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How do Amateur Statistics Affect Post-Draft Success for International NBA Draft Picks?



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by

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Submitted to The Department of Business and Economics

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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.

Signature: _____

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Abstract

The National Basketball Association (NBA), one of the most popular sports leagues in the world, relies on the infusion of young talent through the NBA draft yearly to continue the competitiveness and growth of the league. NCAA athletes have traditionally been the focus of these drafts, however, as the skill gap between international players and college athletes continues to shrink, international players will continue to rise in popularity. This paper attempts to analyze the relationship that exists between amateur performance for international NBA draft prospects and their draft position and future performance in the NBA. By using regression modeling, this paper discusses factors that impact when a player is selected in the draft as well as statistical markers within amateur performance that might allude to future performance in the NBA.

Introduction

When considering my path for this research paper and my current and future aspirations, one constant passion has always remained in my life. That passion is sports, and to be more specific basketball. Throughout my life, watching sports with my dad has always been a cherished memory of mine as he cultivated my love for sports at a young age. However, as I grew older and needed to think about future career plans and what I wanted to do with my life; I knew sports was where my fire burned brightest.

That led me to where I currently am today. An economics major working as the current box office intern for the Erie Seawolves just after working as the team manager for the men's basketball team during this season. In both places, I find myself fitting in and feeling at home. Although I was only the basketball manager for one season, I fell in love with the day to day grind of getting the guys prepared to play beforehand and during the games in addition to the behind the scenes things such as recovery, setting up/tearing down practice and games, along with getting the players' proper rest and nutrition so they could continue to perform. Most of all, I loved the relationships basketball allowed me to form in such a short amount of time with our basketball family becoming closer with each success, but more importantly with each struggle. We had a highly successful season led by many great guys regardless of not having the ending we wanted. Losing in the conference championship the way we did – despite me not being a player – hurt. I have never felt that way before about a sports loss which told me I was in the right place doing the right thing. I don't know where life will take me, but I do know I will be a lucky guy if basketball is with me along the way.

Even though I am not interested in the typical economic and business fields such as banking and finance, economics and its fundamentals are adaptable and can apply to many industries which is perfect for me and the reason I like it. The intersection between sports and

the fundamentals of my economics education grows each day as data becomes more important and relevant in decision making processes throughout all of sports.

I said all of that to first provide insight into who I am as a person and what some of my interests might be but secondly as a segway to what my topic and overall research paper is about. My research sets out to answer two main questions which are: “How Do Amateur Statistics Affect Draft Slot For International NBA Draft Picks?” and “How Does Amateur Performance Affect Post Draft Success For International NBA Draft Picks?”. To achieve this, I used amateur and NBA performance statistics obtained from RealGM and basketball-reference.com to conduct different regression analysis with the international prospects’ amateur statistics as the independent variables while Draft slot and various NBA performance statistics functioned as the dependent variables.

My idea behind this was to build off of the previous research and literature that exists on the topic of the NBA Draft. The literature that exists on my topic follows the same methodology as what will follow with my research, utilizing different regressions to see what independent variables have an effect on different dependent variables such as draft slot, playing time, or NBA performance in reference to NCAA college athletes. I am aiming to do similar things with my research with one major difference. The lack in research and literature about the NBA draft pertaining to international prospects stood out like a sore thumb. That is why my aim is to fill in the gap revolving around international NBA draft prospects and the factors that influence where and when they get drafted in addition to how they will perform once they are drafted. With international players increasing in number and popularity throughout the NBA as basketball around the world catches up to the level we see in the United States. Due to that, research on the draft could be crucial in helping team executives identify key statistics or traits to hone in on when selecting international players’.

The analysis I will do with this research is something that interests me in day-to-day life and represents the type of work I could see myself doing for an NBA team. Furthermore,

European and International players such as Giannis Antetokounmpo, Joel Embiid, Luka Doncic, and Nikola Jokic have recently dominated the league winning the last four MVPs showing it is important to assess their success rate in the NBA as their popularity increases as will the number of international players we see in the league in the coming years.

Relevant Information

History of the NBA Draft

The purpose of the NBA draft is to provide NBA franchises with a fair chance to improve their team through the infusion of young talent in the yearly NBA draft. This event is a great chance for teams who are at the salary cap threshold and cannot spend on big money free agents while also presenting the smaller market teams with that same chance of acquiring talent as draft picks do not demand high salaries. The NBA draft began in 1947 as a territorial draft meaning teams selected players based on proximity to them. It evolved into choice through coinflip in 1965 and then became what we know the draft as today around 1985 when they created the draft lottery (NBAhoopsonline, 2023). This draft lottery has undergone some changes but has maintained its foundational idea around the draft order being determined based on team records with the NBA team with the most losses having the highest chance of the first overall pick in the draft. This system is in place to hopefully give weaker teams a better chance at selecting a franchise altering player - thus catapulting them out of the “NBA Basement”. Overall, the NBA Draft has resulted in many great talents helping to improve teams dramatically, cementing its importance for team building and success in the NBA for the foreseeable future

Draft Process for International Players

The process for international basketball players hoping to get drafted to the NBA is much different than the one NCAA athletes playing basketball experience. In America, it is standard practice for basketball players to play in college after graduating high school. However, this is different for international players who do not attend further schooling after their primary education, often playing on a professional team in their country in their early teens. Due to this,

the rule for international basketball prospects is that they must turn 19 years old in the same year as the draft (sbnation, 2014).

After getting drafted, the contract process for international players works differently than with NCAA drafted players. For example, suppose a player who signs a three year deal with his international team gets drafted one year after that new deal – or with two years remaining on his international contract. In order for that player to play with the NBA team that drafted him, that team would have to acquire his rights from the international squad (sbnation, 2014). The only way to avoid this occurrence is to wait until the player's international contract expires or to draft a player not signed by an international team. This presents a dilemma to NBA teams deciding whether it is worth it to use a certain draft selection on a player who might not join your team for a number of years. With huge misses of Darko Milicic and Hasheem Thabeet in the early 2000s coupled with dominance from recent pick Luka Doncic, and Victor Wenbanyama, the projected first overall pick in next years draft, there are varying levels of success for international prospects that NBA teams can observe (complex, 2020).

International Basketball Overlook

In order to encapsulate the total picture for international basketball, it is crucial to have an understanding of the leagues that are known for producing the international draft picks this paper is centered around. The best basketball outside of the United States is considered to exist in Europe which is known to produce most of the NBAs top international players (medium, 2022).

Some of the top leagues in international basketball are Spain's Liga ACB, Germany's Basketball Bundesliga (BBL), Italy's Lega Basket Serie A (LBA), the Adriatic League (ABA), the Chinese Basketball Association (CBA), the Turkish Basketball Super League (BSL), and the Greek A1 League just to name a few (medium, 2022). In each of these leagues, international players can sign and play with any of these teams after reaching a contract. However, similar to

basketball players in the Olympics playing for their home country, one can also see this with international league play, where certain leagues only consist of teams' from that continent participating. Two of the most known leagues when considering this type of structure are the Euroleague and Australia's National Basketball League (NBL), both of which have produced numerous NBA draft picks (medium, 2022).

Brief Description of My Regression analysis

At its core, a regression analysis is a mathematical way to make educated predictions or to explain variation in certain dependent variables which are affected by the independent variables. In this case, I will be utilizing multiple regressions to assess the variation in Draft Slot that occurs within the draft for international NBA prospects as well as trying to account for the variation that is seen from player to player as far as performance. In doing this, I am attempting to see what prospects should focus on if they want to increase their draft stock as well as what NBA executives can look for as qualities or abilities performance wise that can lead to future NBA success. The dependent and independent variables I will utilize are below with (NBA) indicating a statistic from the players' NBA career or (Int) indicating international or a statistic taken from the players' amateur career:

- Dependent Variables based on Total Statistics
    - Draft Slot (NBA)
    - Total Minutes Played (NBA)
    - Total Win Shares (NBA)

- Independent Variables based on Per Game basis
    - Age
    - Weight
    - Height
    - (PPG) Points (Int)
    - (FGA) Two Point Attempts (Int)
    - (FC) Two Point Makes (Int)
    - (AC) Two Point Field Goal Percentage (Int)
    - (AD) Three Point Attempts (Int)
    - (AE) Three Point Makes (Int)
    - (AF) Three Point Percentage (Int)
    - (FreeThrowAttempt) Free Throw Attempts (Int)
    - (FT) Free Throw Makes (Int)
    - (AI) Free Throw Percentage (Int)
    - (ORB) Offensive Rebounds (Int)
    - (DRB) Defensive Rebounds (Int)
    - (APG) Assists (Int)
    - (SPG) Steals (Int)
    - (BPG) Blocks (Int)
    - (TurnoversPG) Turnovers (Int)
    - (FoulsPG) Fouls (Int)

Literature review

College Performance: Correlation to Draft Slot

Brook, Berri and Fenn (2011) begin with predicting where players will get selected in the draft in addition to predicting future NBA success. The goal of this was to demonstrate if college statistics can be used to accurately predict where players will be drafted. This would be useful because it could help remedy teams “reaching” on selections which is when teams pick a player earlier than the consensus from scouts and draft researchers. This could have a huge impact on the future of the team if a high draft selection is used on a player that was undeserving of that selection. One of the biggest instances coming to mind is during the 2013 draft when the Cleveland Cavaliers selected Anthony Bennett first overall out of UNLV. Bennett’s post play and streaky jump shot did not translate well into the NBA landscape which was currently going through a dramatic change where three pointers were focused on and most players needed to be versatile with some form of jump shot. However, others would say that Anthony Bennett was a reach at first overall in a fairly weak draft class and Cleveland should have gone with a different guy at that selection. Either way, this result might have been avoided if this model was taken into account, preventing the setback of the Cavs until the arrival of LeBron James.

A regression analysis was estimated to assess different factors of college performance and how they contribute to where that player is selected. The dependent variable of the regression analysis was draft position while explanatory variables of production, height, position played, age, conference, reaching the Final Four, winning a national championship, and draft year were used to assess the variability in draft position (Fenn, Berri and Brook, 2011). Results from the regression suggest that taller players are taken earlier in the draft while shooting guards were taken later in the draft with performance held constant. Taller players going sooner in the draft is logical because those players typically have longer wingspans and as most would

agree; the more height and length you can have on the court, the better. Moving on, the analysis also found significance in enhancing draft position for scoring, shooting efficiency from two and three, assists and blocked shots while rebounding and turnovers were found to have no impact on draft position (Fenn, Brook and Berri, 2011). Lastly, a Final Four appearance was found to increase draft position by 12 spots, only if the player declares for the draft after that appearance. Age decreases draft position by six spots each year a player ages in college. Significance was not found in rebounding or turnovers.

Importance was also placed in predicting future performance for NBA draft picks. In order to do this, another regression was used to demonstrate how different variables correlate to future performance. The dependent variable of this model was a created metric encompassing NBA box score statistics called Wins Produced Per 48 or WP48. The explanatory variables of this regression were age, position played, height, conference, march madness “winners”, draft year, and production. Positive significance for production was found in points, rebounds, steals, shooting efficiency from two, and playing for an NCAA champion meaning production increases while those characteristics increase, while height and final four performance were not significant in predicting performance (Berri, Brook and Fenn, 2011). Additionally, age has a small significance when it comes to production.

3 Years In: Productivity and Playing Time

Moving on to predicting player productivity and playing time three years into the players NBA career, the analysis on draft position discovered negative coefficients for points, assists, steals, blocks, two point percentage, three point percentage, win percentage, coach experience, conference, and height meaning better draft position while fouls, four year, and age had positive coefficients meaning worse draft positions (Evans, 2017). Fouls and four year decreasing draft projection also are trends that match up with outcomes from the NBA draft as players who commit a high number of fouls will not be able to maintain playing time on the court as well as

players who spend four years in college, typically doing so because they were not presented with a good reason to enter the NBA draft i.e., not being a projected first or second round draft pick, and not having interest from NBA teams as an undrafted rookie. One of the greatest examples of this is with MJ's running mate, Scottie Pippen who grew from 6'1 to 6'7 during his college career (sportsnostalgiahq, 2022). This catapulted his draft stock and was the beginning of one of the best two way players to ever play the game.

The regression that was estimated by Evans (2017), utilized a dependent variable of NBA win shares which was a heightened measure of performance in the NBA standing for NBA win shares per 1000 minutes of play. More specifically, win shares represent the number equated to the number of wins a player produces for his team, for each given season. The explanatory variables of this regression were age, height, BMI, two year, three year, or four year, coach experience, coach winning percentage, and college stats such as scoring, which were per 40 minutes of play and based on the final collegiate season for each player (Evans, 2017). Results from this regression once again suggest a divide between valued skills and skills that contribute to winning for NBA draft picks. Most variables were found to be insignificant while significance was found for turnovers meaning that decreasing turnovers increases winning or win shares. Another interesting note is that college scoring per 40 minutes was found to increase draft selection and playing time but does not contribute to performance while that player is in the game raising questions into the effectiveness of pure scorers versus well rounded players at the NBA level. Furthermore, four-year players were found to generate fewer wins than one-and-done players which could provide insight into the consideration that is given to a players age and experience in college.

An additional regression was utilized to evaluate the correlation between certain skill sets on playing time in the third NBA season for draft picks. This regression featured a dependent variable of NBA minutes while using the same explanatory variables that were used in the previous regression model on NBA win shares which are: college stats, win percentage,

conference, coach win percentage, coach experience, two year, three year, or four year, age, height, and bmi (Evans, 2017). Results from this regression analysis found that points, rebounds, and steals were positively correlated with increased playing time. For example, a player who sees a three point increase in scoring during his final collegiate season is expected to play an additional 445.8 minutes during their third NBA season. From this, we can see how heavily coaches and executives weigh scoring compared to other statistics shedding light on why some college players focus on scoring the ball rather than developing multiple skills. This occurs at the NBA level as well, where most guys love playing offense while showing little interest on the defensive side, allowing for easy separation into who is and is not an impact player.

Some additional conclusions from the regression are similar to prior results while others were very different. First, foul rate and age are found to result in less playing time which is consistent with other findings. Also, taller or heavier players, or players competing on high achieving teams in tough conferences receive more playing time than other players with performance held constant. Surprisingly, there was evidence suggesting that players under historically great NCAA coaches actually receive less playing time than others in their third NBA season. This was the first result suggesting this phenomenon. From this, one could conclude that players from high recognition colleges are drafted too high as NBA executives would rather make what they deem the safer pick. However, results from the players' third NBA season suggests those players underperform at the NBA level and most likely stood out in college due to the surrounding players and coaching staff at their school.

One would think that playing for a historically great coach would increase playing time because coaches and executives would value it due to the skills learned and advice received from that coach. Generally, players from blue-blood programs are considered to have a higher success rate, however, the above sentiment might cause NBA GMs and executives to rethink those quick decisions.

Building a Foundation: Summer League → Future Performance

The connection between the NBA Summer League and future performance for the players who participated in it is heavily observed. It is assessed to see whether stock should be put into standout performers or performances from the summer tournaments. To provide background; The NBA Summer League is a mid-summer tournament that is held in Salt Lake City, Orlando, and Las Vegas. This tournament features rosters from each of the 30 NBA teams composed of recent draft selections and older “journeyman” types of players. This tournament is used as a way for teams to evaluate their recent draft picks and young players who have not found their spot on a regular roster yet. The Summer League is played like an NBA game, providing the first real chance for the new players to get accustomed and make their mark on the league.

In addition, it is important to note that a two stage approach was used for the research meaning; a regression was first estimated to see whether college statistics are predictive of Summer League statistics for NBA draft picks. Next, an additional OLS regression was estimated to regress performance in the player's rookie NBA season against the difference between his Summer League performance and projected Summer League performance.

The dependent variable of the first estimated regression was Summer League performance which is a metric that takes into account points, win shares, rebounds, steals, and blocks to form six different models. The explanatory variables of the regression were college performance, draft slot, age, age squared, height, weight, college experience, conference, top 25 ranking, position, year, and NBA team (Evans, Pitts and Clark, 2021). Age squared was included in case the relationship between age and performance is not linear. Initial results from this model suggest that college performance is highly predictive of Summer League performance. For example, a player is expected to exhibit a 0.41 point increase in scoring in the NBA for every one point increase in college scoring (Evans, Pitts and Clark, 2021). Additionally, to some surprise, draft slots are not significant in respect to player performance meaning high

draft picks are not the only players to perform well during the Summer League. Standouts can come from the first or second round and are more player/team specific than dealing with draft spots. Another conclusion shows that height is positively correlated with Summer League blocks while being negatively correlated with Summer League assists. This conclusion demonstrates the positional nature of the NBA. Each position on the court at the NBA level is expected to fulfill a certain role in most cases whereas in college or Summer League skills are the focus so players are more free to play how they want. This change in expectation and play style is what we see in the results. “Big men” or players with height are primarily responsible for blocks and rebounds while having little to no ball handling duties which shows in the lack of assists.

The second stage of this process was then used to assess the predictive ability of Summer League for NBA rookie regular season performance. This model is set up with NBA performance as the dependent variable which was regressed against the explanatory variable of performance difference which is still the difference between the players’ actual Summer League performance and projected Summer League performance. Results from this regression suggest that Summer League performance is somewhat predictive of NBA regular season performance depending on what one is trying to predict. Summer League was found to be predictive for win shares but should not be thought of as concrete. A better way to look at it is, players that outperformed expectations in the Summer League tended to also outperform them during their rookie NBA season. For example, players who rebounded or scored more during summer league, also saw that same jump in performance during their regular season games. This is crucial because a lot of people feel that the NBA Summer League does not matter and should not be taken into account when grading player performance. However, as this model suggests, Summer League could actually be used as a tool for coaches and executives to grade players for the final roster. Because the Summer League can be predictive of the regular season, coaches can use it to scout and pick up players for specific roles like a rebounder or pure point guard, both of which are needed on an NBA roster.

International Players: Career Duration

It is also important to include some literature surrounding international players who became NBA draft picks as that is the sample I plan to research for this paper. The literature and research on the topic is slim and could definitely benefit from additional research and work. Research on this topic was conducted comparing foreign born players who went to college against foreign born players who did not. Comparisons ranged from playing time, career length, and physical characteristics to differences in performance in categories such as blocks, rebounds, and scoring in each of the players respective leagues – international and NCAA. In order to conduct this research, a regression was estimated using NBA performance statistics as explanatory variables partnered with dummy variables on whether the particular player was foreign born or went to college. Foreign players were found to record more blocks and steals while achieving lower scoring and assist numbers (Groothius, Hill, 2018). Lastly, an important note is that foreign born players with college experience were selected in the draft sooner than players who only played international basketball pre-draft.

One final piece is that foreign born players with no college experience were seen to have earlier exits from the NBA than others, all else being equal (Groothius, Hill, 2018). This alludes to potential discrimination towards foreign players, player preference to play in their home country, or the over-valuing of the college basketball experience. This demonstrates that international players with no college experience as it is clear there is a disconnect between NBA executives and general managers when it comes to those players who seem to be undervalued and overlooked in comparison to players from America.

When thinking about the literature and popular topics within my research topic they have a lot of similarities between them. One of the first major similarities I noticed was that the data was all basically the same with each of the studies using the players' college statistics such as points, rebounds, steals, assists, etc. to complete their research. Additionally, throughout the different regressions, most of the explanatory variables were kept the same with the three

characteristics of age, height, and weight being important to take into account in each regression. There was some variation in variables such as coach experience, top 25 ranking, and coach win percentage. Constants across almost all of the regression estimations were the importance of height, scoring, and age in a player's draft position, playing time and performance. Lastly, the main similarity existing with the relevant research was the lack of attention to international prospects, with international draft picks being left out of the studies completely, which is why my topic pertains to those players.

The main deficiency in the literature I found is within research surrounding European and overseas NBA draft picks and their statistics in the areas that were discussed above such as summer league performance, NBA regular season performance and NBA playing time. I am not sure if reliable data were not available on those players or they were excluded by choice but foreign players are debatably more popular, and more skilled than ever in the NBA so I feel it is important to evaluate the predictive nature of their amateur statistics on their professional NBA careers to help inject foreign talent into the NBA to continue to grow it as a global brand.

Data Description

The data that will be used in this research paper is on basketball players throughout the world, which was obtained from realGM.com and basketball-reference.com. To be more specific, the data I am using is on European and International players that became NBA draft picks. The sample features players from 27 different international leagues throughout the world with the most players coming from the Spanish ACB with 36 players, the Euroleague with 15 players, the Adriatic League ABA with 14 players, and the French Jeep Elite with 17 players. The goal is to identify a secret to drafting international players or if certain statistics are undervalued and translate well at the NBA level.

To get more specific, the data I am using ranges from the years 2006 to the year of 2021 with all of the data pertaining to statistics or characteristics about international players who were drafted during those years. I chose to use 2006 as the starting point for my player data as that was the first year high school graduates could not enter the draft and seems as a good starting point to maintain consistency with literature pertaining to American NBA prospects. I chose 2021 as the end point because players drafted in 2022 have not played a full NBA season, therefore I would not be able to get the full picture on their performance.

In total, 147 international players make up the sample throughout those years. As stated above, this sample is small in comparison to the NCAA draft picks but is just as important as the four players listed above demonstrate the ability of one draft pick to change a franchise. First and foremost, physical characteristics were obtained for each of the 147 players as age, weight, and height could have an effect on future NBA performance. Weight can make a player faster or slower while being taller as a player gives an advantage over shorter players when it comes to getting off a contested jump shot or having a better chance to impact shots on the defensive end. Secondly, performance statistics for each of the players will be used to answer my

research question. These statistics will be from the players' final season before they were drafted into the NBA to get the best picture of what NBA executives and GMs would have been looking at to make their decisions on who to draft. The statistics that will be used are points per game, two point field goal percentage, three point field goal percentage, free throw percentage, rebounds per game, assists per game, steals per game, blocks per game, turnovers per game, and fouls per game. Both of the variables for shooting percentage are calculated by dividing the made shots in that category by the total shots in that category. The dependent variables of the regression analysis are slightly different as they are data obtained from the players' NBA careers as well as where they were chosen in the draft. These dependent variables are draft slot, total minutes played, total games played, total points, and total win shares. Most of the variables are easily understood except for win shares which is a measure of that particular player's success and how much they contributed to the team winning on both sides of the ball.

International prospects were selected in the top 10, 15 times, with seven of those selections coming in the top five. Interestingly, this data set features players who were born in 35 different countries showing the reach basketball has throughout the world and how popular it has become outside of the United States. Those featured countries, along with a breakdown of the amount of draft picks from each country can be seen below in **Figure 1**.

Figure 1: Countries With The Most Players Drafted

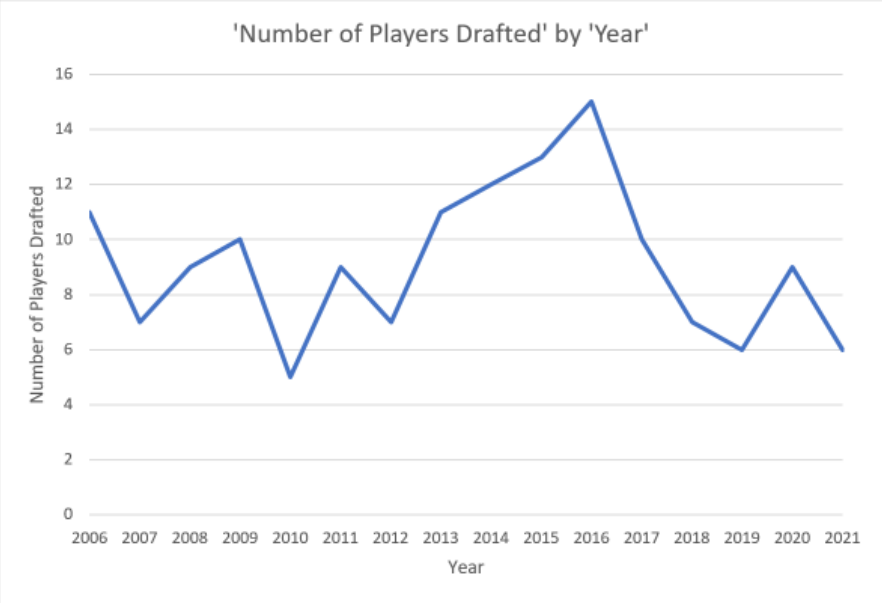
Country	Number of Players
France	22
Serbia	14
Spain	11
Bosnia	7
Croatia	7
Turkey	7
Lithuania	6
Greece	6
Brazil	6
USA	5
Israel	5
Czech Republic	4
Congo	4
Latvia	4
Montenegro	4
Australia	3
Slovenia	3
Germany	3
Argentina	2

From Figure 1, one can see that the country that has the most international players turning into NBA draft picks is France with 22 out of the 147 in the sample. This number very clearly stands out from the rest of the sample indicating France could be more advanced basketball wise than other countries and should continue to be a pipeline for NBA talent for

years to come. The next highest country for draft picks is Serbia followed by Spain with 14 and 11 players drafted. After that a dropoff can be seen until you get to Bosnia, Croatia, and Turkey which each have seven players who were drafted from that country. There are 12 countries in the sample which feature the minimum number of players drafted at one.

The minimum number of international draft picks in a year occurred in 2010 with five players being selected in that year. On the contrary, the maximum number of players selected in a particular year in the sample occurred in 2016 when 15 international players were drafted that year. A breakdown highlighting the number of international draft picks per year is helpful to show the fluctuation in international draft picks during the years ranging from 2006 to 2021. Refer to **Figure 2** which is below, for this breakdown.

Figure 2: Number of Players in Each Draft Year in The Sample



From **Figure 2**, one can see that there appears to be a downward trend in the amount of international players drafted during the recent NBA drafts since the mid 2010s. A potential cause of this could be the difference in playstyles overseas where post play is huge compared to the NBA which values three pointers or layups. The main bulk of international players were

selected in the years ranging from 2013 to 2017 with 61 out of the 147 in the sample getting drafted in that time period. Seven drafts featured double digit international draft picks while nine did not. However, it is important to note that three drafts feature nine international players who were selected in the draft. The high variability in international selections per year shows there is still a perceived discrepancy in talent from their U.S counterparts which needs to be tackled for the number of international draft picks to continue to rise.

Another characteristic of the data is the number of teams who have drafted an international prospect in my sample which would show how some teams might have a better system for evaluating international talent or value the skillsets they bring more than other teams. All 30 NBA teams drafted at least one player in the data set. This will be demonstrated in another table below, called **Figure 3**.

Figure 3: The number of international players selected in my data set per team

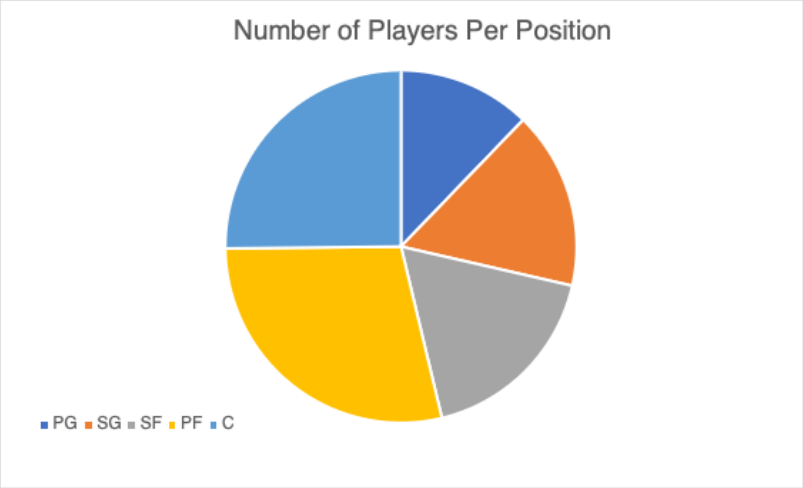
Team	Number of International Selections
PHI	11
DEN	10
ATL	10
MIN	9
WAS	8
SAS	8
OKC	8
PHX	7
BOS	7
HOU	7
NYK	6
TOR	4
POR	4
ORL	4
LAL	4
CHI	4
BKN	4
IND	4
CHA	3

Three teams drafted only one international player throughout the range in the data set while the most players were drafted by the Atlanta Hawks, Denver Nuggets, and Philadelphia 76ers, who each drafted double digit players in the sample. This table seems fitting due to the current player landscape in the NBA. The Sixers drafted the most international players at 11 while the Nuggets picked 10 players which makes sense as Joel Embiid and Nikola Jokic, two superstar international players, are the top guys on their respective teams leading to them

selecting more international prospects. It is surprising to see the Dallas Mavericks have selected only one international player during the sample as their best player is Luka Doncic – a Slovenian superstar – which could cause one to think they do a ton of research on and prioritize selecting international prospects. Overall, it does not appear as if any specific trend exists to gauge how many international prospects will be selected by each team as some have selected a small number of international players while other teams appear to make scouting and drafting international prospects more of a priority to try and find a diamond in the rough type of player.

Next, a positional breakdown of the 147 sampled players' will be provided. In this sample, the most players drafted based on position were Power Forward with 42 players while the least drafted position was Point Guard at 18 players. In this sample, there were 37 Centers, 26 Small Forwards, and 24 Shooting Guards drafted. Based on the breakdown, frontcourt players (C or PF) seem to be more popular to NBA teams while backcourt players (PG or SG) seem to be selected less often.

Figure 4: Positional Breakdown of The Sample



When looking at the player statistics and performance in the NBA after being drafted, there is a ton of variance in the stats for each player. One trend that appeared to exist was as height increased, the average win shares one might expect in their NBA career also seemed to

go up as evidenced by **Figure 5**. This follows the win shares metric which values defense and rebounding, both of which are easier with height.

Figure 5: Players and their height and career NBA win shares

Nikola Jokic: 7’0	92.5 Win Shares
Giannis Antetokoumpo: 7’0	89.9 Win Shares
Rudy Gobert: 7’1	89 Win Shares
Marc Gasol: 7’1	85.3 Win Shares
Jonas Valenciunas: 6’11	69.1 Win Shares

This simple table is used to show the top five highest win share earning players in the data set. As one can see, each of the five players are all front court players ranging from 6’11 to 7'1, playing Power Forward or Center for their teams. Shorter international prospects seem to be avoided as there are only four instances of a player who is 6'2 or smaller being selected with the smallest being 6’0 which happened twice. The number of international players drafted appears to steadily rise once reaching a threshold height of 6’3.

When thinking about the win shares of each of the international players in the sample, European players in comparison to other players appear to have a higher amount of win shares which could indicate that basketball is more advanced in European countries or just that the skill sets developed in those countries are more transferrable and refined for the NBA game.

The statistics on NBA win shares also demonstrate variability with some of the highest win shares being around 90 and the lowest being negative win shares. This alludes to international prospects having a high boom or bust factor, meaning they either are very good, or they are bad with little variation in between.

Variation in the length of careers for the international prospects is prominent in the sample. The minimum career length of a player within the sample – which occurs 42 times – is zero while the maximum length of a player's career within the data set was 15 which happened

two times. Most of the international prospects had careers that were shorter than seven years in length while only 24 out of the 147 total players in the data set had career lengths of eight years or greater. The table called **Figure 6** below shows further insight into the career length of the draft prospects in my research.

Figure 6: Career length by category and how many players are in each category

Career Length	0 Years	1-5 Years	6-10 Years	11-15 Years
Players in Category	42 Players	62 Players	31 Players	12 Players

The statistics on career length further support the above claim of international prospects being hit or miss, demonstrating the struggle international players can have adjusting to the NBA while reinforcing the importance of finding a specific role to fill on your team. It would be interesting to push this study out another 10 years to look back at how these trends continue or change. I would suspect an increase in career length for international prospects due to heightened skill levels across the world partnered with the overall physicality of the NBA decreasing, lowering the chance of injuries and earlier retirement.

Quantitative Analysis

Model Description

My work sets out to continue the observation into discovering “How Amateur Statistics Affect Draft Slot For International NBA Draft Picks?” and “How Amateur Performance Affects Post Draft Success For International NBA Draft Picks?”. In order to achieve this, I used a regression model in three different areas aiming to observe performance as the dependent variables. Those areas were Draft Slot, Total NBA Win Shares, and Total Minutes Played in the NBA. The sample period was from 2006-2021 featuring 147 international NBA draft picks. The independent variables of the various regressions are centered around three subset categories which are: physical traits (height, weight, age at draft time), offensive statistics (points per game, two point field goal percentage, three point field goal percentage, offensive rebounds per game, turnovers per game), and defensive statistics (defensive rebounds per game, steals per game, blocks per game, fouls per game). Additionally, five dummy variables (PGPOS, SGPOS, SFPOS, PFPOS, CPOS) were created to look at the positional effects on the chosen dependent variables.

I estimated five total regression equations, one using Draft Slot (DraftSlot) as the dependent variable, one using Total NBA Points Scored (TotalMinutesPlayedNBA), and one using Total NBA Win Shares (TotalWinSharesNBA). For each of the regressions, the dependent variables were partnered with different combinations of independent variables which were the physical traits, offensive statistics and defensive statistics to observe the effects of each. Additionally, two more regression models using Draft Slot (DraftSlot) and Total NBA Win Shares (TotalWinSharesNBA) as the dependent variables with four positional dummy variables were estimated to observe the positional nature of the draft.

DraftSlot = AgeatDraftTime HeightInches Weight PPG AF AC AI RPG FoulsPG TurnoversPG BPG SPG APG, robust (1)

TotalMinutesPlayedNBA = AgeatDraftTime HeightInches Weight PPG AF AC AI RPG FoulsPG TurnoversPG BPG SPG APG, robust (2)

TotalWinSharesNBA = AgeatDraftTime HeightInches Weight PPG AF AC AI RPG FoulsPG TurnoversPG BPG SPG APG, robust (3)

DraftSlot = CPOS PFPOS SFPOS SGPOS, robust (4)

TotalWinSharesNBA = CPOS PFPOS SFPOS SGPOS, robust (5)

The dependent variables are: DraftSlot (where a player was selected in the draft), TotalMinutesPlayedNBA (the total number of minutes a player played in his career), and TotalWinSharesNBA (the total number of win shares a player earns in his career, how much the player contributes to winning for their team). My reasoning for choosing these dependent variables was to see what international NBA draft picks can do or benefit from in terms of draft rank as well as looking at the ability of amateur statistics to foreshadow what a player might become in the NBA. When analyzing the results from each of the regressions, I will focus on the impacts with the most significance.

Variable Discussion

When thinking about the effects of the independent variables on **DraftSlot**, I would expect physical characteristics such as height, and age at the time of draft to have importance as height and age matter in terms of how developed the player is and what physical limitations

their size could present on offense or defense. When considering offensive statistics, I expect these to have the most significance in terms of draft slot because teams could be searching for high-upside offensive players that can score or facilitate at a good clip, while also considering players who have good shooting efficiency and low turnover rates due to their ability to fit into team environments. As far as defensive statistics, I expect rebounding and fouls to be significant in draft slots due to teams valuing rebounding as that limits the possessions for the other team and fouls which contributes to the amount of time a player can stay in the game. I do not expect the positional variables to have significance due to different teams having different needs in the draft while other teams draft based on the best player available.

In regards to **TotalMinutesPlayedNBA**, I expect the physical characteristics of weight and height to have slight significance due to physical characteristics having the ability to propel a players potential on the defensive end contesting jump shots or rebounding while being able to post other players up in the paint if they have a weight advantage on the offensive end. Offensive characteristics such as two and three point percentage, turnovers and points per game are expected to have significance because as the basketball saying goes, “great offense always beats great defense”. International players who show good offensive potential should have the ability to stay on the court if they produce offensively, and limit turnovers and mistake plays. Defensive statistics in respect to TotalMinutesPlayedNBA, should also have significance because players who can lock up top opposing scorers or offensive players are coveted. International players with defensive potential will most likely find themselves on the court as long as they are not a hindrance on offense.

In terms of **TotalWinSharesNBA**, I expect physical characteristics to be significant and important due to rebounding and defense being key to earning win shares. I would expect players who are taller and heavier to grab more rebounds, thus increasing win shares. As far as offensive statistics, offensive rebounds and shooting efficiency from two and three are expected to have significance due to win shares valuing rebounding and efficiency. Positions with height

are expected to have higher importance in terms of win shares while smaller positions should have less importance due to the statistics valued in win shares. Lastly, defensive statistics should not have much importance in regards to win shares, except for defensive rebounds and fouls. Rebounding contributes to win shares while avoiding obtaining fouls also helps a player to be more efficient which benefits them in terms of win shares.

Regression Results

Table 1: Regression Results from **DraftSlot**

Variable	**Coefficient**	**P-Value**
AgeatDraftTime	7.557	0
HeightInches	-0.112	.835
Weight	-0.117	.128
PPG	-0.580	.283
AF	2.471	.429
AC	1.119	.939
AI	-3.171	.746
RPG	1.533	.156
FoulsPG	1.801	.510
TurnoversPG	3.001	.357
BPG	-6.628	.040
SPG	-9.296	.021
APG	-1.011	.549

Table 2: Regression Results from **TotalMinutesPlayedNBA**

Variable	**Coefficient**	**P-Value**
AgeatDraftTime	-1055.105	.037
HeightInches	-321.841	.219
Weight	77.839	.007
PPG	261.022	.424
AF	-1055.308	.552
AC	5324.268	.472
AI	-1836.582	.622
RPG	-695.491	.132
FoulsPG	-518.313	.683
TurnoversPG	-109.788	.943
BPG	1236.875	.375
SPG	5573.722	.006
APG	-366.787	.637

Table 3: Regression Results from **TotalWinSharesNBA**

Variable	**Coefficient**	**P-Value**
AgeatDraftTime	-3.125	.064
HeightInches	-0.656	.447
Weight	0.236	.023
PPG	0.655	.468
AF	-4.703	.481
AC	32.218	.250
AI	-3.882	.759
RPG	-1.029	.472
FoulsPG	-0.470	.905
TurnoversPG	-2.537	.602
BPG	2.094	.651
SPG	12.509	.019
APG	-0.131	.959

Table 4: Positional Results from Regression on **TotalWinSharesNBA**

Variable	**Coefficient**	**P-Value**
CPOS	2.83	.639
PFPOS	-2.89	.574
SFPOS	-3.94	.443
SGPOS	-5.88	.208

Table 5: Positional Results from Regression on **DraftSlot**

Variable	**Coefficient**	**P-Value**
CPOS	5.81	.213
PFPOS	5.78	.248
SFPOS	11.24	.020
SGPOS	3.86	.440

Where,

AgeAtDraftTime:	Age of the player at draft time - (players final amateur season)
Weight:	Weight of the player - (pounds) (players final amateur season)
Height:	Height of the player - (inches) (players final amateur season)
PPG:	Average points scored per game - (players final amateur season)
AC:	Field goal percentage from two - (players final amateur season)
AF:	Field goal percentage from three - (players final amateur season)
AI:	Free throw percentage - (players final amateur season)
RPG:	Average number of rebounds per game - (players final amateur season)
FoulsPG:	Average number of fouls per game - (players final amateur season)
TurnoversPG:	Average number of turnovers per game - (players final amateur season)
APG:	Average number of assists per game - (players final amateur season)
SPG:	Steals per game - (players final amateur season)
BPG:	Blocks per game - (players final amateur season)
SFPOS:	Player is a small forward guard
SGPOS:	Player is a shooting guard

Analysis of Results

The regressions featuring DraftSlot as the dependent variable had only two variables that were close to being significant. Those variables were defensive variables of steals and blocks per game which have p-values of .21 and .40 respectively. Both of these variables have negative coefficients associated with them showing both statistics, and playing defense as a whole may lead to lowering a players draft slot. AgeatDraftTime has a coefficient of 0 showing that age is directly correlated with draft slot which is something widely known across the NBA as executives look for prototype or positional needs with players they feel they can develop which often results in younger players being selected earlier. Shooting percentages did not appear to matter in the regression as none of the variables are remotely close to significant. However, the results from shooting percentage from two and three are shown to worsen a players draft slot while free throw percentage seems to lower it with each one unit increase in free throw percentage resulting in a three slot decrease in draft position. Fouls and turnovers per game both have positive coefficients, showing they increase a players draft position meaning they are drafted later which makes sense due to those statistics being negative and worsening the teams chance of winning games. Additionally, point guards and shooting guards are drafted earlier in the draft demonstrating the perimeter oriented nature of the NBA while small forwards are drafted later in the draft.

The regressions featuring TotalMinutesPlayedNBA as the dependent variable featured weight, AgeatDraftTime, and steals per game as the most significant variables in the model. Again with steals, this reinforces the thought that NBA executives value defensive intangibles and potential when it comes to international players. A one unit increase in weight leads to a 77 minute expected increase in TotalMinutesPlayedNBA, all else constant. Age at draft time is expected to lower minutes by 1055 with a one unit increase which supports the claim of NBA executives valuing younger players when deciding who gets to be on the court in terms of international players. Free throw percentage and shooting percentage from two both are

expected to decrease the amount of minutes a player is on the court while shooting efficiency from two is expected to dramatically increase total minutes played. Rebounds per game has a negative coefficient which does not make sense to me as teams usually value rebounding as that statistic can swing games as it leads to more possessions for one team. Finally, fouls and turnovers per game have a negative correlation to total minutes played which makes sense. A player who commits a ton of fouls will not be able to stay on the court while turning the ball over is something that irks most basketball coaches.

Finally, the regressions featuring TotalWinSharesNBA as the dependent variable had two variables of significance which were weight and steals per game. Steals per game standing out again with value shows that players who focus on playing fundamental solid defense can find a niche role on a team leading to a prolonged career. Weight leading to more win shares backs what I know about win shares in that it values efficiency, defense, and rebounding, all of which are usually easier for centers or larger players who usually weigh more. A one unit increase in three point percentage is expected to result in a 32 unit increase in TotalWinSharesNBA. This number is staggering compared to the other variables and alludes to efficiency being key for accumulating win shares. Points per game and assists per game both have a negative, small coefficient number showing they result in lower expected win shares, but not by much. Finally, centers are expected to have the highest expected amount of win shares when comparing the positions. This supports my claim that TotalWinSharesNBA values rebounding, defense, and efficiency because centers have better numbers in those statistics. Shooting guards are expected to have the lowest win shares which I attribute to them not grabbing many rebounds or having control of the ball like the point guard does.

Conclusion

The NBA draft is considered to be the most cost effective way to improve an NBA roster, depending on the rate at which successful picks are made. In a league featuring a hard cap, which limits team building ability when met, the cost differences between a free agent signee and drafted player can be the difference between successful championship runs for years to come versus being stuck in the middle, making the playoffs each year without a real chance at winning the championship. The result of successful selections can be seen with the Boston Celtics and Golden State Warriors who just completed in the 2021-2022 NBA finals. On the contrary, mis-use of draft assets can be seen with the Philadelphia 76ers who have not made a deep playoff run, despite having three first overall selections and multiple top ten picks during the early to mid 2010s.

The majority of the literature surrounding the NBA draft revolves around prospects who come from the NCAA in reference to what goes into where they are selected, how much playing time they will receive in the NBA, and what their overall success and production level might be in the NBA after being selected, but very few studies have looked at these questions in reference to international NBA draft picks. As basketball throughout the world continues to catch up to the level one can observe in the United States, international draft prospects will continue to become more integral in the fabric of the NBA team-building landscape. This study aims to learn more about the predictive ability for international draft picks careers through observing what helps determine where they are selected in addition to what statistics might point to a player succeeding in the future at the NBA level.

Utilizing multiple regression models, this study finds defensive statistics such as steals and blocks per game to be important in terms of where a player is drafted and how many minutes and win shares a player accumulates throughout their NBA career. Age at the time of the draft was important in terms of draft slot but not career success while the other physical

variables of height, and weight were important factors in how many minutes a player played and the amount of career win shares they had. Front court players are expected to play shorter careers while having more win shares than back court players. Positions seem to matter in terms of where a player is drafted and how successful they are once in the NBA. Great shooters also appear to have a higher value and chance of success in the NBA when compared to poor shooters in the sample.

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About The Author

My time at Allegheny certainly had its ups and downs. However, these past four years have molded me and allowed me to become who I am today. Although the journey has not been easy or perfect by any means, I wouldn't trade the relationships I have made and experiences I have shared with friends, peers, and professors for anything in the world. Allegheny is a campus filled with many great people, ranging from support staff of every kind, to the professors and students I shared the halls with each day.

I came to Allegheny with very little idea as to what my life might look like in four years or what I would be studying while here. Learning and experiencing many environments and subjects, I settled on Economics and Computer Science which seem to fit me pretty well. Both subjects should be integral in my future aspirations of a career in the sports industry. Long term, I hope to someday end up as an NBA coach or General Manager helping to build teams that contend for championships year in and out. Short term, after leaving Allegheny, I am aiming to pursue a full-time position with the Erie Seawolves after the conclusion of my internship this season. In this potential career, I hope to grow my skills within the sports industry in addition to getting a better idea as to how things work within a professional sports organization.