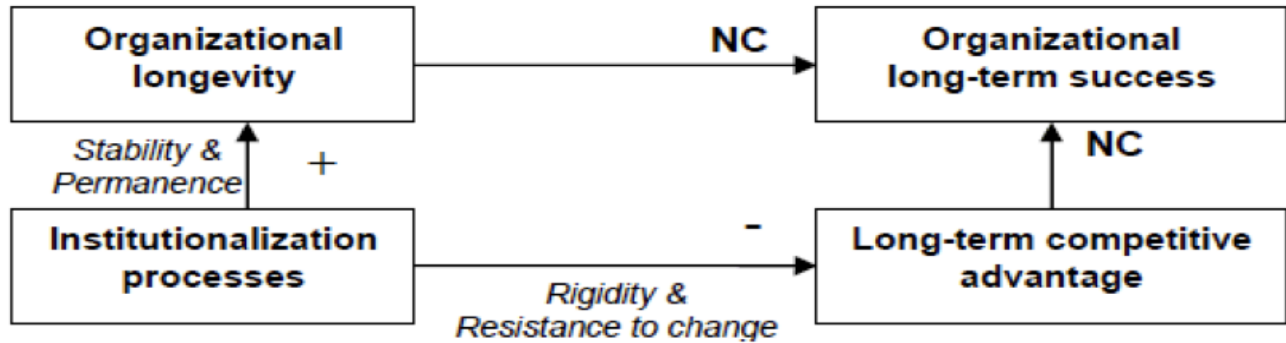
Institution Theory

Although the Theory of Reasoned Action effectively illustrates the decision making process of NBA prospects evaluating early entry, the draft rule itself is the product of a business process that is constantly evolving in order to provide a more effective and efficient property for its primary stakeholders. This business process is best described using Institutional Theory.

The Institutional Theory states that organizations must be continually evolving in order to survive. This evolution must include both structural and procedural aspects of the organization. The primary variables include both the internal and external environments. Organizations tend to adopt structures, procedures, or ideas based, not on efficiency, but rather on external definitions of legitimacy (Meyer & Rowan, 1977). Institutional strategy is not as concerned with gaining competitive advantage based on institutional structures as it is concerned with managing those structures, and preserving or transforming institutional standards and rules in order to establish favorable conditions (Lawrence, 1999). Institutional control can develop unintentional and intentional strategies. In the case of the NBA's age minimums, owners and league executives have exercised intentional strategies to combat the external environment that has resulted in high school entrants reaching an all-time high in the 2005 draft class (Basketball-Reference, 2012). Although it seems trivial, the NBA is strategically collectively bargaining rules that will benefit the franchises and its bottom line. The NBA commissioner, David Stern, and his team are always going to bargain on behalf of the owners.

The primary goal of ownership is to continue enhance the long-term success of the league. The institutionalization process plays a key role in the goal, and has influenced the approach that they have taken in regard to talent development.

Figure 2. The Effect of Institutionalization Processes on Long-term Success



The chart above illustrates how the institutional process affects long-term success in organizations like the NBA (Fleck, 2007). Note: Necessary condition is abbreviated as NC.

Research Questions

The first two research questions have been designed following the tenets of the Theory of Reasoned Action, and how it relates to early entry decision among NBA prospects. The final question is an evaluation of the on-court effects of the institutional changes in regards to age eligibility rules that are new to the 2005 CBA. The first two questions examine a contrast between prospect behaviors before and after the age-minimum was implemented, keeping in mind that a barrier has been implemented to the Theory of Reasoned Action model. These questions were designed to identify the effects of this barrier. The third question was designed to monitor the on-court effects of the institutional change of the age minimum.

- a. Have changes to the 2005 CBA, in regards to the age limit, significantly affected the age of players drafted? How do the average draft, first round, and lottery ages compare before and after the 2005 age limit implementation?
- b. Have changes to the 2005 CBA, in regards to the age limit, influenced additional early entrants selected in the NBA Draft?
- c. Have changes to the 2005 CBA, in regards to the age limit, affected the on-court development of NBA players in the first five years of their careers? Are the rule changes affecting first round and lottery picks disproportionately?

Research Methods

Question 1

The first step was to compare the average age of players drafted in both the seven years before the implementation of the age minimum and in the seven years after the implementation of the age minimum. A fourteen-year period was chosen based on what many would consider to be the modern era of the NBA (Hoopedia, 2012). This era is often referred to as the post-Jordan era because it began on the heels of Michael Jordan's retirement from the Chicago Bulls in 1998 (Hoopedia, 2012). This era has been identified for numerous rule changes, cultural and political turmoil and a decrease in TV ratings often attributed to the decline of the NBA's image. Some felt that the poor public perception created during this era was a result of younger draft entrants.

David Stern and other league executives started to site maturity as one of the primary reasons for eligibility rule changes. Although an additional year of college is likely to add to the mental maturity of early entry prospects, this statistical analysis was set up to examine whether or not the rule was causing NBA franchises to draft older players. The thought is that researching

these decisions best identifies the motives of owners and league executives. In this case, their decisions are the players that they are choosing to draft. Keep in mind that teams can only draft players that have entered the draft.

To identify any age changes that can be attributed to the institution of the age minimum, databases were made for each of the last 14 NBA Drafts. The draft position, name, and date of birth (DOB) of each player were included in this database (www.basketball-reference.com). The average DOB of each individual draft class was then identified. This DOB was then calculated converted into the average age, in days, by using a date differential function. This function was then used to calculate the total number of days between the average DOB and the player's respective draft date. Next, an average of the seven drafts that occurred prior to the age limit (1999-2005) was taken, as well as an average for the seven drafts that occurred after the age limit (2006-2012). These data were also aligned sequentially for the purpose of identifying trends, especially during the years surrounding the 2005 CBA. The functions were then repeated for both first round picks, as well as lottery picks for the purpose of consistency in this statistical analysis. This array of data will allow for a determination as to whether or not the rule change has had more of an effect on the average ages in the beginning of the draft, or if change is consistent throughout the draft.

Next any inconsistencies in the data were identified. Although the draft is always held in late July, it tends to fall on a different day of the month. This date differential could have potentially contributed to some variation in the data. To counterbalance this, results were adjusted by determining the average variation of the draft dates. With this in mind, the 1999-2005 draft dates were taken and averaged. This process was repeated for the 2006-2012 draft dates. The 1999-2005 average draft date was then subtracted from the 2006-2012 average date.

This provided the difference attributed to varying draft dates. This total was then added to the average age change of each player.

The draft age of each player was also used to calculate the mean and standard deviation of both the pre and post rule change groups. I then used these variables, along with the degrees of freedom to calculate the significance of the age change. I repeated this process from lottery picks, first round selections, and the entire draft.

Question 2

As part of the next statistical analysis, the distribution and trend of each grade-level, as well as high school and international draft entrants needed to be investigated. Before gathering this data, significant CBA changes which have been affecting the behavior of top high school, college and international basketball prospects were identified. The total number of both drafted and un-drafted players from 1976-2012 was then found. Next, it was determined that the focus and data entry would be narrowed to the last 14 drafts.

The total number of picks in each draft has changed over the last 14 years. These inconsistencies were a result of league expansion and probation (Basketball-Reference database, 2012). In order to accurately compare these distributions, the numbers needed to be standardized. For the purpose of this analysis, converting the distributions into percentages standardized the numbers. The class distributions were then divided by the total number of selections in each respective draft class. After that, an average of the 1999-2005 and the 2006-2012 distributions for each individual age group were calculated. Players were divided into several categories, including high school, freshman, sophomore, junior, senior, and international prospects.

It is important to note that players who did not go to college and instead played in other professional leagues were designated as international players and international players who went

through the college system where designated with their college classmates. This statistical analysis should not be used as a measure of international entrants, but instead a measure of the level of education, in years, achieved before forgoing their amateur status in order to enter the draft.

Next, the 1999-2005 distribution percentages were subtracted from the 2006-2012 distribution percentages. This change was then multiplied by the current draft size (60 picks). This gave the standardized change following the implementation of the age limit. Results are expressed as if each draft had a total of 60 picks.

Question 3

The third research question that was investigated aimed at determining the effect that the age minimum has had on the development of first round picks in the first five years of their careers. In an attempt to gather this information, a database was created for each of the last 14 draft classes. For each player drafted in the first round of a given year, the school, team, age, education level, minutes and salary accumulated in each of the first five years of the player's career was documented. It was determined that it was important to measure this development through contributions to the players' respective teams. A focus was put on three key criteria that would indicate that a first round pick had reached a level of participation and contribution that would raise their marginal revenue product (MRP) above the salary as slotted in the rookie salary scale. Once a player reached one of the following benchmarks, it was concluded that their development had reached a level of contribution that would exceed their wages. These three benchmarks included:

- a. Starting more than half of the teams games, with a minimum of 32 games played,
- b. Playing 25 minutes per game (MPG), with a minimum of 32 games played,

or

c. Scoring 15 points per game, with a minimum of 32 games played.

For the purpose of this research question, statistics that define a player's contribution were identified. Minutes played, points per game, and percentage of games started were chosen as the key statistics. These variables were chosen as they reflect the readiness of a player to contribute at an NBA level. If a young player is not exceeding league averages in these three categories, they are not contributing to the on court success of their teams, and as a result are not living up to the earning allotted for first round picks by the rookie salary scale.

These three statistical criteria were strategically placed above league averages. The first was determined by simply dividing five, the number of starting players, by 12, the number of active players on each NBA team. This amounts to an average of nearly 41.7% of games started. Once again the threshold was set above the league average, at 50% of games that the player participated in started. This was a logical benchmark, as a player who starts more than half of the team's games, would be considered a "starter" which carries a significant level of importance in the NBA. This classification is made clear by the rules for the sixth man of the year vote, as eligible participants must come off the bench more games than they start (Ginobili Wins..., 2012).

The second threshold was the average minutes played per game. This was calculated by dividing the total number of minutes per game multiplied by five, for the number of players on the court. This total was then divided by 12, the number of active players on the roster for each team. This simple arithmetic expressed that NBA players play an average of 20 minutes per game. Then it was determined that a significant level of contribution for a first round pick would exceed the league average. A 25-minute per game average was determined to be an effective

threshold that would represent a high level of contribution to an NBA team. Between 154 and 180 players reached this threshold annually between the 2005-2006 and the 2010-2011 NBA seasons, meaning that an average of between 5.1 and 6 players on each team would exceed this threshold (Sortable Individual Statistics Database, 2012). This statistic was implemented to account for non-starters that were still contributing amongst their team's top players.

The third threshold derived from a calculation of the average points scored per game. The total number of points scored in the 2010-2011 season was taken and divided by 360, the number of active players in the NBA at any given time. The total number of players, 680.25, was then divided by 82, the number of games in an NBA season. Results showed that on average, a player would score 8.30 points per game. Due to the fact that the top players in the NBA score the majority of the points, 8.3 seemed like a very low average. I only wanted to capture the players who were not playing at least 25 minutes, or starting half their team's games, but were still carrying enough of the scoring load that they would be considered one of their teams top contributors. A threshold of 15.0 points per game was set, as in most seasons; this places players among the top 60 scorers in the league. This means that this player will likely be one of the top two scorers on an NBA roster.

Once these three criteria were set, each first round draft pick was classified into categories based on age. These categories were high school entrants and international players under the age of 19, all players under the age of 20, and all players over the age of 20. These three age groups were chosen to aid in comparing the effects of the 19 year-old age minimum. Ultimately an under-20 age category was chosen in order to effectively evaluate the effects of a potential 20 year-old age limit. It is important to note that the under-20 age category includes

every player from the under-19 age category. These results will help develop methods for future research by identifying the success of each age group.

Next, the year in which each first round draft pick surpassed one of the three milestones mentioned above was identified. Then the annual salaries that had been paid to each first round selection in the subsequent years of their career were added. This sum of annual salaries was taken and both added and averaged by age category for the first round of each draft. The result of this function provide the average amount of money a team can expect to spend on a first-round draft pick in that age group before a selected player reaches the contribution qualifications that were set above. A calculation of the ratio of players in each age group that reached the milestones provided in their first five years following their draft date was also provided. This process was repeated for each first round draft class from 1999 to 2007. The same 14 draft classes were examined, but five seasons of data was not available for the draft classes between 2007 and 2012. For this reason, they were omitted from the analysis.

Next an average of those totals, averages and ratios for each age group was calculated. The 1999-2005 first round draft class data, and the 2006-2007 first round draft class data was then separated. This separation point was used in order to provide a “before and after” contrast surrounding the institution of the 19-year age minimum in 2005. The 2006-2007-sample size is relatively small, as only two draft classes have had five years of experience in the NBA. After completing these calculations, the same procedure was repeated for lottery picks (picks 1-14). The purpose of this calculation was to determine whether the trends in development were the same throughout the first round of the draft. It was important to find out if draft position was also a factor.

It is also important to note that only years of experience that occurred during the five years immediately following the draft were included. If the NBA was not paying a player during any or all of these seasons, the salary totals were excluded from the analysis. For example, many players were drafted, but decided to stay overseas for one or more seasons. These players did not receive salaries from NBA teams during these seasons. If one of these players later came to the NBA within five years of their draft date, these years and salaries were included in the analysis.

Results

Question 1

The findings concluded that the average age of a player drafted from 1999-2005 was 21 years, and 6 months old. Players drafted between 2006-2012 were an average age of 21 years, 6 months and 7 days old. After subtracting these dates, it was found that the 2006-2012 drafts produced players that were an average of seven days older on their respective draft day before considering the variation of draft dates.

The 2006-2012 draft dates were an average of two days earlier than the draft dates from 1999-2005. After adding these additional two days to the seven-day difference, it was found that the average age of incoming drafted players has increased by only nine days after the implementation of the age minimum.

Table 1

Average Age by Draft Class

Year	Entire Draft	First Round	Lottery Picks
1999	22 Years, 1 Month, and 6 Days	21 Years, 3 Months, and 10 Days	21 Years, 1 Month, and 6 Days
2000	21 Years, 10 Months, and 4 Days	21 Years, 6 Months, and 3 Days	21 Years, 2 Months, and 5 Days
2001	21 Years, 2 Months, and 11 Days	20 Years, 7 Months, and 20 Days	20 Years, 2 Months, and 24 Days
2002	21 Years, and 10 Months	21 Years, 7 Months, and 3 Days	21 Years, and 22 Days
2003	21 Years, 2 Months, and 25 Days	20 Years, 11 Months, and 22 Days	20 Years, 9 Months, and 6 Days
2004	21 Years, 3 Months, and 18 Days	20 Years, 6 Months, and 19 Days	20 Years, 3 Months, and 12 Days
2005	21 Years, 11 Months, and 23 Days	20 Years, 11 Months, and 14 Days	20 Years, 4 Months, and 12 Days
Avg.	21 Years, 6 Months	21 Years, and 27 Days	20 Years, 8 Months, and 16 Days
2006	21 Years, 6 Months, and 5 Days	21 Years, 0 Months, and 28 Days	21 Years, 3 Months, and 11 Days
2007	21 Years, 8 Months, and 1 Day	21 Years, and 29 Days	20 Years, 8 Months, and 20 Days
2008	21 Years, 3 Months, and 30 Days	20 Years, 4 Months, and 28 Days	20 Years, 4 Months, and 2 Days
2009	21 Years, 8 Months, and 27 Day	21 Years, 2 Months, and 26 Days	20 Years, 10 Months, and 29 Days
2010	21 Years, 6 Months, and 12 Days	21 Years, and 2 Months	20 Years, 8 Months, and 12 Days
2011	21 Years, 4 Months, and 2 Days	20 Years, 9 Months, and 24 Days	20 Years, 4 Months, and 30 Days
2012	21 Years, 6 Months, and 5 Days	20 Years, 8 Months, and 18 Days	20 Years, 3 Months, and 8 Days
Avg.	21 Years, 6 Months, and 7 Days	20 Years, 11 Months, and 11 Days	20 Years, 7 Months, and 28 Days
Diff.	+7 Days	-43 Days	-18 Days
Adj.	+9 Days	-41 Days	-16 Days

Note. Data collected from Basketball-Reference.com

Using these very same methods, findings concluded that first-round picks actually got an average of 45 days younger after the rule changes in the 2005 CBA. Similarly, lottery picks were an average of 16 days younger after the age minimum was implemented. As expected, the early selections were more effected by the age minimum. This result was consistent in the data for both before and after the age minimum was implemented. The average age for lottery picks after the age limit was 21 years, 6 months, and 7 days, while first-round selections were an average of 20 years, 11 months, and 11 days and lottery picks were an average age of 20 years, 7 months and 28 days old on their respective draft day.

One key factor that cannot be ignored is the trend of younger draft selections even before the implementation of the age minimum. High school entrants had reached an all-time high in 2005. Sophomore and junior selections reached the third-highest total of all time. This was also the youngest collective draft of all time. It is not unrealistic to assume that this trend would have continued if the age limit were not implemented. This data suggests that the age minimum could have been the only thing preventing continuously younger NBA Drafts. This could be a result of drafts that may have otherwise been much younger.

Table 2

Significance of Age Change

Draft Section	P	t	df	Significance
Lottery Picks	0.79	.26	194	Not Significant
First Round	0.58	.55	411	Not Significant
Entire Draft	0.81	.24	825	Not Significant

Note. Data collected from Basketball-Reference.com

Question 2

The findings suggest that the age minimum has resulted in an additional 10.89 early entry candidates drafted each year. The data shows an average decrease of 4.57 high school players selected. This change was anticipated, as high school players are no longer eligible for immediate entry into the NBA draft. This decrease was reflected in an addition of 4.63 freshmen early entrants selected per draft. Sophomore and junior entrants were also selected more frequently after the implementation of the age minimum. Sophomore selections grew by an average of 2.95 picks, as junior selections grew by an average of 3.31 picks per draft. Senior selections decreased by an average of 5.35 selections per draft. International picks also decreased by an average of .97 selections per draft. This change can be seen as an independent phenomenon from the early entry rules. This modest decrease can be attributed to the “winners curse” explanation that was studied by Yang & Lin (2012). The “winner’s curse” suggests that although the supply of international players has continued to increase, the demand for players has remained constant, resulting in a plateau in international selections.

The second, and more complicated, deviation is the addition of 6.26 sophomore and junior picks per draft in place of 5.35 seniors and .97 International picks.

Question 3

Results show that teenage first round picks are more likely to reach these benchmarks than they were before the age limit was instituted. The rate of first round picks reaching these benchmarks' rose from 71.15% to 75.00%, an increase of 3.85%. The league is paying an average of \$33,623.23 per player more before selections are reaching the benchmarks, but is investing an average of \$7,222,154.48 less per year on teenage first round picks who have not yet reached any of these contribution benchmarks.

Lottery picks reflected similar changes, as teenage lottery picks are reaching these benchmarks in the five years following their respective draft at 88.89%, opposed to the 80.65% in the years before the rule change. On average, teams are actually spending \$530,181.72 less on players who have not yet reached any of these statistical thresholds. The league is saving an average of \$4,796,510.78 per year on teenage players who are producing under these statistical benchmarks.

The age limit seems to have had the opposite effect on players who are drafted in their twenties. The number of first round draftees who reached one of these statistics during the first five years of their career declined from 62.59% to 52.08%. As a result, teams are spending an average of \$1,059,676.95 more before these players are reaching these contribution benchmarks. Teams are spending an average of \$39,095,915.78 more per draft on first round draftees that are in their twenties and have not reached any of these contribution statistics.

Similarly, 68.42% of lottery picks in their twenties are reaching at least one of these statistics in the first five years of their careers, compares to 79.10% before the rule change. Teams were spending an average of \$190,107.04 more on these players before they are reaching one of these benchmarks, and an average of \$15,242,897.90 more invested in under-achieving players per year.

The Under-19 age group, which is no longer eligible for the draft, was actually reaching these contribution benchmarks at 71.43%. This was the highest of any of these first round age groups. Under-19 lottery picks were reaching the benchmarks at 76.47%, which was the lowest of any age group.

Table 3

First Round Picks Reaching Significant Levels of Contribution

Draft	Under-19	Under-20	Over-20
1999	1 of 3	4 of 7	7 of 11
2000	2 of 2	2 of 3	17 of 26
2001	3 of 4	5 of 7	11 of 21
2002	1 of 1	5 of 6	12 of 22
2003	4 of 5	7 of 9	14 of 20
2004	7 of 8	10 of 13	11 of 16
2005	2 of 5	4 of 7	15 of 23
Total	20 of 28	37 of 52	87 of 139
Before Percentage	71.43%	71.15%	62.59%
2006	-	3 of 3	11 of 27
2007	-	6 of 9	14 of 21
Total	0 of 0	9 of 12	25 of 48
After Percentage	0.00%	75.00%	52.08%

Note. Data collected from Basketball-Reference.com

Table 4

Lottery Picks Reaching Significant Levels of Contribution

Draft	Under-19	Under-20	Over-20
1999	0 of 1	2 of 4	8 of 10
2000	1 of 1	1 of 1	9 of 13
2001	3 of 4	4 of 5	7 of 9
2002	1 of 1	5 of 5	8 of 9
2003	2 of 2	4 of 4	10 of 10
2004	4 of 5	6 of 8	4 of 6
2005	2 of 3	3 of 4	7 of 10
Total	13 of 17	25 of 31	53 of 67
Before Percentage	76.47%	80.65%	79.10%
2006	-	2 of 2	8 of 12
2007	-	6 of 7	5 of 7
Total	0 of 0	8 of 9	13 of 19
After Percentage	0.00%	88.89%	68.42%

Note. Data collected from Basketball-Reference.com

Discussion

Interpretation of Results

After a review of the first questions results, it is safe to say that this barrier has not produced a more mature talent pool. There were no statistically significant changes for any portion of the draft pool. It seems that there are two primary reasons for this. The first is that some of the top NBA prospects are reclassifying while in high school. They are skipping what would be their senior year of high school to play a single year of college basketball before gaining eligibility to enter the NBA Draft. Typically, these players are spending this year at prep schools that are primarily known for their basketball programs. They play extended seasons and national schedules. Most players then follow their national high school schedule by missing months of school playing a national Amateur Athletic Union (AAU) schedule. These are basically regional all-star teams that travel the country playing in numerous tournaments and showcases that are put on by college programs, or shoe companies like Nike, Adidas or Under Armor. As a result of this trend, many elite prospects are entering the NBA at the same age that they otherwise would have if the age minimum had not been collectively bargained. St. Thomas Moore's Andre Drummond, St. Mark's Alex Murphy, New Hampton Prep's Noah Vonleh and The Tilton School's Nerlens Noel among many others have recently exhibited examples of this type of high school reclassification. These prospects were all considered top-ten recruits in their high school classes by numerous recruiting and prep sports publications. Each of these schools currently competes in the New England Preparatory School Athletic Council (NEPSAC). Many of these schools recruit and attract top basketball prospects from all over the country. NEPSAC student-athletes are typically local standouts who leave public high schools before their junior and senior years in search of more competition and exposure. These schools also specialize in the

creation of post-graduate opportunities. NEPSAC programs also allow student-athletes to continue their development even after graduation. These opportunities are crucial from student-athletes who need to develop both in the classroom and on the basketball court before signing with a school. It also creates a system that allows for students to conveniently reclassify according to their basketball aspirations. This reclassification may be evidence that student-athletes are reacting to the barriers presented in the theory of reasoned action. As a result, it is possible that these top players are evaluating subjective norms earlier than before the age limit was implemented.

The second factor is caused by the effect that “one-and-done” players have on sophomore and junior student-athletes. The second questions results suggest that elite high school student-athletes who are talented enough to be considered as potential picks in the NBA Draft are staying only a year at the college level and then immediately entering the NBA Draft. This is evident by the 4.57 decrease of high school players and 4.63 increase in freshman. This is not a surprise, especially if you look at who these players are. Examples include Anthony Davis, Michael Kidd-Gilchrist, Kyrie Irving, John Wall, Tyreke Evans, Derek Rose, Kevin Love and O.J. Mayo. These are all players that could have been lottery selections had they entered the NBA directly out of high school, but because of the barrier of the age limit, they all played a single year in college before applying for early entry in the NBA Draft. It would appear the intended behavior of these elite players is not changing during their year in college. Instead, it seems that these student-athletes are even more exposed to the descriptive norms of their peers. This is having a domino effect on the descriptive norms of family, friends, fans and even coaches.

The implementation of the rookie salary scale is also playing a factor, as players know that staying in college will only delay their first opportunity to maximize the earning potential that is waiting for them on the free agent market. Alternatively, there is evidence that a stigma is developing in both the NBA and college basketball for players who are still in college by their senior year. When evaluating college seniors, many discredit their talent and potential based on the fact that they were not projected high enough to leave college early (Norlander, 2012). Although this is an unfounded criticism, the third research question examines the ability for teenage first round selections to reach significant levels of contribution in comparison to first round selections in their twenties.

Some might suggest that the lopsided results between teenage and over-twenty draftees reaching these benchmarks, are associated with the best players in a given college class entering the draft years earlier as teenagers. There are obviously exceptions, as some players take longer to develop. Generally, prospects with the most NBA potential are the players that are drafted in the first round or lottery. These statistics show that teenage players are more likely to reach these benchmarks in their first five years. The age minimum has only widened this gap from 8.56% to 22.92%. This gap helps to explain the trends in the second question. Owners, general managers, scouts, and coaches are selecting these younger, less-experienced players because they have higher ceilings, and are more likely to become key contributors.

The NBA determined that the value of these early entrant players was creating liability concerns for the league. The environment was evolving, and institutional changes were needed to reverse such an increase. The age minimum was effective in reducing these liabilities with the younger draft selections. This can only help the future of the NBA, owners and other stakeholders.

These numbers also suggest that lottery picks are far more reliable than those selected later in the draft. This trend is consistent both before and after the age minimum was implemented. This trend is logical as the most talented players are typically going to be selected first.

Overall, it was found that the age minimum has not provided the league with a significantly older draft pool. Drafted players are getting older, but only by an average of nine days. Additionally, early selections have actually gotten younger. It was also found that the age minimum has encouraged additional early entry candidates into the draft. The teenage early entry first round picks are reaching their significant levels of productivity at a much higher rate than the players who were drafted in the first round at 20 years of age or older. This gap has only widened since the age minimum was put into place as part of the 2005 CBA. Additionally, teams are making better decisions on first round players, as the number of fourth-year team options tendered has increased since the rule change.

Financially, the rookie salary scale solidifies draft salaries so that the age minimum has little to no effect on the cost of each class. Instead any financial concerns must focus on the quality of investment. The age minimum eliminated the under-19 category of first round picks and lottery picks, which was the most expensive age group to develop into contributing players. This change took a great amount of pressure off both coaches and league executives.

Due to these factors, it was a surprising to see the lack of attention that was paid to the age minimum during the 2011 CBA, especially after the public relations campaign that David Stern and the NBA League Office launched in support of raising the age limit to 20 years of age. Although these issues are highly debated and often speculated about in the media, the financial ramifications are not significant enough to emphasize them over other major issues up for debate

over the collective bargaining table. Both parties have focused primarily on the distribution of the Basketball Related Income.

The lack of attention from key leaders to the age-minimum policy suggests that the NBA and NBPA are comfortable with the current rules. Given these research findings, it is difficult to believe that the age minimum has achieved its stated goals, but it is also difficult to believe that the financial ramifications of further rule changes are enough to lead league executives to exchange concessions to the NBPA. Examples of these concessions would likely include cap relief or larger percentage shares of the BRI. Due to these logistics, it is hard to see an extension or remission of the age minimum, especially since the NBA and NBPA signed a ten-year CBA in November of 2011. This deal includes a mutual opt out clause after 2017, the seventh year (Coon, 2011). If it were not for the political barriers associated with the CBA, the NBA could create a better system for developing talent that is not only better for the NBA but also players and college programs. The current political climate has created a situation where the NBPA's union leaders can only hope to minimize concessions. They are no longer fighting for enhanced wages, benefits or working conditions (Tellem, 2011).

Proposed NBA Improvements

The age limit should be extended one additional year to 20 years of age and two years removed from a prospects high school graduation. This extended age limit will provide the maturity and age difference that was originally intended from the 19 year-old age limit. The age limit should not have an exception for players who are a year removed from high school graduation. This extension and rule change would also devalue the trend of reclassification. It would also provide a two-year window for NBA scouts and executives to evaluate talent. From the perspective of college athletic programs, continuity among top division-1 rosters should

improve. From a player's prospective, these two years in college allow them to both develop personally, athletically and academically. They can also use college athletics as a tool to generate popularity that can translate to brand equity if they reach the NBA. These rule changes would likely have a significant effect on the injunctive and subjective norms affecting these elite level players. The research results suggest that behavioral intention would remain unchanged at least after the first college season.

From the perspective of the league, an extra season of talent evaluation will help to cut down on potential personnel mistakes that are inevitable throughout the draft process. Since each team's annual salaries are between 50 and 100 million dollars respectively, the league stands to save itself millions of dollars. These revenue discrepancies will come from the savings that can be attributed to more reliable talent investments, as well as the increase in value that these rookies are likely to provide (Kerr, 2012).

It is crucial for the NBA to recognize the fact that the institution of the traditional college experience is not for everyone, and that includes many aspiring NBA players. Prospects with a strong behavioral intention to play professional basketball might be less likely to find success in a higher education setting. Players who do not intend to commit themselves to a full-time academic schedule should be pushed towards alternative paths of basketball development. This change should reduce some of the pressure that lead to corruption of NCAA rules when the 2005 CBA enacted the age limit. By 2008, numerous one-and-done selections had already left their respective schools with NCAA sanctions. Derek Rose, John Calipari, and the University of Memphis received sanctions for a violation regarding the SAT, which is one of the standardized tests that is required for student-athletes to acquire NCAA eligibility. OJ Mayo, Tim Floyd and USC also received NCAA sanctions in a pay-for-play scenario (Garcia, 2009). The

improvement of alternative development paths for potential NBA prospects will be absolutely crucial if the age limit is extended an additional year (Kerr, 2012).

The best way to create this alternative path while keeping North America's best talent in the U.S and Canada is to build the D-League into a traditional minor league. The D-League is a minor league system that was developed and cultivated by David Stern. The NBA financially supports the league. This alternative path will provide opportunities for those who are not interested in a college education. In recent years, the league has continued to add franchises. NBA teams are starting to buy exclusively affiliated franchises.

In this proposal, it is imperative that this trend continues before the renewal of the CBA in ten years. This system will only be effective if each franchise has a D-League affiliate. It is believed that this was David Stern's original vision when he started the league. Since the league primarily operates in leased stadiums and operations are controlled at the franchise level. As a result, operational costs are relatively insubstantial. D-League player salaries are very low and in comparison to the finances associated with risky draft picks. Traditionally, the league has paid the salary of each individual player instead of the respective teams. This system will need to change, even if the NBA subsidizes these salaries through teams instead of the D-league.

In the last couple of years, teams have selected college basketball players in the second round and placed them in leagues overseas for continued development. These were players that current NBA D-League contracts were not able to entice. Two of the best examples are the Detroit Pistons sending Kyle Singler, the 33rd pick, to CB Lucentum Alicante and Real Madrid in Spain's top league and the Timberwolves sending Robbie Hummel, the 58 pick, to Obradoiro CAB (Blusens Monbus) in Spain. As former GM and NBA player Steve Kerr recently said in a Grantland article, "If an 18-year-old basketball whiz wants to earn a living right away, he could

play overseas or in the D-League for those two years. Regardless, it shouldn't be the NBA's responsibility to provide working opportunities for teenagers, just like it's not the NFL's responsibility to do so. The NBA should only care about running its operation the best it can. That's it" (Kerr, 2012).

The MLB and NHL are able to subsidize the costs affiliated with running minor leagues by extending the amount of time that a player has to wait to reach free agency. For example, players in baseball must be in the majors for six years before they reach free agency.

The NBA has been hesitant to enter into D-League conversation with the NBPA. The 12-page proposal that the NBPA finally agreed to as the resolution of the 2011 CBA did not mention the D-League in any context (Beck, 2011).

Research Limitations

A primary limitation to this research was the limited access of advanced statistical metrics. If efficiency statistics had been available for each of the last fifteen years, they would have been worked into the statistical evaluation of player contributions.

Another one of the primary limitations to these statistical analyses was the sample size of career paths demonstrated in the third research question. Only two of the classes that were drafted after the age minimum was implemented have completed the first five years of their careers. After additional seasons, a more complete analysis on these draft classes will be available.

A second limitation is the determination of what is representative of a draft class. A determination had to be made to specifically analyze selected players, or to analyze all players who applied for entry in to the draft. An original determination had been made that all players who applied for the draft would be the most representative of a draft class. Unfortunately,

college seniors are automatically eligible for the draft. This adds thousands of players to the potential draft pool. In an attempt to be consistent, a decision to use only players that were selected in the draft was made.

In the third analysis a decision to use only first round selections was made, as many second round selections never play a minute in the NBA (Basketball-Reference Database, 2012). Additionally, many players that are drafted in the second round spend some time in the D-League (Basketball-Reference database, 2012).

Another limitation with this data is that the seven years before the rule change cannot be seen as a consistent baseline sample. The age of draftees during this period varied quite significantly. Although results are inconsistent from year to year, these numbers are clearly decreasing from year to year.

A final limitation was the classification of draft entrants. A United States national player like Brandon Jennings is classified as an internationally developed player as he played in Italy after high school, while a foreign player who played college basketball is classified with his college class. If the purpose of this statistical analysis were to examine international aspects of the NBA Draft then players would have been classified quite differently.

Future Research Directions

During the attempt to answer these three research questions, many others questions surfaced. Data surrounding these topics will continue to develop as additional draft classes enter the NBA and players who have not yet reached their fifth season continue to reach different levels of contribution. It would be interesting to see these data sets completed after the 2016-2017 NBA season.

Any further extension of the age minimum is unlikely due to its absence at the negotiating table during the drafting of the 2011 CBA. It is likely that the NBA's eligibility rules will remain the same for at least another ten years. Meaning that the age limit could be 17-years-old when it is renegotiated. This is a substantial sample size for conducting before and after research on the 2005 CBA age minimum implementation.

Now that we know an age minimum does not actually result in a statistically significant age increase, we need to monitor the age and class level to see if the results from this study differ significantly in upcoming years. Does a trend of younger and less experienced draft pools continue? Are additional players' elite level prospects forgoing their junior year of high school as part of reclassifying in order to enter the NBA at the same age that they otherwise would?

One thing is certain: private and public debates over the age limit will continue until 2021, and even then many will disagree with whatever draft entry rules are collectively bargained. The economic and political conditions will determine whether or not the age minimum is once again brought into the forefront of collective bargaining negotiations. With the exception of the 2011 CBA, the NBPA has continued to give concessions to owners in hopes of maintaining a favorable balance of the BRI. The two parties have discussed the formation of a committee that would continue to monitor age eligibility issues going forward (Wojnarowski, 2011). Any agreement would need to be an amendment to the current CBA.

Findings like the data presented in this study will have a minimal effect on the league's approach to draft eligibility. As stated above, the NBA's motivation seems to have more to do with quality of player investments, competitive balance and the leagues image than the age, maturity or development of players. In other words, they do not want to improve player development, they just want to better select the players that are more likely to develop. Quite

simply, they are looking to minimize the risk and maximize the reward in regards to the draft process.

David Stern's concern of the leagues image also presents an interesting opportunity to further investigate the socioeconomically structures of the NBA and the role that it plays regarding the implementation of the age minimum. An analysis of collectively bargained rules would be a great metric for the evaluation of these socioeconomic structures. Similar research has been conducted using the age requirement in women's professional tennis to explain socioeconomic structures (Rodenberg & Stone, 2010).

Conclusion

These research findings are important because they provide an explanation of the results associated with the age limit. It can be suggested that the NBA owners are not concerned about the strength of college basketball. It seems that they are also not interested in obtaining a more mature draft pool. These findings seem to show that the NBA is more interested in creating a system that allows top-level decision makers the opportunity to see each and every eligible draft candidate for an entire season at either the collegiate or international level. This process allows owners to draft players who are going on to develop at a more reliable rate. The age minimum is relieving owners of one of their biggest liabilities. The way that the NBA's competitive balance is structured places a great importance on successful early lottery selections. With so few opportunities for acquiring talent, wasted opportunities are devastating, especially for small market franchises who are less likely to attract proven free agents. The data suggests that even top picks are not guaranteed to reach their potential. The age limit was an indirect attempt to influence the leagues competitive balance and especially helping small market franchises.

Between 1997 and 2003, only 80% of first picks had at least one superstar season, compared to 40% of second picks, 30% of third picks and 20% of fifth picks (Groothuis, Hill & Perri, 2009). They likely saw that the contributing factors that influence early entry behavior were overwhelmingly leading players to make the transition earlier and earlier. The age minimum was the easiest way to inhibit this behavior.

The proposal above aims at furthering the NBA's initiative to improve the league's ability to scout potential early draft entrant, as well as their collective image. The proposals provide relatively simple changes that should produce numerous benefits for the high school, college and professional organizations basketball association, as well as high school, college and professional athletes and their coaches. These changes were aimed at alleviating some of the pressures that have led to a chain of corruption throughout all levels of basketball. They stem from the three original research questions that identified that there has been little change to the overall age of players drafted after the implementation of the age minimum, and lottery picks actually have gotten significantly younger since the CBA change. The second research question identified that the reason for these unexpected numbers can be attributed to a substantial increase in the amount of early entrants being drafted. Last, data collection was designed to find out how these new draft classes were faring compared to their counterparts, and it was found that teenage selections were actually developing more reliably than players drafted in their twenties, although they are slightly more expensive to prepare to contribute at the NBA level. It also found that draft selections were reaching a level of significant contribution at a higher rate. This improvement can be contributed to teams benefiting from the ability to scout all prospects for at least a year while they are playing in college or playing in another professional league. The

proposals serve as an extension of the age limit and tweaks to a capitalist system that served as a development system to the NBA since the league's inception as the BAA.

These results show a conflict between numerous factors that seem to indicate an increasing incentive for early entry candidates, and a barrier preventing immediate entry. The age minimum has been an effective barrier to entry; its contribution has clearly affected the subjective and injunctive norms toward additional early entrants even while the collective behavior intention is unaffected after mandatory time in college basketball. This combination of factors has resulted in ages that have remained statistically consistent.

The results also reflect the type of continual evolution that collectively bargained league rules represent. Early on-court results suggest that some of the NBA's largest player development liabilities have been eliminated. Age eligibility rules will continue to be monitored by both the NBPA and the owners. Consistent with Institution Theory, the evolution of the external environment will determine what future changes the owners will seek.

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Appendix I

Table 5

2012-2013 NBA Rookie Salary Scale (Lottery Picks)

Pick	Year 1	Year 2	Year 3	Year 4	QO
1	\$4,286,900	\$4,479,800	\$4,672,700	26.10%	30.00%
2	\$3,835,600	\$4,008,200	\$4,180,800	26.20%	30.50%
3	\$3,444,400	\$3,599,400	\$3,754,400	26.40%	31.20%
4	\$3,105,500	\$3,245,200	\$3,385,000	26.50%	31.90%
5	\$2,812,200	\$2,938,700	\$3,065,300	26.70%	32.60%
6	\$2,554,200	\$2,669,100	\$2,784,100	26.80%	33.40%
7	\$2,331,700	\$2,436,600	\$2,541,600	27.00%	34.10%
8	\$2,136,100	\$2,232,200	\$2,328,300	27.20%	34.80%
9	\$1,963,600	\$2,052,000	\$2,140,300	27.40%	35.50%
10	\$1,865,300	\$1,949,200	\$2,033,200	27.50%	36.20%
11	\$1,772,100	\$1,851,800	\$1,931,600	32.70%	36.90%
12	\$1,683,500	\$1,759,300	\$1,835,000	37.80%	37.60%
13	\$1,599,300	\$1,671,300	\$1,743,200	42.90%	38.30%
14	\$1,519,400	\$1,587,800	\$1,656,100	48.10%	39.10%

Note. Data collected from Basketball-Reference.com

Appendix II

Section 1: Player Eligibility as it is Stated in the 2011 Collective Bargaining Agreement

(a) No player may sign a Contract or play in the NBA unless he has been eligible for selection in at least one (1) NBA Draft. No player shall be eligible for selection in more than two (2) NBA Drafts.

(b) A player shall be eligible for selection in the first NBA Draft with respect to which he has satisfied all applicable requirements of Section 1(b)(i) below and one of the requirements of Section 1(b)(ii) below:

(i) The player (A) is or will be at least 19 years of age during the calendar year in which the Draft is held, and (B) with respect to a player who is not an international player (defined below), at least one (1) NBA Season has elapsed since the player's graduation from high school (or, if the player did not graduate from high school, since the graduation of the class with which the player would have graduated had he graduated from high school); and

(ii)

(A) The player has graduated from a four-year college or university in the United States (or is to graduate in the calendar year in which the Draft is held) and has no remaining intercollegiate basketball eligibility; or

(B) The player is attending or previously attended a four-year college or university in the United States, his original class in such college or university has graduated (or is to graduate in the calendar year in which the Draft is held), and he has no remaining intercollegiate basketball eligibility; or

(C) The player has graduated from high school in the United States, did not enroll in a four-year college or university in the United States, and four calendar years have elapsed since such player's high school graduation; or

(D) The player did not graduate from high school in the United States, and four calendar years have elapsed since the graduation of the class with which the player would have graduated had he graduated from high school; or

(E) The player has signed a player contract with a "professional basketball team not in the NBA" (defined below) that is located anywhere in the world, and has rendered services under such contract prior to the Draft; or

(F) The player has expressed his desire to be selected in the Draft in a writing received by the NBA at least sixty (60) days prior to such Draft (an "Early Entry" player); or

(G) If the player is an "international player" (defined below), and notwithstanding anything contained in subsections (A) through (F) above:

(1) The player is or will be twenty-two (22) years of age during the calendar year of the Draft; or

(2) The player has signed a player contract with a "professional basketball team not in the NBA" (defined below) that is located in the United States, and has rendered services under such contract prior to the Draft; or

(3) The player has expressed his desire to be selected in the Draft in a writing received by the NBA at least sixty (60) days prior to such Draft (an "Early Entry" player).

(c) For purposes of this Article X, an "international player" is a player: (i) who has maintained a permanent residence outside of the United States for at least the three (3) years prior to the Draft, while participating in the game of basketball as an amateur or as a professional outside of the United States; (ii) who has never previously enrolled in a college or university in the United States; and (iii) who did not complete high school in the United States.

(d) For purposes of this Article X, a "professional basketball team not in the NBA" means any team that pays money or compensation of any kind – in excess of a stipend for living expenses – to a basketball player for rendering services to such team.

(2011 Collective Bargaining Agreement, 2012)

Appendix III

Table 6

Players Drafted by Class (1999-2012)

Year	HS	INT	FR	SO	JR	SR	Total
1999	2	6	2	6	6	36	58
2000	2	10	3	9	6	28	58
2001	5	7	6	10	8	21	57
2002	1	14	2	5	13	22	57
2003	4	21	2	3	6	22	58
2004	8	15	3	2	8	23	59
2005	9	14	1	7	11	18	60
2006	0	16	2	9	13	20	60
2007	0	13	8	5	14	20	60
2008	0	12	12	9	8	19	60
2009	0	14	4	8	13	21	60
2010	0	7	10	12	13	18	60
2011	0	12	7	8	14	19	60
2012	0	9	9	13	8	21	60

Note. Data collected from Basketball-Reference.com

Appendix IV

Table 7

Percent of Players Drafted by Class (1999-2012)

Year	HS	INT	FR	SO	JR	SR
1999	3.4%	10.3%	3.4%	10.3%	10.3%	62.1%
2000	3.4%	17.2%	5.2%	15.5%	10.3%	48.3%
2001	8.8%	12.3%	10.5%	17.5%	14.0%	36.8%
2002	1.8%	24.6%	3.5%	8.8%	22.8%	38.6%
2003	6.9%	36.2%	3.4%	5.2%	10.3%	37.9%
2004	13.6%	25.4%	5.1%	3.4%	13.6%	39.0%
2005	15.0%	23.3%	1.7%	11.7%	18.3%	30.0%
2006	0.0%	26.7%	3.3%	15.0%	21.7%	33.3%
2007	0.0%	21.7%	13.3%	8.3%	23.3%	33.3%
2008	0.0%	20.0%	20.0%	15.0%	13.3%	31.7%
2009	0.0%	23.3%	6.7%	13.3%	21.7%	35.0%
2010	0.0%	11.7%	16.7%	20.0%	21.7%	30.0%
2011	0.0%	20.0%	11.7%	13.3%	23.3%	31.7%
2012	0.0%	15.0%	15.0%	21.7%	13.3%	35.0%

Note. Data collected from Basketball-Reference.com

Appendix V

Table 8

Change by College Class

	HS	INT	FR	SO	JR	SR
1999-2005 Average	7.62%	21.38%	4.67%	10.32%	14.25%	41.77%
2006-2012 Average	0.00	19.76%	12.38%	15.24%	19.76%	32.86%
Percent Change	-7.62%	-1.61%	7.71%	4.92%	5.51%	-8.91%
Standardized Change	-4.57	-0.97	4.63	2.95	3.31	-5.35

Note. Data collected from Basketball-Reference.com

Appendix VIII

Table 9

Percentage of First Round Picks Reaching Above Average Levels of Contribution by Draft Class

Draft	Under-19			Under-20			Over-20		
	Total \$ U19	Average	Ratio	Total \$ U20	Average	Ratio	Total \$ 20+	Average	Ratio
1999	\$19,083,465.00	\$6,361,155.00	1 of 3	\$25,555,425.00	\$3,650,775.00	4 of 7	\$42,423,056.00	\$1,928,320.73	7 of 11
2000	\$2,670,720.00	\$1,335,360.00	2 of 2	\$6,145,337.00	\$2,048,445.67	2 of 3	\$74,693,937.00	\$2,994,047.19	17 of 26
2001	\$25,175,124.00	\$6,293,781.00	3 of 4	\$34,774,084.00	\$4,346,760.50	5 of 7	\$43,926,979.00	\$2,196,348.95	11 of 21
2002	\$0.00	\$0.00	1 of 1	\$17,174,679.36	\$2,862,446.56	5 of 6	\$67,497,058.07	\$3,068,048.09	12 of 22
2003	\$26,170,328.00	\$5,234,065.60	4 of 5	\$31,705,654.00	\$3,963,206.75	7 of 9	\$57,402,501.00	\$2,733,452.43	14 of 20
2004	\$21,694,924.00	\$2,711,865.50	7 of 8	\$40,027,317.00	\$3,079,024.38	10 of 13	\$43,009,806.00	\$4,884,536.65	11 of 16
2005	\$18,715,277.00	\$3,743,055.40	2 of 5	\$18,715,277.00	\$2,673,611.00	4 of 7	\$62,531,622.00	\$2,718,766.17	15 of 23
Total	\$16,215,691.14	\$3,668,468.93	20 of 28	\$24,871,110.48	\$3,232,038.55	37 of 52	\$55,926,422.72	\$2,931,931.46	87 of 139
			71.43%			71.15%			62.59%
2006	-	-	-	\$11,742,000.00	\$3,914,000.00	3 of 3	\$116,465,045.00	\$4,479,424.81	11 of 27
2007	-	-	-	\$23,555,912.00	\$2,617,323.56	6 of 9	\$73,579,632.00	\$3,503,792.00	14 of 21
Total	-	-	-	\$17,648,956	\$3,265,661.78	9 of 12	\$95,022,338.50	\$3,991,608.40	25 of 48

Note. Data collected from Basketball-Reference.com

Appendix IX

Table 10

Percentage of First Round Picks Reaching Above Average Levels of Contribution by Draft Class

Draft	Under-19			Under-20			Over-20		
	Total \$ U19	Average	Ratio	Total \$ U20	Average	Ratio	Total \$ 20+	Average	Ratio
1999	\$16,168,785.00	\$16,168,785.00	0 of 1	\$22,640,745.00	\$5,660,186.25	2 of 4	\$14,792,400.00	\$1,479,240.00	8 of 10
2000	\$0.00	\$0.00	1 of 1	\$0.00	\$0.00	1 of 1	\$47,136,016.00	\$3,625,847.38	9 of 13
2001	\$27,186,204.00	\$5,437,240.80	3 of 4	\$27,186,204.00	\$5,437,240.80	4 of 5	\$18,705,950.00	\$5,437,240.80	7 of 9
2002	\$0.00	\$0.00	1 of 1	\$17,174,679.36	\$3,434,935.87	5 of 5	\$24,837,020.63	\$2,759,668.96	8 of 9
2003	\$16,815,062.00	\$8,407,531.00	2 of 2	\$16,815,062.00	\$4,203,765.50	4 of 4	\$17,227,706.00	\$1,722,770.60	10 of 10
2004	\$20,087,524.00	\$4,017,504.80	4 of 5	\$30,587,757.00	\$3,823,469.63	6 of 8	\$18,591,436.00	\$8,683,572.67	4 of 6
2005	\$10,791,720.00	\$3,597,240.00	2 of 3	\$10,791,720.00	\$2,697,930.00	3 of 4	\$24,332,492.00	\$2,433,249.20	7 of 10
Total	\$13,007,042.14	\$5,375,471.66	13 of 17	\$17,885,166.77	\$3,608,218.29	25 of 31	\$23,660,431.52	\$3,734,512.80	53 of 67
Percent			76.47%			80.65%			79.10%
2006	-	-	-	\$6,766,080.00	\$3,383,040.00	2 of 2	\$54,868,755.00	\$4,572,396.25	8 of 12
2007	-	-	-	\$19,411,232.00	\$2,773,033.14	6 of 7	\$22,937,904.00	\$3,276,843.43	5 of 7
Total	-	-	-	\$13,088,656.00	\$3,078,036.57	8 of 9	\$38,903,329.50	\$3,924,619.84	13 of 19
Percent						88.89%			68.42%

Note. Data collected from Basketball-Reference.com