

The Underpayment and Trials of The NBA Athlete

by

Angel J Sanchez

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Sponsor: Yulia Chikish

Second Reader: Mary Garcia

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Introduction

My goal for this paper is to study the difficulties that NBA athletes may face. In particular, I look at the economic/business side of the NBA. By addressing the issue of the underpayment of high production restricted free agents in the NBA. This topic is important because the general public mostly pays attention to the large salaries of the NBA stars provided by the media, but does not understand the hardships many players must go through before they land a big contract. Moreover, the general public seems to underestimate the amount of effort required from NBA athletes, and how difficult it is to be recognized for this effort and time you put in the NBA. Being an athlete is a 24/7 job. Definitely is a job that many people wish to have but it is not one many people could actually handle.

In this essay I will provide individual cases of star caliber players who are underpaid as well as hardships of high production players who are unrestricted, by including the individual players' statistics and comparing them to the league averages for production and salary over the last 5 seasons. We establish what a star player's production is, along with seeing how they are compensated. However, in order to get the results, of just how underpaid NBA players are. We take UFA (unrestricted

free agents) and RFA (restricted free agents), and compare the salaries of the UFA to the RFA. Which gives what RFA players would make if they were UFA.

I claim that despite available methods of measuring player performance, there is a bias toward contracts of the players entering free agency. In the NBA athletes are not always paid based off of their performance and actual value seen in both Zhang (2017) and Krautmann et al. (2009), and players bringing large revenues in many cases are underpaid. It is seen in how players who will be entering free agency are handled and treated because it is there where you see a bias approach towards a player's actual value. This will be discussed in my individual case studies.

Media outlets greatly influence contracts because they are the ones along with teams that develop the narrative around a player and their production, they play huge roles behind how players are perceived and received by fans. This is important because it is needed to gain negotiating power with teams, as well as acquire sponsorship deals and other lucrative off court assets and that affects compensation. Perception plays an important role in a team game and how general managers decide the value of a player. What influences perception is the media and how they choose to interpret the game, because the majority only know what they know about sports because of sports media outlets like First Take ESPN, Undisputed FS1, Jaylen and Jacoby, etc. NBA teams even go as far as to create social media platforms to further interact with

fans because they are aware of how fans consume sports nowadays¹ which is discussed in Meng et al. (2015). Whomever these outlets choose to acknowledge and glorify, affects how fans view a player in turn affecting a players worth. A players' negotiation power depends on the perception fans have, because fans determine ticket sales, jersey sales etc. The contracts, the fans and the media all affect each other as well as players.

I would like to make a case using economics, player cases, along with statistics to inform and educate the fans of the NBA on the plight of the athlete, along with the difficulties of free agency by proving there is a bias. So athletes in the NBA do not have to worry about being devalued and villainized and even harassed because of wanting to explore free agency in order to allow players more freedom in exercising their power as free agents. For an NBA player who has been drafted into the NBA rookie contract, it expires within about 4 years. At the end of the contract the player can either resign with the current team or to sign with a new team. The issue is within those 4 years Stars are underpaid. Even after the 4 years you can still be underpaid. In my case studies I will provide studies of UFA players and their trials as well as RFA players.

Case Studies

¹ <https://sproutsocial.com/insights/social-media-sports/>

The bias toward contract players entering free agency is rooted directly in team ownership. Including those the owner appoints to run the team, the positions appointed by an owner for a basketball team can be seen here². What ownership does not actually want is a valuable asset to leave, because of a salary cap the majority of revenue a superstar player produces goes to ownership seen in Zhang (2017). Here is a quote from Zhang (2017) “They argued that the presence of salary cap is the main cause which “overcorrect” the externality and shift rent from superstars towards team owners, especially owners of small market teams”.

Ownership is very aware that perception is everything to a player in a team game. The case of the Dan Gilbert letter is the perfect example. There are many cases of a team trying to keep a player or spread a negative narrative to potentially influence a player’s contract negotiations with the next team. For example, the case of LeBron James whose jerseys was burnt all around Cleveland his own hometown. Dan Gilbert the owner of the Cleveland Cavaliers engaged by writing a letter and putting the letter out to the public³. In the letter the character of James was chastised and slandered. He said LeBron’s decision was “cowardly betrayal”, in the letter Gilbert went on to say the announcement was “narcissistic”. You can see LeBron’s effects on Cleveland’s economy in Zhang (2017), LeBron James during his tenure in

² <http://virtuallscoutschool.com/lessons/nba-front-office-structure-2/>

³ <https://www.businessinsider.com/dan-gilbert-letter-taken-down-2014-7>

Cleveland had the franchise value of the Cavaliers 450million. When he left it dropped to nearly 200 million. A player of LeBron's caliber is the main attraction in a city, bars make money, hot dog boys, or people selling tickets outside make money off of what he attracts. You can also the affect LeBron James had on Cleveland's television ratings here⁴.When LeBron James left Cleveland to go to the Lakers in 2018 "Fox sports Ohio ratings have dropped by 58 percent".

This is important because it is a clear display of the kind of behavior a star/superstar player exploring their free agency must deal with, and where an owner is adding fire to a flame as well. The narrative media attempted to spread this year alone about LeBron James is baffling. The narrative is that LeBron James is no longer a star, and that he is old. Though the year before he made the all-star team, let's take a look at LeBron's total statistical averages for last season and this season compared to the leagues. LeBron James production for 2019-2020 season totals statistical average; keep in mind, player production is measured by a few things like: games played, minutes played, points, field goals made, field goals attempted, field goal percentage, three pointers made, three pointers attempted, three-point percentage, free throws made, free throws attempted, free throw percentage, offensive rebounds,

⁴ <https://clutchpoints.com/nba-news-lebron-james-has-massive-effect-on-lakers-cavs-local-tv-ratings/>

defensive rebounds, rebounds, assists, steals, blocks, turnovers, points responsible for, efficiency, assists/turnovers, steals/turnovers. Below shows LeBron's James total production for the season in the same order I mentioned above starting from Games played down to steals/turnovers Now below LeBron's Stats here is a look at the total average production for players in the NBA to see where he stands compared to the average production.

2019-2020 total stats	Games played	Minutes	points	FG%	3P%	Assists	Rebounds	Blocks	Efficiency
Lebron James	23	797	589	49.7	34.1	247	160	13	687

2019-2020	Games played	Minutes	points	FG%	3P%	Assists	Rebounds	Blocks	Efficiency
League average	15	348	159	43	29	34	65	7	178

The 2019-2020 season is a shortened season, based on all the more important measures of player production LeBron James at 35 years old is still way above average.

However, keep in mind that the NBA for one is run by owners of teams, and those owners hire people to run the team. Since the NBA is a business that brings in billions of dollars in yearly, we must understand where the NBA gets its value. The

NBA gets its value from the players⁵! They are the product being sold to fans along with the fact that when you attend games in the NBA, unlike any other professional Sport fans at these games are so close to players that in front court seats you could touch them. Say what you want to them for the player to hear which is actually a current issue for high profile players. Prime example of a high profile player that has an issue is Russell Westbrook⁶. High production players because of their stardom have to deal with hecklers just like the other leagues. However due to how close fans are to NBA player's things get a lot more personal. The foot note above is an article discussing what fan yelled to Westbrook which was "get on your knees like you used too". Players who are aware of the leverage they hold and exercise the power are villainized like LeBron James.

Then there is the other end of the spectrum when a player chooses not to exercise their leverage as a superstar /star. Isaiah Thomas who was a player who had an MVP like season in 2017 on the Celtics look at his production for that season in the table below. Under his production for the season you can see the average player production below as well.

⁵ <https://www.investopedia.com/articles/personal-finance/071415/how-nba-makes-money.asp>

⁶ <https://www.washingtonpost.com/sports/2019/03/16/russell-westbrooks-stand-shows-nba-has-reached-tipping-point-fan-behavior/>

2016-2017 season	Games played	Minutes	Points	FG%	3P%	Assists	Rebounds	Blocks	Efficiency
Isiah Thomas	76	2569	2199	46.3	37.9	448	204	13	1874

2016-2017	Games played	Minutes	Points	FG%	3P%	Assists	Rebounds	Blocks	Efficiency
League averages	54	1223	534	44	28	115	220	24	603

Isiah happened to sacrifice his health for the team, because they were in the playoffs and because of the passing of his sister⁷. He played through a HIP injury, which is extremely detrimental to Isiah Thomas and what he offers to a team because he is a player of smaller stature, he is already a liability on the defensive end however he makes up for it with his offense. Instead of sitting out due to injury and mourning the loss of his sister who passed away in the middle of a playoff series, he continued to play. Unfortunately for Isaiah, he was traded away anyway while injured. An MVP candidate traded like he was nothing despite his performance⁸.

⁷ <https://abc7.com/sports/a-conversation-with-isaiah-thomas/3809120/>

⁸ <https://stats.nba.com/player/202738/>

Another case similar to Isaiah Thomas is Demar Derozan. Demar Derozan was a perennial all-star and happened to be drafted by the Raptors⁹, he was willing to spend his entire career with the Raptors franchise even resigning with the organization to be traded away for another of all-star caliber but who was held in a higher regard - Kawhi Leonard¹⁰. The issue with this is that the front office of the Raptors also gave confirmation to Demar that there were long term plans for him going forward which is why he resigned in the first place with a franchise that is not even looked at by other all-star players or even really valuable players in the NBA because who wants to play in Canada (Yang, 2009). Something to keep in mind is that the location of the team matters to players. Players want to play in cities that have opportunities for example the Los Angeles Lakers for Hollywood, the Golden state warriors for Silicon Valley, the New York Knicks for Wall street or fashion. With all this being said for Demar Derozan to resign is a big deal yet that loyalty means nothing to team that wants something different, and LeBron James leaving the Cleveland Cavaliers to go to the Miami Heat makes perfect sense.

In Yang (2009) this is touched upon, because it says that a player's popularity is a key determinant of an athlete's brand equity this is important because the article also says that a player especially a high brand equity player (defined by receiving enough

⁹ <https://stats.nba.com/player/201942/>

¹⁰ https://www.espn.com/nba/story/_/id/24184139/demar-derozan-dishes-trade-toronto-raptors-sanantonio-spurs-nba

votes to be an all-star starter) looks at what the value the team will add to his brand equity, because this value determines the player's other sources of income like endorsements as I mentioned earlier.

Another thing that is important for a player is that a spillover of their brand varies based on the team that they go to. Also where a player may go changes based on the maximum salary restriction. It is important to mention that free agency did not always exist and that players of the past did not have the benefit of leaving the team that drafted them (Erikson, 2016). Since the NBA was founded players have been dealing with a biased system that wants them stuck. The Reserve system as it was called was not changed until 1976 and the NBA was founded in 1946 (Yang, 2009). This benefits owners because if they draft an iconic player well now they keep them forever. Something to keep in mind is that teams do not share the earnings from local television nor radio broadcasting or live gate revenues. When free agency was introduced not only did they give players the ability to choose the franchise that may be right for them, but also salaries increased as well as the salaries of super star players. For example, Michael Jordan made 33 million for one season in 1998.

To control the superstar player's max salary team owners initiated a lock out in order to implement a cap on salaries. Making it so that as an all- star player you must look at how much a team can offer you contractually because teams are now required to pay the top players the same amount of money. Which means that the value a team

brings to a player's brand equity became more important. Brand equity is the commercial value that derives from consumer perception of the brand name of a particular product or service rather than from the product or service itself. For a player fresh in to the league, developing your equity can be especially hard if eyes are not on you the whole way you may never get the credit for the talents you possess because you are stuck on team that does not have a high level of brand equity.

How do you measure a team brands equity? One way is to define a team brands equity by looking at the revenue over and above the team's performance the previous season. Along with looking at revenue from paid attendance and broadcasting rights, another thing stated in Yang (2009) is that high brand equity players have a significant impact on team revenue. Not only that but a larger market team provides a greater fan base higher game revenues a high brand equity team also provide players with opportunities off the court as mentioned before. In the article it states that you can measure a team's brand equity based on the off court opportunities it provides. The point is players of high value bring a lot of money to teams. Yang (2009) mentions that "high brand equity players attract fans beyond their direct impact on a team's performance by increasing the team brand awareness and enhancing the team brand positive image".

The perfect examples of players that were drafted by low brand equity teams are Damian Lillard and Kemba Walker - two all-star caliber players who have been

snubbed in all-star games(keep in mind that all stars are fan voted) and all NBA teams because of the markets that they play in. Which is what happening to the more talented players in the NBA because of the draft system. The draft system basically makes it so that the worst teams in the NBA have the highest percentage of grabbing the best talent. The reason teams have a percentage is because the draft works as a lottery, because you want to keep the league competitive by giving small market teams a chance at an all-star but not only that you want keep people interested in buying a team. Giving them the chance at high brand equity players regardless of the team having low brand equity makes it so that as an owner you are going to profit no matter where your team is, example Phoenix Suns team in Arizona low brand equity but they have Devin Booker a high performance player that could be an All-Star his production can be seen here¹¹ as well as his salary for the 2018 season along with what he should actually be paid based on the regression model ran here¹². keep in mind Devin Bookers ranking compared to all the players in the NBA is 16, but he cannot get enough votes to get in the all-star game. The reason isn't because he

¹¹

2018-2019 season	Games played	Min	Points	FG%	3P%	Assists	Rebounds	Blocks	Efficiency
Devin booker	64	2242	1700	46.7	32.6	433	265	13	1473

¹²

2018-2019 season	Devin Booker	Actual salary:2,319,360	Should be paid:8,330,597
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himself is not good enough. It is because he is in the more competitive conference but not only that his team does not win (because what free agent wants to play in Arizona their only hope is the draft) even with the suns acquisition of the number one overall pick. Fans of the team still go to the games and watch the games even though the team is usually losing to see the extraordinary performances booker and his co-star Deandre Ayton put on (Booker is a player that in his 3rd year in the league dropped 70 points on a top 5 defensive team at the time).

Yang et al. (2009) dives into why superstar players have such an effect on people even mentioning that players like Michael Jordan, Larry Bird, Shaquille O'Neal and Charles Barkley have a large impact on television ratings and game attendance. The article even goes so far to say that teams compete for the service of the best athletes by offering attractive compensation packages that are worth millions every year. It says that athletes brand value could come from the cultural meanings athletes are endowed with like status, class gender, and age as well as personality and lifestyles and these meanings can be passed from the celebrity athletes to the consumer through services provided like games and products endorsed. Basically the way fans relate and are inspired by players. An example of this is Michael Jordan and what he accomplished with Nike and his Jordan brand, you literally become cool when you have his sneakers as a kid they instill confidence in you. Not only that people in school think it's cool too. This is the kind of affect a superstar athlete has.

Rosen (1981) argues that superstars have the effect that they do because of joint consumption technology and imperfect substitution methods. So basically, because consumers now have the ability to be like athletes by wearing what they wear drinking what they drink, eating where they eat, etc. As a rookie in the league, you have no negotiating power because you have yet to show your value in the NBA setting. Keep in mind that players are drafted based off of what people think they could be or become in the NBA. So what this tells us is that no matter how much of a success a player is in any league if it is not the NBA then he is at the team's mercy as it pertains to negotiation options. So, what this means is that if the player is of a high performance but is in a small market low brand equity team, it is going to be almost impossible for him to get the value that is actually worth. Which sways in the favor of owners in low market low brand equity because it keeps the players who are still high performance but on a bad team stuck. The example is Carmelo Anthony a perennial all-star in the NBA you can see his effects on TV ratings here ¹³. Carmelo's first game as a Knick yielded 6.7 household rating over 507,285 households. To put that in perspective That rating was the highest rating MSG network had since Michael Jordan's double nickel game. The double nickel game was Jordan's first game back at MSG since his first retirement and he scored 55.

¹³ <https://www.multichannel.com/news/msgn-dunks-highest-knicks-regular-season-ratings-16-years-melos-debut-379948>

That game had a rating of 6.78. With Carmelo's insertion into the line-up in 2011 the television rating went up 60% , it went from 1.01 to 1.62.

Now if you look at average production in the league for the last 5 years down below and how it matches up, it is clear Carmelo has been pushed out the league over the last two seasons. Here is Carmelo Anthony's production for the 2017-2018 season down below under the league average production, the season before he was pushed out. There was a belief that Anthony can no longer contribute to a team the way he did during his tenure with the New York Knicks. The Knicks as an organization brings large amounts of money to a player because of the outside opportunities now available to you as the Knicks superstar. Like wall street connections, fashion connections and so on. however players do not want to play there because of the owner which can be seen here¹⁴. Here is a quote from the article "in terms of wins and losses, James Dolan's tenure as owner of the New York Knicks ranks among the least successful in modern history if the National Basketball Association". So in a way Carmelo lost his years with that team because now due to media and Knicks ineptitude of not being able to put a team around their superstar, Anthony is suffering.

2015-2020	Games Played	Min	Points	FG%	3P%	Assists	Rebounds	Blocks	Efficiency
League average	44	1008.6	444.8	43.6	28.2	96.8	183.8	20.4	423

¹⁴ <https://www.bloomberg.com/news/features/2019-07-26/is-the-knicks-james-dolan-the-worst-owner-in-professional-sports>

2017-2018	Games Played	Minutes	Points	FG%	3P%	Assists	Rebounds	Blocks	Efficiency
Carmelo Anthony	78	2501	1261	40.4	35.7	103	453	49	1073

Another reason up and comers in the NBA are at a disadvantage is because there are many situations where the up and coming talent are not given an opportunity to shine and are underinvested in this is discussed in Cohen (2018). When agents who are very likely to be terminated in the short term whom have discretion as it pertains to project selection have an incentive to underinvest in projects who will not bear fruit in the short term. Which is a problem especially if you are on a small market team you end up like Isaiah Thomas the player drafted to the Sacramento Kings and never truly invested in until Boston and unfortunately has lost the chance at earning the contract he so deserves as a result of his injury and the perception media has painted. We also have the cases of Luka Doncic, Ben Simmons, Pascal Siakam, Donovan Mitchell as well. Luka Doncic is a second year player in the NBA, however he is a veteran player in the Euro league which happens to be the second most competitive league outside of the NBA here you can see Luka's production for the 2018-2019

season here along with his salary¹⁵ Luka in the 2019-2020 season managed to push a rebuilding franchise in the Dallas Mavericks to 5th seed in the west as starting PG, right under you will see his salary along with what he should actually be paid based on the same regression model used for Devin Booker down below under his production. Then we have Ben Simmons a 3rd year player for the Philadelphia 76ers here you will be able to see Ben Simmons production 2018-2019 season along with his salary and what he should be paid down below under Luka's. Ben Simmons is coming off of an eastern conference finals birth in his 2nd year as starting PG.

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2018-2019 season	Games played	Min	Points	FG%	3P%	Assists	Rebounds	Blocks	Efficiency
Luka Doncic SF/PG Dallas Mavericks	72	2318	1526	42.7	32.7	429	563	25	1554

2019	Luka Doncic	Actual salary:6,560,640	Should be paid:18,543,996
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2018-2019 season	Games played	Minutes	Points	FG%	3P%	Assists	Rebounds	Blocks	Efficiency
Ben Simmons	79	2700	1337	56.3	o	610	697	61	1952

2019	Ben Simmons	Actual Salary:6,434,520	Should be paid:20,624,939
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Pascal Siakam a 3rd year player for Raptors. Look at his production his salary and what he should be paid down below Pascal is coming off of being a secondary option in a championship birth as starting PF. Here we have Donovan Mitchell a second year player who as starting SG managed to lead the Utah jazz as the primary scoring option in the playoffs, take a look at his production along with his salary and what he should be paid under Siakam's.

2018-2019 season	Games Played	Minutes	Points	FG%	3P%	Assists	Rebounds	Blocks	Efficiency
Pascal Siakam Pf	80	2548	1354	54.9	36.9	248	549	52	1631
2019	Pascal Siakam		Actually paid: 1,544,955				Should be paid:16,303,609		

2018-2019 season	Games Played	Minutes	Points	FG%	3P%	Assists	Rebounds	Blocks	Efficiency
Donovan Mitchell	77	2598	1829	43.2	36.2	322	316	31	1440
2019	Donovan Mitchell		Actually paid:3,111,480				Should be paid:13,793,335		

Measuring Player's Value

Yang, et al. (2009) shows that it can be measured through player performance in the following way:

$$performance = points + rebounds + assists + blocks + steals - turnovers.$$

Other than performance there are three other variables that have potential to affect players' value: age, position and popularity (brand equity). Popularity is measured by the number of votes a player receives in the All-Star Game Voting.

Kuehn (2017) mentions that it is difficult to evaluate player value in a team setting where spillovers in labor productivity exist. One can observe total team output but it is difficult to determine the marginal value of an individual player. Also, it is difficult to measure how the productivity of an individual can be affected by other teammates, as well as how much of an individual's success is due to the team environment. Most of the time it is assumed that a worker will be paid based on his marginal value, but this is not the case in a team setting where individual marginal value is hard to measure. resulting in players being undervalued compared to other players who put up similar numbers in terms of production, basically compared to the other stars in the league. which can cause an asymmetry in incentives. This explains the cases I discussed in the previous paragraph, regardless of a player's individual performance through the course of their contract it is still possible for

them to be undervalued based on Kuehn (2017) this also means that the player has little control over how he is valued. If on a low brand equity team especially in the middle of their careers, they do not get the benefit of the doubt. Like Lou Williams who has always been a highly productive player his total career, but whose team never did well so he never got the contract he deserved but look now. On a team that invested in him by giving him the freedom to play the way he'd like to (the way a team runs their offense is determined by the coach many times coaches will run an offense that does not bring out a players finer attributes). Managed to drag a team with no fellow all-stars to play offs in more competitive conference (look at his totals for that season down below) in the NBA the west which can be seen here¹⁶ , and manage to ball out against the defending champions at 32 years old.

So how is it a player of Lou Williams caliber has yet to get the compensation he deserves? It is the bias players face the media does not give him the credit he deserves and since it is safe to say that player value evaluations are subjective the bias has definitely affected him negatively look at his salary for the amazing year he had seen below his production ranked 29 in the league for production but ranks 147 for salary in

¹⁶ <https://www.sbnation.com/nba/2019/10/21/20924557/nba-conference-imbalance-east-vs-west-playoff-seeding>

2018-2019 season	Games played	Minutes	Points	FG%	3P%	Assists	Rebounds	Blocks	Efficiency
Lou Williams	75	1993	1498	42.5	36.1	402	222	11	1295
147	Lou Williams, SG	LA Clippers	\$8,000,000						

you can see the average salary of a player here¹⁷ the league . What we must keep in mind is that owners will underpay players restricted by the reserve clause is a common practice, and that owners of professional sports teams do exercise monopsony powers wherever they can (Krautmann, 2009).

However, when and only if the negotiating powers of a player rises owners are able to get less surplus, and it so happens you get the most surplus from people who provide the highest amount of value. Meaning that a player who has increased his negotiating powers is also one you could extract the most surplus from, because negotiating powers only increase when a player's production is outstanding and unquestionable. So what players have done in an attempt to counter the owner's powers is creating labor unions to bargain with owners on a more even level playing field. However, these collective bargaining agreements mostly always favor veteran players leaving rookies at the mercy of the owners, despite creating forming labor unions to prevent owners from extracting all the surplus from high production players it still happens regardless

¹⁷

Average salary	2018-2019 season	6,698,477
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Krautmann et al. (2009) finds that restricted agents are substantially underpaid. The reason for this statement is because the median surplus extracted from restricted players was 732,000 which means that the typical player only received two thirds of his MRP. They also found that starters generate nearly five times the surplus generated by utility player. So basically if you are a third or fourth year player who is generating large amounts of revenue you will not see the fruits of your labor till the end of the rookie contract.

In these google sheets I have the average salaries and total average statistic for all player on the NBA from 2015-2020 if you look at the sheets it will show you the production levels of each player and how exactly they are compensated I have been using these sheets to give the total averages for the players in my case studies. You can see averages for production down below, and you can see the averages for salary over the last 5 seasons under production

Average player production for last 5years	Games played	Minutes	Points	FG%	3P%	Assists	Rebounds	Blocks	Efficiency
2019-2020	15	348	159	43	29	35	65	7	179
2018-2019	49	1122	516	43	29	114	210	23	587
2017-2018	48	1100	484	44	28	105	198	22	549
2016-2017	53	1223	534	44	28	114	220	24	603
2015-2016	55	1250	531	44	27	116	226	26	200

2015-2020 production	44	1008.6	444.8	43.6	28.2	96.8	183.8	20.4	423.6
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Average salary 2015-2020	2019-2020	2018-2019	2017-2018	2016-2017	2015-2016
\$ 5,817,648.20	\$ 7,508,587.00	\$ 6,698,477.00	\$ 5,582,522.00	\$ 4,965,848.00	\$ 4,332,807.00

Krautmann et al. (2009) describes three categories of players: first round draft picks, players not drafted in the first round and free agents. A draft pick is a player taken in the yearly draft which includes players in the NCAA or even players from different leagues around the world. There are two rounds of the draft where there are 30 picks in each round and the best players are drafted early to teams that need them the most, so the best players almost never go to good teams.

First player drafted in the first round has a specific salary for the first 3 years. However, this specific salary varies based on the number of a draft pick. Players drafted in the top 10 all together have an average salary of 3 million with an increase to 4 million in the second year and then to 5 million¹⁸, however in the third year that is a team option. A player not drafted in the first round does not have negotiating rights also free agent rights depend on seniority.

¹⁸ based on the table <http://www.cbafaq.com/scale17.htm>

What we learn by looking at all the academic articles listed in this paper like Krautmann et al. (2009), Zhang (2017) , Yang (2009) and Cohen (2018) is that due to the structure of evaluation in the NBA, as well as the draft system, contract structure, free agency structure, that all the rules are not balanced to be in both the favor of the player and the owner. Based off of what we have seen it is clear that the rules are in favor of owners especially those who have low brand equity teams. Which puts players in a difficult situation as a result, because how is you're negotiating power supposed to increase if you are unable to get votes from fans or acknowledgement from media because of a team organizations ineptitude and inability to put a decent roster around you because no one wants to player whether it be due to the team's location or players around the league not wanting to play for the owner etc. So what I have done is calculate exactly how much RFA agents are underpaid in comparison with UFA.

Model

The approach that I use to calculate the underpayment of Restricted Free Agents (compared with Unrestricted Free Agents) is the following. At the Stage 1 estimate the coefficients of the following model on a set of Unrestricted Free Agents data:

$$\mathbf{SALARY} = \beta_0 + \beta_1 \mathbf{EFFICIENCY} + \beta_2 \mathbf{CONTROLS} \quad (1)$$

where salary is the salary of an Unrestricted free Agent, **EFFICIENCY** is the measure of a player's productivity it is the sum of (points per game)+(rebounds per game)+(assists per game)+(steals per game)+(blocked shots per game)-(turnovers per game)-(missed FG per game)-(missed FT per game), and **CONTROLS** – is the set of control variables, such as total minutes played, year, team and player's position.

At the Stage 2 I collect the same data for Restricted Free Agents and use the coefficients β_0 , β_1 and β_2 estimated at Stage 1 to calculate predicted salary for Restricted Free Agents as if they were Unrestricted. Finally, I compare the predicted salary with the actual salary to see if the Restricted Free Agents are systematically underpaid. The main assumption necessary for this approach to work is to believe that Unrestricted Free Agents are paid more according to their marginal product, because of MP (Marginal Product-is the change in output resulting from employing one more unit of a particular input) =MR (Marginal revenue -is the additional **revenue** that will be generated by increasing product sales by one unit). The UFA contract forces teams to pay players closer to the value of their production.

The reason for this is because, teams in the NBA when drafting a player or trading for a player do so based on a need or fit for the team. Different players have different strengths based on their positions, and even in those positions players have different strengths . Need and fit is situational and based on the team. So in a free competitive

market it means that teams compete and bid for the players that either fulfill their needs or fit in with what they have. In order to find what the bidding prices are. I took production and salary for the last 5 years and averaged it, for UFA players and RFA players. After gathering the averages, a standard linear regression was run on the data.

Data and Results

The table below is a summary of statistics for UFA players, what it shows is the number players included in the summary under observations, the variables the summary took into account which were salary, efficiency, positions. Those variables were chosen because it would tell us on average what was UFA player getting paid , What is there average efficiency, and separate them by position. The table shows the minimum and maximum salaries of UFA agents as well, along with the minimum and maximum efficiencies.

Variable	Observations	Mean	Std. Dev.	Min	Max
Salary	589	6,514,835	7,531,514	4,608	37,500,000
Efficiency	589	589.4482	516.2254	0	2581
Center	589	0.157	0.364	0	1
Power Forward	589	0.132	0.339	0	1
Point guard	589	0.127	0.333	0	1

Small Forward	589	0.106	0.309	0	1
Shooting guard	589	0.156	0.363	0	1

The estimated equation (1) for the stage 1 is presented in the Table below. The coefficients for years and teams are omitted from the Table.

Salary	Coefficient	Std.err	t	p>t
Efficiency	11,560.08	1,263.95	9.15	0
Minutes Played	-1,910.25	831.6996	-2.3	0.022
Point guard	1,197,302	955,941.8	1.25	0.022
Small Forward	2,794,779	996,347.4	2.81	0.005
Shooting Guard	1,056,753	979,697.5	1.08	0.28
Forward	557,328.8	910,885.4	0.61	0.541
Guard	41,950	896,212.5	0.05	0.963

Further I use the coefficients from the Table above to estimate the salary of Restricted Free Agents as if they were in the same conditions as Unrestricted Free Agents. The Table below is a small part of the Excel sheet I used to make the calculations. It contains the data of Restricted Free Agents as well as estimated coefficients from the Stage 1. Multiplying each variable by respective coefficient and adding them together gives the estimated salary for the Restricted Free Agents.

Even though I collected data for the last 5 years only 4 years were used: 2019, 2018, 2017, 2016. Player salary, total mins, total efficiency, and their contract is listed. Dummy variables are used for the different seasons, teams and positions (not shown). All of the data that you see here has been collected from sites listed here ¹⁹. I got the information on player contracts from sportrac.com as well as basketball reference.

Season	Player	Salary	Estimated salary	Constant	Minutes	Minutes coefficient	Efficiency	Efficiency coefficient	Contract
2019	De'aaron Fox	5,470,920	14,938,400	184474.3	2546	-1910.246	1533	11560.08	RFA
2019	Deandre Ayton	8,165,160	14,600,157	184474.3	2183	-1910.246	1606	11560.08	RFA
2019	Duncan Robinson	9,474	3,846,721	184474.3	161	-1910.246	45	11560.08	RFA
2019	Mitchell Robinson	1,485,440	9,987,664	184474.3	1360	-1910.246	980	11560.08	RFA
2019	Derrick White	1,667,160	9,760,505	184474.3	1728	-1910.246	879	11560.08	RFA
2019	Jayson Tatum	6,700,800	13,585,276	184474.3	2455	-1910.246	1304	11560.08	RFA
2019	Shai Gilgeous - Alexander	3,375,360	9,359,635	184474.3	2174	-1910.246	977	11560.08	RFA

Main Results and Conclusion

The main result is presented in the Table below. An average Restricted Free Agent should be paid \$7,337,857, but in reality is paid only \$3,920,013. “Should be paid” shows what a Unrestricted Free Agent would be paid if they showed the same productivity, played the same number of minutes, on the same position and on the

¹⁹ <https://www.basketball-reference.com>, <https://www.sportrac.com>, <https://stats.nba.com>

same team, the only difference is type of contract. This shows that the average Restricted Free Agent is only paid a little more than a half of what he is actually worth.

Average RFA	Actually Paid: 3,920,013	Should be Paid: 7,337,857
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The result show that from the moment players enter the NBA they are in constant battle to get what you they worth. Some players are fortunate enough to be drafted in the right city and team situation and are able to land huge contracts. However as mentioned previously those players have the most extracted from them despite the big contract. Due to the other revenues they bring in for organizations. It is possible to calculate what UFA are underpaid but it would take the approach used in Zhang (2017). Which includes all-star voting changes in Television revenue etc. Overall what I have learned is landing the big contract in the NBA is very situational and a lot has to be going in a player's favor to get that contract outside of health and his production. The trials each player faces are different between them, some players are severely under the average pay, because they were not drafted in the first round or not drafted at all. You have players that are paid the average but have a large surplus extracted from them, it is very possible to never get what you are worth based on your production in the NBA. Look at Scottie Pippen even Michael Jordan two of the most influential super stars in NBA history always Highly productive , but

underpaid their whole careers. Many players in the NBA never get the chance at getting close to what they actually deserve. When a player is ready to put himself first they are meant with many trials. So the Job of the athlete is not such an easy one it is journey of always having to prove people hard and pushing yourself to the limits and still dealing with all the media attention. Being a professional athlete is a job many wish to have but not one many could handle

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