Spring 2022

Talent or Popularity? Analysis of the Superstar Phenomenon and Player Value Determination in the English Premier League

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Senior Project Submitted to

The Division of Social Studies

of Bard College

by

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Annandale-on-Hudson, New York

May 2022

Acknowledgements

I owe special thanks to my wonderful and loving family: Mom, Dad, Jaime, and two beloved cats Chester and Nacho. You guys are my rock and support system. Thank you for all the love and support throughout my life and for being my #1 fans. I am forever grateful and love y'all.

Thank you to the Bard Soccer Family. Besides being a fantastic group of brothers, you guys have made me a better person. The past four years have been a blessing that I will never forget.

Thank you to the Economics Department at Bard. You have engaged my intellectual curiosity and made me a better critical thinker, skills that I will continue to use and develop for the rest of my life.

Thank you to my senior project advisor Dimitri Papadimitriou. Without your guidance, writing this paper would have been a different experience. You patiently helped me along the way and always offered sage advice regarding this paper but also life.

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Abstract: The superstar phenomenon in our economy has wide implications and fosters debate on the issues of wealth and income inequality. This paper analyzes the superstar phenomenon in England's top soccer league, the English Premier League (EPL), and what variables are most important to superstar compensation. Past superstar literature cites the importance of the debate of talent versus popularity. Using a dataset of the top 12% highest-paid players in the EPL by annual salary in 2021-2022, this paper creates an econometric model of talent and popularity variables using two different dependent variables, one being the annual salary of players and the other the industry-renowned transfermarkt.com market value. This paper found that the control variables, such as a player's position and what team they're on are most important to salary compensation. "Talent" variables such as goals, match rating, and control variable age were most important for market value. Popularity, measured by how many Instagram followers a player has, was not important for both salary and market value. The combined talent and popularity variable, the video game FIFA 21 rating, was the only variable significant to both salary and market value. This study suggests that talent comes first and popularity comes second.

Chapter 1: Introduction

Modern-day economies like the United States have seen a great increase in wealth and income disparity between the average worker and top earners. In the United States, the share of total income earned by the top 1% of earners more than doubled between the 1970s and the 2010s (Alvaredo et al. 2013). Some top earners even have incomes that are barely comprehensible to the average person. For example, as of 2022, Elon Musk has a net worth of $222 billion[1], while the median net worth for a person of the same age (50 years) in the US for 2021 was $168,600[2]. It is no wonder why these top earners in our economy have been subject to immense amounts of media, political, and academic coverage. The rising inequalities in income are an important driver of overall inequality in our society. Despite a consensus that inequality is an important issue, there is no clear consensus on why people earn so much compared to others. The top wage earners consist of business and financial executives, medical professionals, lawyers, media stars, and sports stars. In this paper, we call these top earners "superstars", and refer to this type of situation in the economy as the "superstar phenomenon".

The first formal definition of the "superstar phenomenon" comes from Sherwin Rosen, who defines it as "wherein relatively small numbers of people earn enormous amounts of money and dominate the activities in which they engage" (Rosen 1981, 845). However, we all know superstars simply by stating their names. It may be Leonardo Decaprio and Scarlett Johannson for acting, Kanye West and Beyonce for music, Michael Jordan and Lebron James for basketball, or Elon Musk and Jeff Bezos for business. Superstars are the faces of their industry, and despite

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[1]Dan Moskowitz. 2022. "A Look at the 10 Richest People in the World (Updated April 2022)." Investopedia. April 2, 2022. https://www.investopedia.com/articles/investing/012715/5-richest-people-world.asp.
[2] Knueven, Liz. n.d. "The Average Net Worth in America by Age, Race, Education, and Location." Business Insider. Accessed April 28, 2022. https://www.businessinsider.com/personal-finance/average-american-net-worth.

the heated debates on who is the absolute "best" in their field (ask any soccer fan about Cristiano Ronaldo versus Lionel Messi), the general public agrees that these people are the best at what they do. The trickier question is, how do you measure the value they bring? Especially in a performance and entertainment-based market like sports, at the end of the day, Michael Jordan is phenomenal at putting a ball into a hoop. There has been a persistent argument that entertainment superstars are taking too much of the economic pie. While their income grows massively by putting a ball into a hoop or shooting a ball into a net, the factory worker who makes essential products has a stagnant income. This debate gets exasperated further when a performer's bad behavior gets blown up by the mass media.

However, there is no possible way to measure the number of people superstars have inspired to pursue their passion and improve other aspects of their life. Superstars are beacons of hope for people trying to make it into an industry. Role models are an important guiding light to self-improvement, and many superstars have attributed their success to following the acts of previous superstars. It is this dilemma of the superstar question that keeps it an emotional topic. We all strive for equality, and get angry when some seem to be taking more than their fair share, but how do you measure the emotional attachment superstars create?

Lionel Messi was the original inspiration for this paper. Arguably the best soccer player in the world, the 34-year-old Argentine winger has gained massive worldwide popularity. Messi is a player known for his phenomenal technique and superb attacking skills, many compare him to a god because of how great he is. He stands at a humble 5 feet 7 inches and his physique is smaller than other soccer superstars like Cristiano Ronaldo, who is 6 feet 2 inches. He does fewer advertisements and gets less attention from off-field endeavors than other superstars like

Ronaldo or Neymar, but is still a hot topic for the media due to his supreme talent. FC Barcelona, Messi's former club at the time of this writing in 2022, definitely recognized the value Messi brought to the club. Messi's exuberant contract signed in 2017 was leaked in 2021 and offered an inside look at the superstar phenomenon in soccer in full force. Messi's 2017 contract entailed "just under $674 million over four years (roughly $168.5M per season), a renewal fee estimated at roughly $140M, and a roughly $94.6M loyalty bonus" (Fernandez 2021). Messi's contract was worth five times over Lebron James' contract in the NBA, and fifteen times over NHL star Alexander Ovechkin. The contract shook the sports world, and many have criticized how FC Barcelona dealt with the superstar. The club was left with an extreme debt of 1.173 billion euros ($1.384 billion) and was put into a financial crisis with the uncertainty of being able to sign new players due to financial regulations in Spain's soccer league La Liga.

As of 2022, Messi has since left Barcelona for French uber club Paris Saint Germain. The two agreed to a two-year $104 million contract. Barcelona is under immense pressure to dig itself out of a financial crisis and has since struggled to maintain its previous success. As of April 2022, they are currently in third place in the La Liga with help from a few new signings, however, none of them are at the same level as Messi. It is unknown if Barcelona will ever get a player of Messi's caliber again. Messi's departure left the city of Barcelona and the club's worldwide fans saddened and frustrated with the club's higher management. It shocked the soccer community and provided a clear example of how *not* to handle a superstar. This debacle between Messi and his club of 21 years is another example of how the superstar phenomenon has a broad impact.

I went to Barcelona to study abroad in the Spring of 2021, the last season where Messi was at Barcelona before his transfer to Paris. Despite being in the middle of the COVID-19 pandemic and with the city in partial lockdown, I saw the passion people have for their soccer teams and their superstars. It was a jolt of good news when Joan Laporta, the president during Messi and Barcelona's glory days in 2003-2010, returned to the club in hopes to keep Messi happy. Messi even offered to take a 50% pay reduction to stay at the club, but financial regulations and the club's financial situation didn't permit him to stay. I left Barcelona to return home before Messi left, but could see the heartbreak my friends and the fans of Barcelona felt on social media when Messi announced his departure. I feel proud of unknowingly going to Barcelona during Messi's last season at the club. Messi and my love of soccer are the reason I even knew Barcelona existed in the first place, and what prompted me to look at the city for studying abroad. Gaining more insight into the compensation of a superstar like Messi would help me understand the players I fell in love with on TV as a kid, and help me understand the immense impact they have on our society.

This paper will focus on studying the superstar phenomenon in soccer. This may be a small and specific group of top earners, but accurately reflects the patterns of recent increasing income inequality. Media and sports stars are among the professions with the fastest growth in top incomes. The media and sports stars in the top 0.1% of US earners experienced a 5% compound annual growth in their incomes between 1979 and 2005 (Bakija et al. 2012). They are also well-represented among the wealthiest individuals in the world. For example, a 2016 report from Franzini et al. found that two-thirds of the 120 top wage earners in Italy in 2003 were association footballers. Along with representing rising income inequality, the industry of sports

and soccer provides a lot of conveniences when it comes to finding the right data. Professional

sports offer a unique opportunity for innovative labor market research because several indicators

about a player's characteristics and performance are widely available and salaries are regularly

published by the dedicated press (Kahn 2000). The sports industry allows for in-depth analysis

that would be hard to do in other industries that top earners occupy like media, business, or law.

Analyzing sports also allows us to extrapolate the results to other performance-based industries

like music or acting. The availability of sports data brings us one step closer to the essential

question of this paper: what determines the compensation of a superstar?

Recent academic attempts at analyzing the superstar phenomenon have established two

main tenets for superstar compensation: talent and popularity. In sports and specifically soccer,

regardless of the empirical methods used and the soccer league studied, there is a consistency

that both talent and popularity have a significant positive impact on superstar salary

determination (more on this in Chapter 2). This paper uses a dataset of the annual salaries and

market values of the top 60 superstar players in the English Premier League by 2021-2022

annual salary. The English Premier League was chosen (to be explained in more detail at the end

of Chapter 2) because of its immense popularity in the soccer industry and the surprising lack of

previous superstar studies of the league. This paper found that for determining a player's annual

salary, it is the control variables position and if a player is on a "Big Six" team (explained in

Chapter 3) that are most important. While determining a player's market value, talent variables

in terms of average play rating, goals, and control variables like age were the most important.

The combined talent and popularity variable, a player's rating taken from the popular video game

FIFA 21, was the only variable that remained statistically significant in both of the models, being

somewhat significant for salary and very significant for market value. Popularity, in terms of a player's Instagram following, proved to have a minuscule impact on both annual salary and market value. These findings provide valuable insights into the complicated relationship between clubs and superstar players, as they provide insight into both parties' decision-making. It also distinguishes between two common superstar measurements in annual salary and market value, and determines the variables that are actually driving these values up to extreme amounts for superstars.

This paper will be developed as follows. Chapter 2 will provide an extensive literature review of the history of superstar economics and superstar studies in soccer. Chapter 3 will develop the econometric model used in this paper to study superstar effects in the English Premier League. Chapter 4 will conclude and provide further implications.

Chapter 2: Literature Review of Superstar Economics

Adam Smith, (the actual Adam Smith born in 1723, not to be confused with George Goodman who used the pseudonym of "Adam Smith") one of the most influential classical economists today, included a perspective of superstar incomes in his famous 1776 book, *An Inquiry into the Nature and Causes of the Wealth of Nations.*

> "There are some very agreeable and beautiful talents of which the possession commands a certain sort of admiration; but of which the exercise for the sake of gain is considered, whether from reason or prejudice, as a sort of public prostitution. The pecuniary recompense, therefore, of those who exercise them in this manner must be sufficient, not only to pay for the time, labour, and expense of acquiring the talents, but for the discredit which attends the employment of them as the means of subsistence. The exorbitant rewards of players, opera-singers, opera-dancers, etc. are founded upon those two principles; the rarity and beauty of the talents, and the discredit of employing them in this manner" (Smith 1776/1982, 209).

Smith views the superstar as some sort of a "public prostitute". They transform their talents and body into a means of production that can obtain commercial ends. Smith recognizes the beauty and rarity of talent that exists but doesn't devote all of their superstar income to that talent. As another explanation for superstar incomes, Smith believes that their high wages are a compensation for the discredit superstars suffer from "prostituting" their talents to the public. Smith writes, "the exorbitant incomes of superstars are founded upon two principles, the rarity and beauty of their talent and a compensation for the discredit they suffered" (Smith 1776/1982, 209). It is interesting that Smith had this outlook on superstars. Unlike contemporary view, Smith

explains superstars as somewhat disgraceful, comparing them to prostitutes. Today we view superstars as noble and god-like figures.

The compensational wage for the discredit of superstars also keeps in line with Smith's classical economic view of free-market competition and the price-setting mechanism. Free market competition reduces prices. However, the historical evolution of superstars and their absurd wages proves Smith's theory and confidence in the price-setting mechanism faulty. Nowadays, competition does not moderate differences in reward amongst many suppliers, and the superstar phenomenon is a clear example. Smith's contribution to the superstar question in 1776 proves that this question has been frequently asked throughout history. Neoclassical theory, the successor of Smith and classical economics, would similarly assume that in a perfect market with free competition, people are paid according to their marginal contribution to welfare and that free competition would "level out" the rewards amongst competitors through price reductions. Superstar economics has since evolved from the times of classical and neoclassical theory, with its study becoming much more apparent and relevant during modern times. Below is an outline of how the superstar phenomenon question has continued to be expanded upon and studied over time.

The first piece of modern literature surrounding superstar economics is a 1981 paper by Sherwin Rosen. Rosen defines the "superstar phenomenon" as "wherein relatively small numbers of people earn enormous amounts of money and dominate the activities in which they engage" (Rosen 1981, 845). His theory of superstars is based on their talent. He believes that superstars arise where there is a convex relationship between the distribution of talent and the distribution of rewards such that "small differences in talent become magnified in large earnings differences"

(Rosen 1981, 846). Rosen also develops the idea of imperfect substitution (goods that have a lesser level of substitutability) and joint consumption technology (sellers can service the entire market without the costs of production rising) to explain the income of superstars. Consumers view slightly less talented performers as highly imperfect substitutes and therefore are willing to pay the extra amount for superstars. Also, the duplication of production services (TV, radio, media) at constant marginal cost means superior talent can easily spread their influence more often, keeping their market power and increasing their superstar incomes. Rosen's theory is highly based on how the talent of a superstar, even if it may only be slightly better than its competitors, generates large earnings differences in the context of a market based on performance.

The second piece of literature surrounding superstar economics is a 1985 paper by Moshe Adler. Adler takes a different approach to explain the superstar phenomenon. He claims that to value the performance of an artist or athlete, people need to gain knowledge about them by communicating with others. Superstars thus arise when more people happen to know about a certain person, even if they're only of similar or slightly better talent. Adler believes that a star's knowledge is built up through a positive network externality (the quantity of a good demanded by a consumer increases in response to an increase in purchases by other consumers), therefore a superstar is created by a snowball effect and agreed upon by the public to minimize their learning costs. Adler's logic puts the media in a significant position for creating superstars as they impart influence on which performers get public attention. Adler's theory is highly based on the popularity aspect of superstars, and how their popularity within a performance market drives larger earnings, despite them being of similar talent to competitors.

Rosen and Adler's theories provide two main tenets of superstar economics that have remained omnipresent throughout its study: *talent and popularity.* These two principles are not necessarily mutually exclusive and often are taken into account together when explaining superstar economics.

Alternative Explanations To The Superstar Phenomenon

There is much debate and further work to do on whether talent or popularity is most influential in superstar economics, but many other academic attempts have been made to expand the superstar question. In his 1988 article, MacDonald provides a dynamic version of Rosen's talent model. Macdonald uses a two-period model to analyze performers in a setting where their performance is observable to all interested. In the first period of performance, where performers are usually young, if they perform well according to reviews they are more likely to stay within the industry. If they perform badly, they usually leave. This process of the audience obtaining information about the performer is what Macdonald calls an information accumulation process. The performers who perform well in the first period go on to command a larger crowd and therefore a higher market price, which consumers are willing to pay because they know they will observe a good performance. This creates a market separation with these types of performers experiencing a vast income growth in the second period. Thus, these performers turn into superstars because of this information accumulation process based on their first-period performance. Macdonald compares benefitting from this information accumulation process to winning a "lottery", explaining it as a certain stroke of luck that creates superstars.

Frank and Cook's 1995 book, *The Winner-Take-All Society*, introduces the concept of winner-take-all payoff structures in the economy. "Winner-take-all" is defined the same as the

superstar phenomenon, where small differences in performance give rise to enormous differences in rewards. The main essence of the book argues that "winner-take-all" structures have permeated many aspects of the economy, attract too many contestants and that policies can be implemented to make the distribution of rewards more equitable and efficient. Frank and Cook argue that technological advances, such as easier media replication, give more leverage to superstars. They also set up a hypothetical economy of potters and singers. In this experiment, "the societal loss from overcrowding equals the prize of winning the contest. When the lesser talented do overestimate their chances, or when too many are sensitive to the lure of fame (the status motive), it would even have been better for society if the opportunity for superstardom had not existed" (Frank and Cook 1995, 106-113). These "winner-take-all" markets are therefore socially inefficient and the solution offered by Frank and Cook are higher tax rates. "If the problem is that the individual market rewards for an activity are too high from a social perspective, the simplest solution is to tax that activity, thus making it less attractive" (Frank and Cook 1995, 121). Frank and Cook's book offers a comprehensive take on how the "winner take all" phenomenon has created superstar markets and how they interact in the general economy.

Lex Borghans and Loek Groot contribute to the superstar question in terms of analyzing media superstars. In their 1998 article, "Superstardom and Monopolistic Power: Why Media Stars Earn More Than Their Marginal Contribution to Welfare", Borghans and Groot argue that media stars, such as sportsmen and artists, earn significantly more than their marginal contribution to welfare. They come up with two conditions that must be met for superstar incomes: differences in talent and an endogenous property right that can be claimed by the winner. The differences in talent between competitors leading to higher rewards are generally

more acceptable and understandable, but the endogenous property rights leading to superstar incomes is a more controversial opinion. Borghans and Groot describe the relationship between these endogenous property rights and modern media production.

> "These endogenous property rights emerge in situations of media production. Due to media production, only one person is needed to serve the whole market, where without this technology many producers are needed. Efficient allocation requires the most talented producer to be assigned to this task, but in practice the situation provides this person with an opportunity to exploit the number-one position: Since one person is known as the best, people strongly prefer to watch this winner rather than another producer. The superstar therefore has a certain monopolistic power" (Borghans and Groot 1998, 569).

The conclusions made by Borghans and Groot on endogenous property rights expand on theories established in previous literature. Rosen's theory of joint consumption technology is shown to have an impact because the easy replication of media allows for only one person to serve the whole market. This combined with the imperfect substitutability of the audience gives the superstar a monopoly power and the opportunity to exploit their number one position. This exploitation of the number one position is also possible because of the sheer popularity of the superstar, including some of Adler's popularity theory.

Borghans and Groot further utilize their data and explain the superstar phenomenon by presenting three stylized facts relating to superstar incomes. "Superstar incomes are (a) mostly media incomes, which (b) tend to increase with the extent of the market, and (c) the extent of the market is much more important than the quality or superiority of the superstar" (Borghans and

Groot 1998, 570). They deduce that these stylized facts are true if the superstar is being paid more than their marginal contribution to welfare. The overall contribution to the literature of their article can be best depicted through the following quote:

> "But it is not so much the difference in quality between rivals or the degree of superiority of superstars over their rivals which explains superstar incomes, but rather the uniqueness and relevance of the number-one position combined with the extent of the market in which the superstar can exploit the number-one position. Thus the phenomenon of superstar incomes can be explained by the temporary monopolistic power of the bests in the activities in which they excel. The degree of monopolistic power and the particularities of the institutional framework determine how much of the rents are captured in the superstar's personal income" (Borghans and Groot 1998, 570).

Borghans and Groot's article opens up a different perspective on the superstar question. They reinforce theories from Rosen and Adler, however, they introduce a new element of superstar monopolistic behavior and rent capturing. They stress that difference in talent is not important, what is important is how the media and popularity allow superstars to achieve and maintain the top position in a market, and how a superstar can use that top position to their advantage and increase income. Their view offers relevant findings when it comes to the debate of whether talent or popularity is more important in creating superstar incomes.

Up until this point, many explanations have been made for the superstar phenomenon. The ideas of imperfect substitution, easy or costless media replication, information accumulation, reduction of learning costs, "winner-take-all" markets, and superstar monopolistic behavior have all been expressed. However, the two omnipresent explanations for the superstar phenomenon

are Rosen's theory of talent and Adler's theory of popularity. All of the literature going forward, including the alternative explanations from Macdonald, Frank and Cook, and Borghans and Groot, acknowledge and build off the talent and popularity principles from Rosen and Adler. There is debate on which principle contributes more to the superstar phenomenon, but these two principles ultimately work off each other. Adler's theory of popularity is an addition to Rosen's theory of talent. Therefore the conjecture is that *both talent and popularity* have a significant influence on superstar economics. This turns us to the question of this paper, how much impact does talent and popularity (along with other common variables[3]) have on superstar incomes when it comes to the world of English soccer?

Related Empirical Literature to Soccer

There have already been attempts at explaining the superstar phenomenon in sports, specifically within the renowned world of European soccer. Studies have used a range of different empirical strategies to measure talent and popularity and other variables, and have derived different results.

Lucifora and Simmons investigate wage determination among professional soccer players appearing in the Italian league in their 2003 article, "Superstar Effects in Sport, Evidence From Italian Soccer". They found a superstar effect in Italian soccer using performance indicators from the 1995-96 season. They showed that talent, as in the number of goals and assists scored per game, imparts significant influence on the skewness of the salary distribution of forward and midfield players. These findings support Rosen's theory that talent is a driver of superstar effects, especially attacking talent in terms of the number of goals and assists a player can create rather

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[3] Other common variables to be included in the market value and salary determination models in Chapter 3. Some common variables that are known to have an impact are age, goals, assists, position, and birth region of superstar.

than defensive talent (such as tackles won). Although they did not measure the effects of popularity (Adler) on salary, many other academics have.

Franck and Nuesch found in their 2010 article, "Talent and/or Popularity", that both talent and popularity increase the market value of a player in the German soccer league. Their findings were especially evident in the very top distribution of players. Lehmann and Schulze (2008) found the opposite of Franck and Nuesch (2010). Their findings concluded that neither talent nor popularity have a significant effect on the skewness of soccer superstar incomes in the German soccer league. This contradiction in results suggests that the difference in empirical methods and measurement definitions can have a big impact. Lehmann and Schulze captured popularity through the number of "hits" of a player's name in the online version of Kicker sport magazine during the 1998/99 German season. They captured talent through various performance indicators like goals, assists, shots, tackles, and a set of dummy variables for the 1998/99 season. Franck and Nuesch captured popularity through press citations unrelated to the performance of a player. They defined talent as a player's considered contribution to the team output. Therefore, they captured talent first by creating a team production function using performance indicators and then used the indicators that proved to be beneficial to a team as the indicators for measuring a player's talent/market value. The literature in soccer superstar economics has competing empirical methods to measure talent and popularity, however, all these different methods are useful, there is no "right" way to measure the subjective natures of talent and popularity, especially when applied to a team sport like soccer. Lehmann and Schulze's article is considered to be an outlier in this paper, as all the other sources have found talent and popularity to have a significant effect on superstar incomes. Nevertheless, the variation in empirical methods and

results assessed below can help us expand the question of superstar phenomena in European soccer.

Garcia and Pujol analyze the Spanish soccer league and its monopsony rents. A monopsony is when a single buyer substantially controls the market as the major purchaser of goods and services offered by many sellers. Garcia and Pujol explain that Spanish clubs operate with monopsony power because there are a few clubs that compete for a vast amount of soccer players. According to labor market theory, Spanish clubs are expected to obtain monopsony rents from this situation. However, Garcia and Pujol explain that Spanish clubs do not actually profit from these expected monopsony rents, and suspect that superstars take those expected monopsony rents. They write,

> "A number of entities (not just Spanish clubs) would fiercely compete for hiring those few superstars, who accumulate market power. The paper suggests that the monopsony rents that the clubs were to obtain from most of the soccer players, would eventually revert to the superstars, who enjoy strong bargaining power" (Garcia-del-Barrio and Pujol 2004, 1).

This analysis pairs nicely with Borghans and Groot's explanation of the superstar phenomenon, where they claim that superstars utilize their temporary monopoly power to maintain the number one position, and thus higher rewards. Along with this claim, Garcia and Pujol confirm that Spanish soccer is a "winner-take-all market", and that slight differences in talent combined with more popularity increase superstar incomes. They measure talent through an index of performance and another index of productivity, and measure popularity by the amount of "google" links to a player online. In addition to their results, they found relationships that players

with national team experience in international competitions drive player salaries up, and that

attackers are systemically paid more than defenders and goalkeepers, reinforcing Lucifora and

Simmons' (2003) findings from the Italian soccer league.

Frick, Battre, and Deutscher (2008) analyze salary determination in the German soccer

league. They find that innate talent/performance mainly drives player remuneration, but that

recent performances of a player are valued much higher than performance delivered years ago.

They also find other interesting variables that impact salary determination that we have yet to

discuss. Some of their interesting findings are quoted below.

> "Age, career games played, international appearances over career and international
>
> appearances last season have a statistically significant non-linear influence on salaries.
>
> Goals scored last season as well as games played last season have a significantly positive
>
> and strictly linear influence on annual income. Forwards, midfielders, and defenders
>
> command a much higher wage than goalkeepers. Players from South America and
>
> Western Europe receive a considerable pay premium while players from the "rest of the
>
> world" are neither favored nor "discriminated" against. The pay premium for South
>
> Americans and West Europeans is not surprising: Other things equal, players from these
>
> regions attract larger crowds (Wilson and Ying 2003) and contribute more to
>
> merchandising revenues than other players (Kalter 1999). Team captains and players who
>
> moved from a first division club abroad to Germany are paid a significant premium. In
>
> the former case this is obviously due to "leadership skills" that are required for the job
>
> and that are, therefore, particularly rewarded in the market (Kuhn and Weinberger 2005)"
>
> (Frick 2008, 16).

These are all different relationships that could possibly add to superstar wages and will be important to keep into account as possible variables in our salary determination model to come later. Particularly interesting is the region of birth relationship. South American players and Western European players tend to be more popular in terms of attracting attendance and merchandising revenues, thus increasing their salaries. This is also found by Bryson, Rossi, and Simmons (2014), who conclude that in Italy migrant players receive a premium wage compared to domestic Italian players. In addition to finding that migrant superstars increase crowd attendance and therefore revenue, they also find that the proportion of migrants in a team is positively associated with an increase in team points, suggesting that migrant superstar players in Italy fall under both the talent and popularity principles proposed by Rosen and Adler. Also, the finding that captaincy/leadership skills increase salary expands the question of what constitutes talent in a sports setting. Talent is not only determined by raw performance variables, but also by leadership skill/status variables.

Brandes, Franck, and Nuesch (2006) study German soccer players and find a distinction between national superstars and local superstars, or what they refer to as "local heroes". National superstars are defined as players in the top 2% quantile of the league's distribution market value, and local heroes as the most valued player on a team with no superstars. They find that local heroes attract fans for mostly home games because of their popularity, and that national superstars attract more fans to home and away games because of their outstanding talent. They conclude that because national superstars attract more fans to away games, they produce a positive externality for home teams, adding to the contested question of who should bear the costs of paying for superstars. The authors even numerically figured out the value of this average

superstar externality in Germany per season: 430,000 euros (Superstars increase match attendance on the road by 4%, which results in 24,484 tickets sold additionally. Given an average admission price of €17.50, this totals €428,470). This article dives deeper into the superstar question providing it with more nuance based on severity and type of superstardom (national or local), and how different types of superstars impact game attendance and thus club/league revenue. They also expand on Rosen and Adler's theories proving that talent drives superstardom for national superstars but popularity drives superstardom for local heroes. Nevertheless, the popularity of a national superstar looks to be financially beneficial, as they provide a positive externality to German clubs.

The research into superstar salary determination and phenomena is extensive for European soccer leagues. The above sources touch on the very popular Italian, Spanish, and German soccer leagues. Because Europe is the main hub of competitive soccer, it attracts the highest talent and most popular superstars in the world. The average person on the street would have no idea about the Indonesian soccer league, but most likely an idea of the Spanish soccer league. However, this sheer popularity means superstar effects in European soccer have different implications than soccer leagues in different parts of the world. What are the implications of the superstar phenomenon in other soccer leagues around the world?

The most studied soccer league within superstar economics outside of European soccer is the MLS (Major League Soccer) in the United States. The MLS is different from European soccer leagues in a variety of ways. In terms of talent and popularity, the MLS is a developing league, having only been established in 1993. The players in the MLS are generally seen as less talented than players in European leagues, and therefore are less popular in terms of attendance

and media coverage. Also, the MLS has different regulations than in Europe, most notably the Designated Player Rule, which allows clubs to sign one "designated player" per year that is not constrained by the league-imposed salary cap. This rule was implemented in 2007 in an attempt to better compete for high talent international players. One example is the famous David Beckham, an English forward with an impressive European career, who was signed as the designated player for the Los Angeles Galaxy in 2007. Despite these differences between the US and Europe in terms of their soccer leagues, similar superstar effects have still been found in the MLS.

Kuethe and Motamed (2010) find that players that are Designated Players (DP) and chosen for the annual MLS All-Star game have higher salaries on average and are the league's highest earners. They also reinforce previous findings, such as a premium for players with national team experience and players from South America or Europe. Kuethe and Motamed also point out that

> "the MLS also provides a counterexample of the suggested relationship between
> age and salary among professional soccer players. We have found that MLS players
> exhibit a convex relationship to age which suggests that MLS may be a transitional
> league. Young athletes with the greatest potential may maximize their earnings
> outside MLS whereas older star players may find a comfortable league in which
> to perform and ultimately retire" (Kuethe and Motamed 2010, 578).

This is a common case for professional players regarding the MLS. Younger players go to European leagues in pursuit of competing with higher talent and thus in hopes of achieving higher popularity. Older players that have already established themselves as talented and popular

players in European leagues, will move to the MLS to continue playing at a more comfortable, but still professional level with decent compensational wages. A clear example of this is David Beckham moving to LA Galaxy as a Designated Player in 2007.

Jewell (2017) studies the effects of the DP rule more closely. His results determine that DPs increase attendance, but those attendance effects tend to diminish over time and the effects are highest in a DP's first year. Also interesting is the "superstar externality" Jewell found, pointing out that MLS clubs benefit from other MLS clubs signing superstars because they drive attendance and revenue to away games. Jewell analyzes and supports the signing of superstar players to drive revenue to a developing league like the MLS. However, it depends on the superstar's salary wage and the amount of revenue they bring to the club. He also concludes that these findings specifically apply to the MLS because it is an emerging league with different income streams than European leagues and a lot of MLS income is based on stadium attendance.

Coates, Frick, and Jewell (2016) expand on the broader implications superstars have on their clubs in the MLS. They recognize that signing DPs increases the MLS' marketing value, as the two previous articles stated, but argue that salary inequality negatively impacts team performance, and suggest that without MLS salary regulations, salary inequality could be worse. On the other hand, they found that an increase in a team's wage bill increases team performance in the MLS. This article presents a dilemma unique to the MLS but relevant to the general question of superstar effects in soccer.

"The unique structure of MLS sets up an interesting dilemma for the league and teams; individual teams are likely focused on their own revenues and the relationship between winning and attendance, while the league is likely to be highly focused on revenues.

Thus, individual teams may be more concerned about mitigating the negative influence of

increasing salary inequality to improve point production, and the league may be

concerned about signing high-priced talent to drive revenues" (Coates, Frick, and Jewell

2016, 731).

While individual teams want to maximize winning and team performance, the league is

interested in maximizing revenues, which superstars certainly bring. This dilemma introduces the

question inside superstar economics of the performance and financial impact superstars have on

their clubs and ultimately leagues. While the implications for the MLS are different than in

European leagues, there are many costs and benefits associated with signing superstars that clubs

and leagues have to contend with.

Having expanded the superstar phenomenon in soccer from studies on European leagues

to the United States and its MLS, we see similar patterns and correlations in terms of what

determines a superstar's salary. The superstar question in soccer is still ongoing however, with

academic articles published as recently as 2018 and 2020. Carrieri, Principe, and Raitano (2018)

analyze the Italian soccer league for superstar effects. They measure talent, popularity, and also

introduce a new aspect of superstar bargaining power, which is meant by the influence a player's

agent has on their earnings. They measure bargaining power by using "information on the total

market value of players who are represented by the same agent (provided by the website

transfermrkt.com), assuming that an agent with a richer portfolio is better able to bargain a good

deal with the club's owner" (Carrieri, Principe, and Raitano 2018, 956). The authors also assume

that superstars have more bargaining power on earnings because they can threaten to leave their

team if another team is offering a better contract, giving them an upper hand in contract

negotiation. Interesting here is the implementation of Borghans and Groot's ideas of superstar monopolistic power. They measure performance and popularity in similar ways to many of the previous papers in soccer superstar literature. Performance is measured by goals and assists in a season and a mean performance grade given by a newspaper for a season. Popularity is measured by the amount of Google search queries made each year for a player. They found that performance, popularity, and bargaining power are all associated with higher earnings. In one of their three statistical estimation methods, Ordinary Least Squares (which we will be using later in this paper), they found that performance and popularity were the leading determinants of higher wages. In terms of wage increase, goals led to an 11.4% increase, assists a 3.4% increase, and mean grade performance a 6.3% increase. Popularity led to a 16% increase, while bargaining power led to an 8% increase while the power of an agent is mostly used to allocate players to richer teams.

      The authors conclude that when it comes to superstar effects in soccer, a "winner-take-all" conclusion is insufficient. Other mechanisms that have a significant impact are at play in the salary determination of the highest earners, not just "winning". They also conclude that popularity has the greatest effect at the very top of the earnings distribution, meaning that

      "popularity—above all—allows individuals to become super-rich, especially in a context—such as football—characterised by the large spread of pay-TV technology and the internet. This allows teams to be watched by a global audience and contributes to redistributing the largest share of revenues towards the most popular players. With a few possible differences across sectors, this can be a factor explaining the earnings of other

high earners, such as actors, musicians, and of virtually all workers in sectors

characterised by a large audience" (Carrieri, Principe, and Raitano 2018, 971).

Very interesting is the theme of Rosen's joint-consumption technology and how it allows for

superstar popularity and monopolistic power. This 2018 article has shown that the inklings from

Rosen, Adler, and the other authors that have previously contributed to superstar literature, were

correct to an extent.

The most recent article on soccer superstar economics is a 2020 paper from Scarfe,

Singleton, and Telemo. It analyzes the MLS and superstar effects through talent and popularity,

they don't include bargaining power. The authors use "predicted wages" for a club to represent

the amount they pay for a player's performance, and "residual wages" a club spends as a

representation of the popularity a player brings. They find that a higher team spend on

performance/predicted wages led to better team performance, while a higher spend on

popularity/residual wages did not. A higher spend on popularity/residual wages for players above

the 80th percentile in earnings did however lead to a higher attendance rate, which was used as a

proxy for revenue. A higher spend on performance/predicted wages did not result in higher

attendance. These findings are consistent with Adler's theory of popularity, suggesting that some

players were paid more because of their popularity, not their supreme talent. This also suggests

that MLS consumers prefer to watch popular superstar players.

The authors acknowledge that the MLS has certain caveats as compared to European

soccer. The MLS has more rigid salary regulations than other leagues, a soccer player's career is

short which means they may only spend a few years in the MLS, and the MLS is a relatively new

league meaning that superstars could be used more so to help build up the league's branding and

attract more viewers. Nevertheless, the authors introduce some interesting implications at the end. The MLS is a competitive league, and few teams consistently dominate the competition or have significantly more spending power than another (this is not the case for European soccer). This could be due to the rigid salary restrictions they impose, however, it comes at the expense of signing more superstar players to the MLS. An interesting question this article brings up is what do consumers value more, a competitive league or seeing superstar players. League salary restrictions and the number of superstar players thus become important and something soccer leagues must monitor according to their consumer's values.

There has already been extensive research on superstar effects in soccer. This literature review covers the Italian, German, Spanish, and United States soccer leagues, with certain but not grand distinctions between the United States (MLS) and European leagues. There is a consistency of themes throughout the literature, regardless of what soccer league is studied. Talent and popularity are shown to have a significant impact on superstar salary determination. Having vastly different empirical methods used to measure talent and popularity, the detailed results are not uniform throughout all of the studies, but the result of a positive association between talent/popularity and superstar wages is a consistent finding. This is promising for the area of superstar economics in soccer, as Rosen and Adler's theories from the 1980s proved to ring somewhat true in real studies and have only been built upon since.

This paper uses the English soccer league as the subject of study for superstar economics. The next sections will explain a brief history of the English Premier League and why specifically this league was chosen for this paper.

Background of The English Premier League (EPL)

To fully understand the significance of the EPL, we first must do a brief overview of its league history and the relationship between England and soccer, or as they call it "football", however, this paper will stick to using the term "soccer" for the sake of consistency.

Brief History of English Soccer

Soccer has existed in the world and in England for thousands of years. It runs very deep within the English culture and has reigned supreme over sports like rugby or golf. The sport of soccer is a source of great pride and connection for English people, and much of this is due to its vast history within the country. In England, the game was first known as a war game and was actually condemned for its violence. In the 700s the first soccer game took place in the east of England, where they used the severed head of a Danish prince that they defeated in war as the ball. The violence and danger common in the game caused King Edward III to pass laws to try and stop the game in 1331. However, the game remained popular, and the game became legal again in 1605. Fast forward to the 1800s, and England is credited as the birthplace of modern soccer. In 1815, the Eton College of England established the first set of rules for the game. In 1863, the Football Association was founded. The first introduction of any type of league was in 1888 when the English Football League was created with 12 founding clubs. The structure of the league would include five tiers of English soccer, the first division being the best and the fifth division being the worst, with clubs being able to move through the tiers through a cycle of promotion and relegation based on league results.

As soccer's popularity increased worldwide and the game started to modernize, with the introduction of the penalty kick, the rise of national team soccer and the first World Cup game in

1930, the rise of competition between European leagues, and the implementation of the sport in school systems, the first tier division of the English Football League decided to break away from the league in 1992. This new league, which was originally named the first division of the English Football League, would be named the English Premier League. It would sit at the top of the pyramid of the five soccer leagues in England, and still be subject to the cycles of promotion and relegation between league divisions[4].

History of the English Premier League

In 1992, the Premier League was created and consisted of 20 clubs. This was mostly a response to the decline of English soccer in the 1970s and 1980s, where hooliganism was rife and supporters endured poor facilities. England was banned from European competition for five years because of the Heysel Stadium Disaster in 1985. This was a crowd disaster in Brussels, Belgium at a European Cup final game between Liverpool (English team) and Juventus (Italian team). 39 fans, mostly Italian and Juventus supporters, died by being crushed up against a wall. Around 600 total were injured during the incident. This disaster proved to be costly to England's soccer reputation, as many English players moved abroad to play in other leagues and Italy and Spain's soccer leagues experienced a drastic increase in attendance and revenues. The Premier League was created in 1992 to rebuild English soccer's reputation, but also to take advantage of the potential economic opportunities of the sport. The league quickly improved the stadiums and facilities of the sport and signed many lucrative broadcast and sponsorship deals. Soon the league was able to attract the world's best players and managers of the sport, and would cement itself as the pride of English soccer.

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[4] At the end of each season, based on league standings, the EPL relegates the bottom three teams, while the top three teams from the second division (named the Championship League) are promoted to the first division.

Modern-day Premier League

The Premier League's growth would continue into the modern-day and have a positive effect on England's economy. In 2019-2020, despite the COVID-19 pandemic, it still created an estimated £7.8 billion ($10.4 billion) for the UK economy. It generated 3.2 billion viewers worldwide and attracted 528,000 tourists to England to watch games. Overseas TV income totaled £1.4 billion ($1.9 billion), about half of the UK's total TV earnings sold abroad in 2019-2020. This overseas TV income was more than the four other major European soccer leagues (Italy, Spain, France, Germany) combined, which was £1.2 billion ($1.64 billion) (Walker 2022). The league's immense popularity is suspected to be from its competitive nature. While the league still has most of its financial power and success distributed amongst the "Big Six" clubs[5], the share of it is more widely distributed amongst the other teams than in other European leagues. "In the English top-flight, the highest-ranked team receives 1.6 times the funding from central revenue distributions, compared to the bottom team. The ratio is less than half of that in Spain's La Liga" (Walker 2022). It seems that the competitive nature of the EPL, and the higher chance of a bottom team upsetting a top team, attracts more viewers and drives popularity. In 2019-2020, the EPL saw a total of 2.1 billion interactions on its social media channels. The popularity of the sport is so high that it is to the point where people are concerned it will reach hooliganism levels comparable to the 1970s and 80s. At the European

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[5] The teams Manchester United, Manchester City, Chelsea, Liverpool, Arsenal or Tottenham compromise the "Big Six". These are the teams that have historically had the most financial power and winning success compared to the other 14 teams in the league. They have consistently won the Premier League title, played in the prestigious international club competition UEFA Champions League, been located in bigger markets like London and Manchester, and enjoyed much more worldwide recognition and popularity amongst the other clubs. This will be used as a dummy variable in the econometric model in Chapter 3.

Championship 2020 final[6], where the English national team lost to Italy on penalties, an

estimated 250,000 people rushed the turnstiles and vandalized Wembley stadium (where the

game took place), "it was overrun with thugs and the authorities lost control" (Cross 2021).

Since its inception in 1992, the Premier League has grown at a tremendous pace and even to the

point where it may have unforeseen economic consequences.

Why The English Premier League?

This paper focuses on the English Premier League (EPL) for two specific reasons. One is

that the EPL has solidified itself as modern-day soccer's most popular and competitive league in

Europe, and arguably the world. The immense popularity and revenue it generates make it a

perfect performance-based market for studying superstar economics. It is also a market where the

talent of a player is easily quantifiable, in terms of goals, assists, ratings, etc., as compared to a

more subjective market like music or acting. The second reason is that there are surprisingly very

few recent academic attempts at analyzing the superstar phenomenon within the EPL, despite its

recent meteoric rise. This paper looks to change that and analyze if the EPL holds the same

patterns past literature has found in other popular European soccer leagues. It also aims to utilize

and build upon the extensive superstar phenomena literature we have covered. In Chapter 3, a

market value and salary determination model for English Premier League superstars will be

created.

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[6] The "European Championship" is where European senior men's national teams compete and determine the continental champion of Europe. The competition has been held every four years since 1960, except for 2020, when it was postponed until 2021 due to the COVID-19 pandemic. Its structure and competitiveness is comparable to the World Cup, but the tournament is only in Europe.

Chapter 3: The Econometric Model

The econometric model used in this paper was inspired by Carrieri, Principe, and Raitano's 2018 model on the Italian league mentioned in the literature review. Specifically, the variables they use to measure popularity and talent influenced the following model. The following econometric model will use Ordinary Least Squares (OLS) as its statistical and regression estimation technique.

Data and Main Variables

The empirical analysis of this paper is based on data collected from a variety of sources. Below is a table of the variables chosen, their description, and their data source. The paper used a total of two models, one with the player market value as the dependent variable, and the other with the player's annual salary as the dependent variable. The reasoning behind the variables is in the next section.

Variable	Description	Data Source
Market Value (dependent variable)	transfermarkt.com player market value for May 2021 (at the conclusion of 20-21 season) (in millions USD)[7]	transfermarkt.us
Salary (dependent variable)	Annual Salary for 21-22 season (in millions USD)[8]	spotrac.com
Age (control variable)	In years	transfermarkt.us
Position (dummy/control variable)	Forward (1) Midfielder (2) Defender (3)	transfermarkt.us

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[7] Values originally collected in Euros, but changed to USD using the average 2021 exchange rate of 1.18 USD to Euros.

[8] Values originally collected in English Pounds but changed to USD using the average 2021 exchange rate of 1.37 USD to Pounds.

Big Six Club (dummy/control variable)	If player is on Manchester United, Manchester City, Chelsea, Liverpool, Arsenal or Tottenham 1 = yes, 2 = no	transfermarkt.us
Talent/performance	Goals for 2020-21 season Assists for 2020-21 season Average play rating for league play in 20-21 season (on 1-10 scale)	transfermarkt.us whoscored.com
Popularity	Instagram followers per player for a date in the range between May-June 2021[9]	speakrj.com
Talent and Popularity combined	FIFA 21 in-game player rating	ea.com

Reasoning for Variables Chosen

Dependent Variables

The two econometric models used will be one with the market value as the dependent variable, and the other the annual salary as the dependent variable. This allows for two measures of superstar worth, and the ability to compare both dependent variables to each other.

The market value for May 2021 was used because it assumes the value of a player at the conclusion of the 20-21 EPL season. The transfermarkt.com market value was used over other market value measurements because of its renowned consensus within the international soccer

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[9] Speakrj.com's data did not give a consistent exact date for a player's Instagram follower count history. However, a datapoint between May and June 2021 was found for every player, and if not found, the follower count was estimated based on the players January 2022 follower count. The exact amount of followers on a specific date per player was not important, but a general follower count near the end of the 20-21 EPL season (5/23/21) was the main focus for the purpose of finding a possible relationship with the dependent variable.

community[10]. Their market value number comes from a crowdfunded consensus of experts and community users based on a multitude of factors they deem important[11]. Despite looking like an underwhelming site for soccer nerds, the importance of its figures is immense. Rory Smith from the New York Times writes, "a player's worth on Transfermarkt is not seen within the sport as an estimation, but, effectively, as a price tag: the starting point for negotiations on trades in which tens of millions of dollars change hands, a digital anchor for a real-world fee" (Smith 2021). The transfermarkt.com market value figure is essentially an anchor for assessing a superstar's actual worth, and is thus chosen as one of the dependent variables.

The annual salary is the other dependent variable. We assume that the annual salary clubs pay a superstar player reflects what they believe is their real-life value. It is assumed that clubs, firms with financial interests, heavily monitor what they pay in wages and only pay what they believe a superstar to be worth. In the EPL players are usually on salary contracts. The salary dependent variable will be a player's annual salary for the 21-22 season, assuming that this figure was negotiated by players, agents, and clubs based on the player's performance in the previous 20-21 season.

Control Variables

The control variables are age, position (forward, midfielder, or defender), and whether a player belongs to either of the "Big Six" clubs in the EPL. Citing the literature review, age has been a known important factor for assessing player value, with a negative correlation as players get older due to assumptions about bodily ability.

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[10] Smith, Rory. 2021. "The Wisdom of the Crowd." The New York Times, August 12, 2021, sec. Sports. https://www.nytimes.com/2021/08/12/sports/soccer/soccer-football-transfermarkt.html.
[11] Transfermarkt's explanation for how market value is determined. https://www.transfermarkt.co.in/transfermarkt-market-value-explained-how-is-it-determined-/view/news/385100.

The position of a player is important too, with forwards being most valued, midfielders valued second-most, and defenders valued last. Goalkeepers were excluded from the model due to the need for a separate talent analysis (saves, clean sheets, etc.) based on their role as compared to a field player.

The "Big Six" club variable is a dummy variable based on whether a player is on the teams Manchester United, Manchester City, Chelsea, Liverpool, Arsenal, or Tottenham. These are the chosen teams because historically ever since the inception of the Premier League in 1992, they have had the most financial power and winning success compared to the other 14 teams in the league. These teams have consistently won the Premier League title, played in the prestigious international club competition UEFA Champions League[12], been located in bigger markets like London and Manchester, and enjoyed much more worldwide recognition and popularity than the other clubs. This means that these clubs have the healthiest revenues, meaning they can exert financial power and have exclusive access to the most talented and expensive players in the international soccer market. It is assumed that these clubs will be able to offer more annual salary pay to their players as compared to other clubs, and thus is a control variable.

Talent/Performance Variables

These variables represent the "talent" tenet of the superstar phenomenon question. These variables are chosen to represent the on-field performance of a player and how much they contribute to a team strictly in a soccer production sense. These variables are goals for the 20-21

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[12] The UEFA Champions League is an annual club football competition organized by the Union of European Football Associations and contested by top-division European clubs, deciding the competition winners through a round robin group stage to qualify for a double-legged knockout format, and a single leg final. The top four teams based on standings from each European league get to compete.

season, assists for the 20-21 season, and the average play rating for league play in the 20-21 season.

Goals and assists were chosen because it has been cited multiple times that players that contribute a lot of goals and assists in a season are systematically paid more than others. This analysis also implies that forwards and midfielders are more valuable than defenders and goalkeepers because they are more likely to be in positions that contribute goals and assists. The statistics for the 20-21 season were chosen because it is assumed that when analyzing a player's potential for the 21-22 season, their most recent performance from the 20-21 season would be the most important factor.

The average league play rating is taken from the website whoscored.com. Whoscored.com explains their ratings on their website as the following.

> "Our player ratings are based on each event recorded in the game calculated live automatically using our own algorithms, which comprise over 200 raw statistics. All events are valued based on a researched perception of the effect on the outcome on the match. Positive events are valued against negative events[13]".

Their ratings are comprehensive on-field performance measures and have been used by the media, fantasy sports, and betting industries. The whoscored.com player ratings in this model are a player's final average performance measure after the 20-21 Premier League season. It is important to note that these figures are taken only from player performance in Premier League games during the 20-21 season. They exclude player performances from domestic club competitions, national team competitions, and other games played outside of the 20-21 Premier

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[13] Whoscored.com statement on how ratings are calculated.
https://www.whoscored.com/Feeds/Ratings#:~:text=About%20WhoScored.com%20Ratings,the%20outcome%20on%20the%20match

League regular season. The whoscored.com rating serves as the most comprehensive

talent/performance figure in this model. The whoscored.com ratings are on a scale with 1 being

the lowest and 10 being the highest.

Popularity Variables

The variables chosen to represent the popularity of a superstar player are the amount of

Instagram followers on a player's account at the end of the EPL 20-21 season (taken using a date

between May 2021 to June 2021). Because talent and popularity are inextricably linked (the

more talented a player the more likely they are to be popular), this variable is an attempt to

measure the popularity outside of a player's on-field performance. It is assumed that when a

person "follows" a player's Instagram account, they are interested in keeping up with that

player's life. Instagram was chosen over other social media platforms like Facebook, Twitter, and

Youtube because it is a platform known most for people showcasing their lifestyles. While on

Twitter a player is restricted to 140 character posts, on Instagram a player can post a wide range

of content from soccer to family to advertisements. Players are known to use Instagram as a tool

to engage with fans and promote their personal brands, and is thus a popularity variable.

Talent and Popularity Combined Variable

Because it is hard to separate the link between a player's talent and popularity, and even

harder to find out which tenet contributes more to a superstar's worth, a variable representing

both talent and popularity has also been chosen for this model. FIFA is a popular simulation

video game created by EA Sports. People can play with teams and players from leagues all over

the world to compete offline and in online multiplayer settings. One of the game's most popular

features is Ultimate Team, where people can build their own squads using any player available in

the game. Teams are built using earned in-game coins to buy players at a certain value deemed

by FIFA's online transfer market, or by using coins to buy packs that contain random players.

Throughout the series' seventeen years of history, it has amassed over 325 million sales. FIFA

serves as a talent variable proxy because the in-game stats a player has is based on their real-life

performance on a scale of 1-100. Because FIFA releases a new version of the game once a year,

the player ratings change every year based on performance prior to the release. FIFA 21 was

released on October 6, 2020.

For example, Lionel Messi, arguably the best player in the history of soccer and a player

for Barcelona at the time, has a FIFA 21 rating of 93. A lesser-known player like Adebayo

Akinfenwa, who plays for a club in the third tier of the English soccer league system, has a FIFA

21 rating of 65. The two cards can be seen in Figure 1 below. The ratings for each player are very

detailed, including physical and mental characteristics like acceleration, dribbling, shooting,

aggression, and more.

Figure 1: Example of FIFA 21 Player Cards

Note: Taken from futbin.com. Comparison of Adebayo Akienfenwa and Lionel Messi's FIFA 21 base
player card stats. ST= Striker (Forward Position), RW= Right Wing (Forward Position), PAC= pace, SHO=
shooting, PAS= passing, DRI= dribbling, DEF= defending, PHY= physical.

Because of its great detail into player characteristics based on previous real-life performance, the FIFA 21 player rating serves as a talent proxy for superstar players.

FIFA 21 player ratings also serve as a popularity proxy too. The higher the in-game rating, the better the in-game performance. In a competitive multiplayer landscape like Ultimate Team, where players compete against each other with their own built squads, superstar players go for a premium while lesser-known players don't, much like how the real world international soccer player market operates. It is assumed that players of FIFA 21 want to win as much as possible, and therefore are incentivized to obtain the highest rated players and play with the highest-rated teams for the best chances of winning. This incentive creates a demand and popularity for players that have good in-game performance.

The FIFA 21 in-game rating is a marker of a player's real-world on-field talent, but also a symbol of the player's popularity and demand amongst an engaged online video game community. Therefore, the FIFA 21 in-game player rating serves as a variable representing both the talent and popularity of a superstar player.

Descriptive Statistics

The dataset used in this model is a set of 60 players from the EPL. A "superstar" player in this model is defined as a player that commanded a significant annual salary for the 2021-2022 season. Specifically in the EPL, there are a total of 505 players for the 2021-22 season. The top 60 players in the EPL based on annual salary make up the top 11.88% of players. Therefore, a superstar player for the EPL in this model is defined as a player whose annual salary demands are in the top 12%. The figures in this paper are all generated from the programs Stata and Microsoft Excel.

Below are the means and 95% confidence intervals for each of the variables in the model. Note that the variables "pos" and "bigsix" are insignificant here due to being dummy variables.

Figure 2: Variable Averages

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. ci means, level (95)
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Variable	Obs	Mean	Std. err.	[95% conf. interval]	
age	60	27.93333	.4552684	27.02234	28.84432
markval21	60	5.43e+07	4360294	4.56e+07	6.30e+07
salary	60	1.34e+07	754979.1	1.19e+07	1.49e+07
goals	60	8.416667	1.210195	5.995072	10.83826
assists	60	5.933333	.7886435	4.355261	7.511405
rating	60	6.9395	.0428955	6.853666	7.025334
pos	60	1.883333	.0982665	1.686702	2.079964
igmay21	60	1.03e+07	4909960	443187.2	2.01e+07
fifa21	60	83.36667	.5378166	82.2905	84.44284
bigsix	60	1.116667	.0417936	1.033038	1.200295
R	0	.	.	.	.
salaryinpo~s	60	9899964	544598.9	8810224	1.10e+07
salaryin	60	1.36e+07	745945.6	1.21e+07	1.51e+07
U	0	.	.	.	.
markvaline~s	52	4.88e+07	4100117	4.06e+07	5.70e+07
markvalin	52	5.76e+07	4838139	4.79e+07	6.73e+07
e	60	-.009375	1677384	-3356438	3356438
_est_regre~1	996	.060241	.007543	.045439	.0750429
_est_regre~2	996	.060241	.007543	.045439	.0750429

The average age amongst the superstars is 28. The average market value is $54.3 million. The average annual salary is $13.4 million. The average number of goals scored is 8.4 and assists given is 5.9. The average player rating is 6.9. The average number of Instagram followers is 10.3 million. The average FIFA 21 rating is 83.3.

Figure 3 is a histogram of the Annual Salary distributed amongst the superstar players. It is skewed to the left, meaning it is log linearly distributed. This will be accounted for later in the model in the salary regression by using the natural log of annual salary. Most of the players have salaries around $10 million, while some are located in the range between $15 to $25 million, and very few upwards of $30 million. The player with the highest salary is forward Cristiano

Figure 3: Histogram of Annual Salary
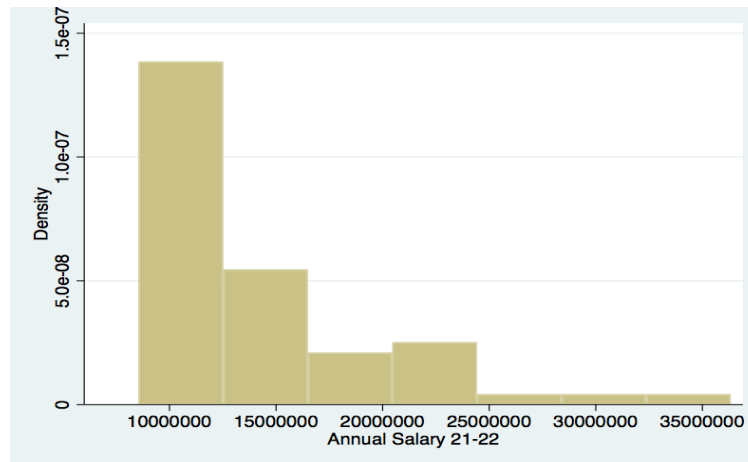
Ronaldo, commanding a $36 million annual salary from Manchester United.

Figure 4 is a histogram of the market value distributed amongst the superstar players. Unlike salary, market value is normally distributed. Most of the players have market values

Figure 4: Histogram of Market Value
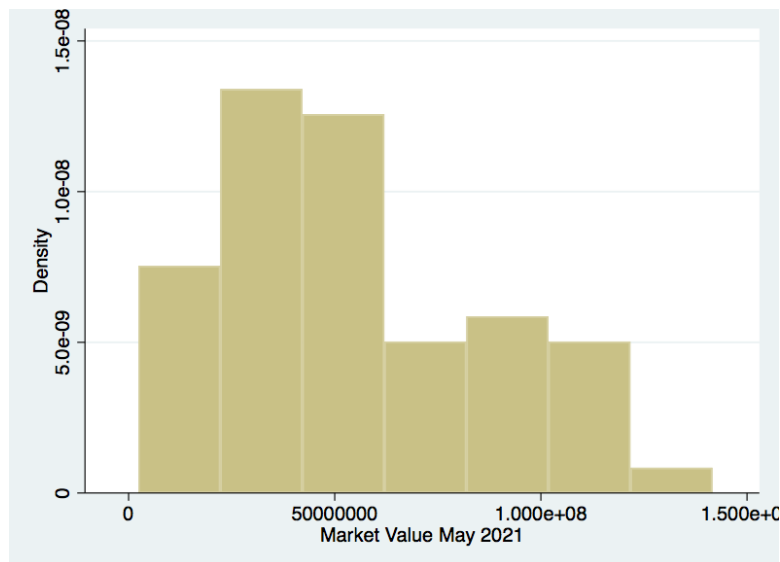
around $50 million or below, while some are located in the range between $50 to $125 million, and very few upwards of $125 million. The player with the highest market value is forward Harry Kane of Tottenham Hotspur valued at $141 million.

Dummy Variable Descriptive Statistics

Amongst the top 60 superstar players in the EPL, there are 21 forwards, 25 midfielders, and 14 defenders. This can be seen in percentages in Figure 5 below.

Figure 5: Positional Spread in Dataset By Percentage
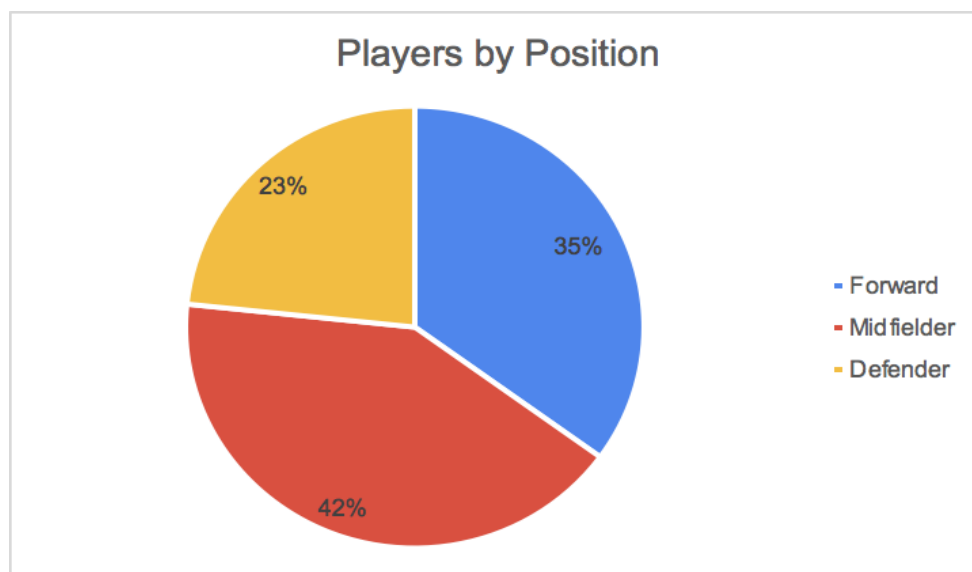
Figure 6 shows the averages and 95% confidence intervals of the superstar players by position. "1" are forwards, "2" are midfielders, and "3" are defenders. Forwards average a salary

Figure 6: Average Salary and Market Value By Position

```
. by pos, sort:ci means salary
```

-> pos = 1

Variable	Obs	Mean	Std. err.	[95% conf. interval]	
salary	21	1.53e+07	1521849	1.21e+07	1.85e+07

-> pos = 2

Variable	Obs	Mean	Std. err.	[95% conf. interval]	
salary	25	1.26e+07	1027273	1.05e+07	1.47e+07

-> pos = 3

Variable	Obs	Mean	Std. err.	[95% conf. interval]	
salary	14	1.19e+07	1250668	9168586	1.46e+07

```
. by pos, sort:ci means markval21
```

-> pos = 1

Variable	Obs	Mean	Std. err.	[95% conf. interval]
markval21	21	6.43e+07	8963940	4.56e+07 8.30e+07

-> pos = 2

Variable	Obs	Mean	Std. err.	[95% conf. interval]
markval21	25	5.12e+07	6180047	3.84e+07 6.39e+07

-> pos = 3

Variable	Obs	Mean	Std. err.	[95% conf. interval]
markval21	14	4.48e+07	6223109	3.14e+07 5.83e+07

of $15.3 million, midfielders a salary of $12.6 million, and defenders a salary of $11.9 million.

As for market value, forwards average $64.3 million, midfielders $51.2 million, and defenders

$44.8 million. These same results can be seen in bar graph form in Figure 7 below.

Figure 7: Bar Graphs of Average Salary and Market Value by Position
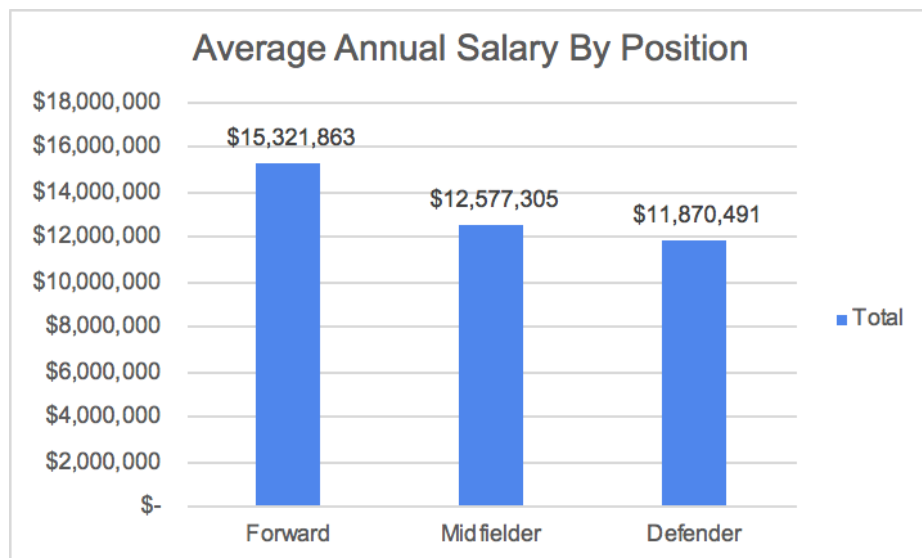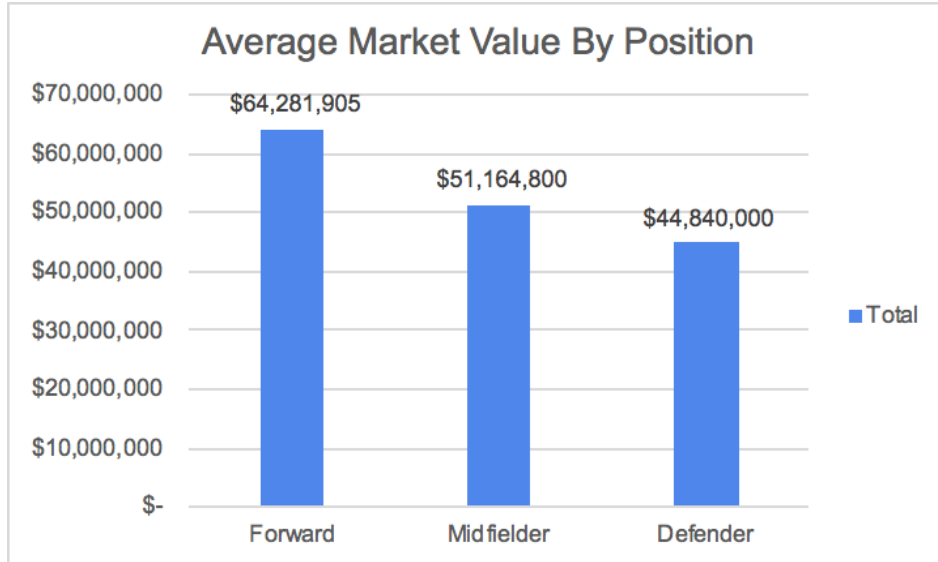
Despite being a small dataset, the findings here are consistent with previous literature from other European leagues. Forwards and midfielders are systematically valued more than defenders in terms of salary and market value. Forwards demand the highest salaries and have the highest market values out of any position. Forwards Cristiano Ronaldo and Harry Kane's high valuations are prime examples of this pattern.

Figure 8 shows the averages and 95% confidence intervals of being on a "Big Six" team or being on another team. "1" means that a player is a part of the Big Six, while "2" means that they are not a part of the Big Six. In this dataset, 53 players were on Big Six teams while 7 players were on other Premier League teams. That means the Big Six represents a whopping 88.33% of the top 60 superstars in the Premier League.

Figure 8: Averages by Big Six Club Variable

```
. by bigsix, sort:ci means salary

-> bigsix = 1
    Variable |        Obs        Mean    Std. err.      [95% conf. interval]
    salary   |         53     1.40e+07     820207.4      1.23e+07    1.56e+07

-> bigsix = 2
    Variable |        Obs        Mean    Std. err.      [95% conf. interval]
    salary   |          7      8854114    211854.1       8335726     9372503


. by bigsix, sort:ci means markval21

-> bigsix = 1
    Variable |        Obs        Mean    Std. err.      [95% conf. interval]
   markval21 |         53     5.78e+07     4675904      4.84e+07    6.72e+07

-> bigsix = 2
    Variable |        Obs        Mean    Std. err.      [95% conf. interval]
   markval21 |          7     2.78e+07     5966254      1.32e+07    4.24e+07
```

The average salary for a player in the Big Six is $14 million, while for a player not in the Big Six it is $8.85 million. The average market value for a player in the Big Six is $57.8 million, while for a player not in the Big Six it is $27.8 million. This analysis supports the assumption that the Big Six have exclusive access to the best superstar players, and players on Big Six teams are valued much higher than players on other teams.

From the descriptive statistics, we can prematurely derive some insights regarding the superstar question in the EPL. Supporting previous studies cited in the literature review, forwards and midfielders command a higher salary and market value than defenders, and the Big Six clubs hold exclusive access to the best players.

Results

The empirical analysis from this model are two multivariate regressions including all the dependent, control, talent, popularity, and talent/popularity combined variables. One regression has annual salary as the dependent variable, while the other regression has the market value as the dependent variable. This analysis was done using the program Stata.

Salary Regression

Figure 9 below shows the robust version of the annual salary regression. Multicollinearity was tested for using the variance inflation test (VIF), and the final result was a mean VIF of 2.52, meaning there is no multicollinearity. The natural log was used for the dependent variable salary because of its log-linear distribution as shown before in Figure 3. This means the coefficients in Figure 9 are percentages, as supposed to dollar values. The normality test of the model results in a normal distribution and can be seen in Figure 10 below. The final R-squared value of the salary

Figure 9: Annual Salary Regression

```
. reg lnsalary i.pos i.bigsix age rating goals assists igmay21 fifa21, robust

Linear regression                               Number of obs   =         60
                                                F(9, 50)        =      24.90
                                                Prob > F        =     0.0000
                                                R-squared       =     0.5453
                                                Root MSE        =     .27323
```

lnsalary	Coefficient	Robust std. err.	t	P>|t|	[95% conf. interval]	
pos						
2	−.2218281	.0973985	−2.28	0.027	−.4174586	−.0261975
3	−.1797011	.1138589	−1.58	0.121	−.4083935	.0489913
2.bigsix	−.2366257	.0926356	−2.55	0.014	−.4226897	−.0505617
age	.004545	.0098409	0.46	0.646	−.0152211	.0243111
rating	.3012863	.1719813	1.75	0.086	−.0441483	.6467209
goals	−.0151081	.0079686	−1.90	0.064	−.0311134	.0008972
assists	.0117231	.0124679	0.94	0.352	−.0133194	.0367657
igmay21	3.35e−09	9.60e−10	3.48	0.001	1.42e−09	5.28e−09
fifa21	.0276286	.0108809	2.54	0.014	.0057736	.0494836
_cons	11.99768	1.224768	9.80	0.000	9.537659	14.45769

Figure 10: Normality Test
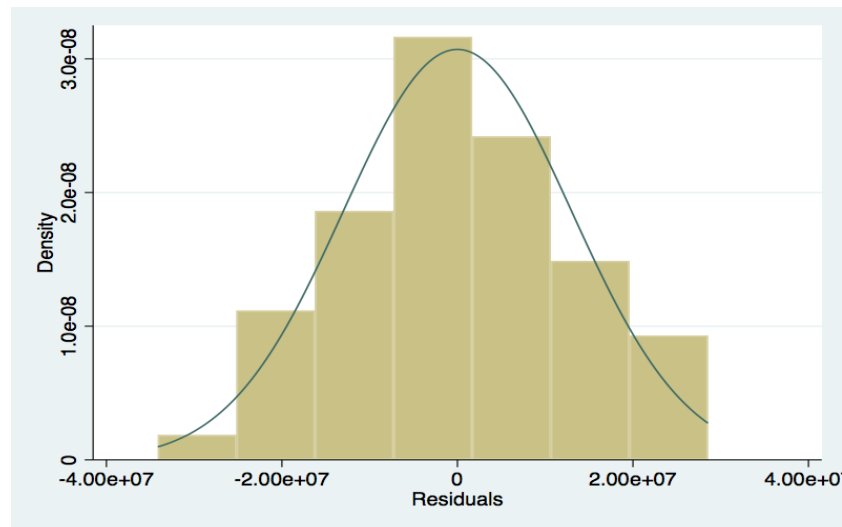
regression is high at 0.54, displaying a good model fit and association with the data.

Market Value Regression

Figure 11 shows the robust version of the market value regression. No multicollinearity

was found with a mean VIF of 2.52. The normal distribution shown in Figure 10 also applies to

this market value regression. The natural log of the dependent variable market value was not

used because it is already normally distributed, as shown in Figure 4. This means the coefficients

are in dollar amounts, as opposed to percentage amounts like in the salary regression. The final

R-squared value is 0.85, displaying a very strong and even greater model fit than the salary

regression.

Figure 11: Market Value Regression

```
. reg markval21 i.pos i.bigsix age rating goals assists igmay21 fifa21, robust

Linear regression                              Number of obs   =          60
                                               F(9, 50)        =       27.65
                                               Prob > F        =      0.0000
                                               R-squared       =      0.8520
                                               Root MSE        =      1.4e+07
```

markval21	Coefficient	Robust std. err.	t	P>|t|	[95% conf. interval]	
pos						
2	8022115	5062921	1.58	0.119	-2147060	1.82e+07
3	3794731	5705495	0.67	0.509	-7665093	1.53e+07
2.bigsix	-3710201	7884366	-0.47	0.640	-1.95e+07	1.21e+07
age	-5046832	714637.6	-7.06	0.000	-6482224	-3611440
rating	2.96e+07	9854011	3.01	0.004	9832441	4.94e+07
goals	973646	459008.1	2.12	0.039	51701.06	1895591
assists	244728.1	659368.9	0.37	0.712	-1079653	1569110
igmay21	-.1185555	.0542499	-2.19	0.034	-.2275196	-.0095914
fifa21	4190394	662659	6.32	0.000	2859404	5521383
_cons	-3.72e+08	7.40e+07	-5.03	0.000	-5.20e+08	-2.23e+08

To easily interpret the two regression models' results we can look at Figure 12.

Figure 12: Salary and Market Value Regression Results

```
. esttab regression1 regression2
```

	(1) lnsalary	(2) markval21
1.pos	0 (.)	0 (.)
2.pos	−0.222* (−2.28)	8022115.5 (1.58)
3.pos	−0.180 (−1.58)	3794730.6 (0.67)
1.bigsix	0 (.)	0 (.)
2.bigsix	−0.237* (−2.55)	−3710201.0 (−0.47)
age	0.00454 (0.46)	−5046832.2*** (−7.06)
rating	0.301 (1.75)	29624803.4** (3.01)
goals	−0.0151 (−1.90)	973646.0* (2.12)
assists	0.0117 (0.94)	244728.1 (0.37)
igmay21	3.35e−09** (3.48)	−0.119* (−2.19)
fifa21	0.0276* (2.54)	4190393.7*** (6.32)
_cons	12.00*** (9.80)	−371890342.7*** (−5.03)
N	60	60

t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Using the p-values to test for statistical significance, we use the number of stars next to a variable in the table. The code is depicted at the bottom of the table, but one star means the

p-value is less than 0.05, two stars the p-value is less than 0.01, and three stars the p-value is less than 0.001. The more stars the more statistically significant the variable is to the model.

According to the regressions, the variables that are statistically significant to a superstar's salary are whether he is a midfielder, whether he is on a Big Six team, his Instagram following, and his FIFA 21 rating. Switching from a forward to a midfielder position had a coefficient of -0.222 meaning that a forward would lose around 22.2% in salary from switching to a midfielder position. Going from a Big Six team to another team had a coefficient of -0.237, meaning that a player would lose around 23.7% of his salary going from a Big Six team to another team. The Instagram following proved to be the most significant variable with two stars. However, it had a coefficient of 3.35e-09, which means that a player's Instagram following has a positive but extremely minuscule impact of 0.00000000335% on a player's salary. Therefore, it can be concluded that while the Instagram following may have an association with the salary dataset as shown in the p-value of two stars, it is actually not significant to a player's salary. The FIFA 21 rating had a coefficient of 0.0276 meaning that one increase in a player's FIFA 21 rating would increase their annual salary by around 2.76%.

The variables that are statistically significant to a superstar's market value are his age, rating, goals scored, Instagram following, and FIFA 21 rating. The age of a player is very significant with a coefficient of -5,046,832 meaning that one increase in age leads to about a $5 million reduction in a player's market value. The play rating also was significant with a coefficient of 29,624,803 meaning that one increase in a player's average play rating led to an increase of about $30 million in market value. Goals scored had a coefficient of 973,646 meaning that every goal scored led to an increase of about $1 million in market value. The

Instagram rating had a coefficient of -0.119, meaning that a player's Instagram following has a

very minuscule negative impact of -0.119 dollars on a player's market value. Therefore, similar

to its relationship with salary, it can be concluded that while the Instagram following may have

an association with the market value dataset as shown in the p-value, it is actually not significant

to a player's market value. The FIFA 21 rating also proved to be very significant with a

coefficient of 4,190,393 meaning that one increase in FIFA 21 rating led to about a $4 million

increase in market value.

Summary of Results

To summarize the regression results, in terms of determining a superstar player's annual

salary, the dummy/control variables position and whether a player is on a Big Six club proved to

be most important. As for determining a player's market value, the talent variables in rating and

goals and control variable age were the most important. The popularity variable Instagram

following was concluded to not be significant for both salary and market value, having a very

minuscule impact in both regressions. What is most interesting is that the combined talent and

popularity variable, the FIFA 21 rating, was the only variable that remained statistically

significant in both of the models, being somewhat significant for salary and very significant for

market value.

Just like any econometric model, there is always room for improvement. This model may

be suspect to model misspecification and have biased coefficients. Other models include aspects

beyond this paper that could improve the results found in this paper. For example, using a dataset

of all the players in the EPL and their salaries and market values along with a quantile regression

technique may improve this model. However, this study was unable to do this due to a lack of

availability and statistical capability. The author encourages other researchers to expand upon superstar phenomenon models and literature in the EPL and sports.

Chapter 4: Conclusion

The results from this study provide us with interesting findings and discussion on the superstar question in the EPL. We can say that like in previous academic research on this topic, both talent and popularity drive the story for superstar compensation, however, the results from this paper suggest that it is mostly talent. The FIFA 21 rating variable is the clearest example of this as it is significant for both salary and market value, but is a variable that is based mostly upon a player's talent. From the results, we can also derive differences between salary and market value as measures of superstar worth.

The annual salary clubs offer their superstar players seems to be more predicated on control variables like position and if a player is on a Big Six club. This means that if a player is looking to maximize their annual salary, it would be best to be a forward and to get on the most popular teams. This makes sense, as the annual salaries a club gives its players are predicated on the amount of revenue the club as a firm is able to generate. Manchester United can offer their players significantly more in annual salary than a lower level EPL club like Norwich City, simply because Manchester United makes so much more revenue. For example, in the 2019/2020 EPL season, Manchester United had a total revenue of $651 million, while Norwich City had a total revenue of $152 million[14]. The finding that annual salary is predicated on control variables can explain why the best players are often taken by the most popular clubs, they are the clubs that can afford to offer the players the most money and fame. The annual salary regression in relation to superstars seems like more of a reflection of the economic environment of the EPL. The Big Six clubs hold substantial market power because they have the most revenue, meaning

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[14] Taken from Statista.com. https://www.statista.com/statistics/566666/premier-league-clubs-by-revenue/

they can attract the best players. Because everybody would rather pay attention to who is considered to be the "best" rather than anyone else, these clubs also get the most eyeballs, which also means more revenue. It seems that the annual salary is more of a measurement of a club's financial capability when it comes to paying their players wages, not a talent indicator of the player. Yes, it is most likely that the highest-paid players on the best teams are the most talented. However, in terms of strictly on-field production, there may be players who outperform the superstars but are not nearly as well compensated. Annual salaries of players compared to their on-field production can provide insight into what players are deemed "overrated" and "underrated".

The market value figure seems to be more predicated on the talent of a player. The transfermarkt.com market value is a speculative figure based on the assumed potential of a player by a group of experts. It seems that the age and talent of the player are most important when it comes to assessing a player's potential. Age is very important, as the assumption that as players get older their bodies won't be able to function as well remains consistent throughout superstar literature and this model. The talent in terms of play rating and goals are important as well, showcasing that the market value is a figure that values the specific on-field performance a player brings. This can also be seen in the FIFA 21 variable having three stars for market value. The emphasis on talent the transfermarkt.com market value has can be a reason why international clubs use it as an anchor value when it comes to buying and selling players. It seems that sports analytics has become significant in terms of how the soccer industry values its players. Digital anchors like the transfermarkt.com value and whoscored.com rating are representations of this growing reliance on sports analytics.

The popularity variable, a player's Instagram following, did show association with the data and therefore had significant p-values, but the coefficients of its impact on annual salary and market value were minuscule, and therefore can be determined as not significant to both the annual salary and market value. This is interesting because there is evidence that clubs can benefit from a player's social media influence. A prime example of this is the blockbuster signing of Cristiano Ronaldo to Italian club Juventus in 2018 for a record 100 million euros. Within the first day, "the team sold 520,000 shirts bearing Ronaldo's name within just 24 hours of the merchandise being released" (Hess 2018). This resulted in at least $60 million in sales for the kit sponsor Adidas, with Juventus receiving an estimated amount of about 6-9% of that, resulting in $6 to $9 million. From a club's standpoint, if signing a player like Ronaldo can have financial results like this only on the first day, it is definitely a worthy endeavor. However, Ronaldo is definitely an outlier in terms of popularity, he is the second most followed person in the world on Instagram with 415 million followers as of March 2022. Although a clear premium on popularity exists and can be used to a club's advantage, it seems that it is only in those absolutely rare cases of when a club signs a player of Ronaldo's status. Argued as one of the best players of all time, Ronaldo is a "super superstar". Maybe Instagram following only has this type of impact on these "super superstars". This would support Borghans and Groot's analysis of superstar monopolistic rents. The players like Ronaldo who are in the absolute number-one positions in their industry can exploit their influence. What their analysis failed to realize is that clubs may be able to benefit from the player's market power too, specifically by leveraging their immense popularity, in Juventus and Ronaldo's case his 415 million followers. However, this case should not be considered the norm for the top players in the EPL. It seems to be truly the

players who are in the number one position that this outcome is possible for both the player and the club.

The FIFA 21 rating provides us with an interesting discussion as it is statistically significant for both the annual salary and market value models. FIFA seems to be another good anchor for assessing a player's talent, acting similar to the transfermarkt.com market value. The high correlation between FIFA player ratings and a player's agreed-upon market value is something clubs and players should notice. For players, they should do all they can to bargain for higher FIFA ratings, as it could lead to higher annual salaries and market values. The best way to do this is by increasing on-field performance statistics as FIFA ratings are based on real-life performance. However, it is unknown if there are scandalous practices players may take in bargaining with FIFA's creator company, EA Sports. As for clubs, they should look to FIFA as another "digital anchor" for player talent. FIFA is very detailed in its performance ratings, and even issues out consistent in-game "player upgrades" based on real-life results throughout the game every year. It would be beneficial for clubs to keep track of these player upgrades which may play a factor in their decision to sign or release a certain player. Clubs may gain an advantage by noticing a player's increasing performance as depicted through FIFA ratings. The conversation about how well the digital world reflects the real world is beyond the scope of this paper. However, FIFA is an example of how a curated digital world based on the real-life performance of a certain market, in this case soccer, impacts and even changes the landscape of that market in the real world. The transfermarkt value and FIFA ratings are doing something right when it comes to player valuation. It seems that with the rapid increase of technology use

amongst consumers, at least for sports, the digital world will play an increasingly important role in determining player potential and influencing club decisions.

From our regression model results and analysis, we can also conclude a couple of distinctions between how annual salary and market value are used. The market value is a very important figure for when a club wants to buy or sell a player and get an estimate of the on-field impact they may have, assuming that other subjective factors like cultural and group dynamic player fit in a team is constant. The annual salary is a figure that is more concerned with the control variables of a player, such as their position, what team they are on, and the financial capabilities of their team. It is important to not deduce the annual salary of a player to only being a "control variable" measure and the market value being only a "talent" measure of superstars. The results from this model show that each dependent variable may sway in one direction, but realistically it is most likely that both talent and popularity drive the story for superstars in the EPL. This can be best seen by the combined talent and popularity variable, the FIFA 21 rating, being the only variable statistically significant for both salary and market value. Talent and popularity are inextricably linked, and it is most likely that talent drives popularity higher.

We can also infer that the findings in the EPL are relevant to other popular European soccer leagues such as the German, Spanish, French, and Italian leagues as well. All these leagues have a similar structure to the EPL's Big Six. In these leagues, there are a few teams that have consistently won, competed in the most prestigious competitions such as the UEFA Champions League, and have access to the best players. Some recent notable examples of these unequal league structures are Barcelona, Atletico Madrid, and Real Madrid in the Spanish League, Bayern Munich in the German league, and Paris Saint Germain in the French league. In

these other leagues it may not be a "Big Six", but a "Big Two or Three". It can be inferred that these teams with similar makeups to the Big Six in the EPL, have similar relationships to talent and popularity when it comes to superstars.

Players want to win games and be compensated for their contributions. The on-field contributions a player makes to a team are the most important for both players and clubs. If players want to earn more compensation they should focus on improving their on-field contributions to a team, which would also most likely increase their popularity. Clubs want to win games and have the best players while remaining financially savvy. One of the best ways to remain competitive in the business of soccer is to win games and earn significant trophies. Typically this is done by obtaining the best players. This is nothing new, and there has always been a competitive race for the superstars of international soccer. The clubs like the Big Six with the most revenue and market power usually win this race for superstar players. While it may be obvious that talent is the main driver of success for a club, the popularity of a player cannot be ignored. It seems that in this new age of social media and the globalization of sports, clubs have already tried tapping into the potential profits they can obtain. The clearest example of this is Juventus' gamble on signing Ronaldo in 2018. After the first 24 hours of that signing, the Juventus owners not only got one of the most talented and prolific players in the world, but were able to strategically profit from the immense market a player of that status carries. However, this is an outlier example, and may only work with players like Ronaldo who are considered gods of the sport and "super superstars".

Talent and popularity will always be inextricably linked in a market based on performance like sports. However, specifically the way talent and popularity is linked is

important for players, clubs, and observers to understand. The regular fan can utilize the talent popularity relationship to better understand the decisions that their favorite clubs or players make. From this paper, it seems that talent reigns supreme, and suggests that superstar players are compensated mostly because of their talent. There are many "digital anchors" that we can use to get an inside look at how the soccer industry values its players, with the transfermarkt.com value and FIFA ratings being some of the most prominent. However, in the real world, it is likely much more complicated. Behind the decisions of clubs and players at the highest level, there is an ever-evolving and complicated relationship of values considering talent and popularity.

Romantically, we can deduce the findings from this study into the following. Clubs value the players that are able to create a positive emotional effect on their fans. This is usually done by winning and fighting to obtain the best players. Players should focus on their talent because their on-field performance is what mostly delivers happiness to their fans. Players that provide these positive emotions, which is most commonly done by players who help their team win a lot, will be substantially compensated for it, and will most likely increase their popularity along the way. It seems that talent comes first and then popularity follows.

Further Implications

The superstar phenomenon is prevalent in performance markets such as music or acting, and utilizing the analysis from this study may help us understand these markets a little better. Are the highest-paid actors and musicians in terms of salary more predicated on popularity? Are valuations of their performance based on their true performance within their field or do other factors matter? Sports is at an advantage when it comes to understanding its superstar phenomena because the performance of an athlete can be heavily quantified. This can be seen in

numerical talent variables from this study in the forms of goals, assists, and ratings. For markets like music or acting, the performance of the best performers would be much harder to quantify. Much of the enjoyment derived from these types of performers is subjective and not heavily based on "winning" over another, they seek to enrich someone's life through art. Despite the subjective disparity of value between sports and art performances, they both create intense emotions within their fans. It would be interesting to find out if the talent and popularity relationship is similar between the two performance markets.

Future Research

This paper is limited in its scope because it only determines the impactful variables to the valuations of superstar players in the EPL in terms of annual salary and market values. Understanding the driving factors of these immense valuations of superstar players helps us understand superstar economics in sports, but further research can expand on this paper and superstar economic literature as a whole. Certain questions on the superstar phenomenon in soccer remain that other researchers can explore beyond the capabilities of this study. One can ask, what is the impact that signing a superstar has on a club's overall revenue? What is the impact it has on specifically a club's commercial revenue? Does signing superstar players *always* lead to winning success? Are there other impactful factors that lead a soccer team to success beyond the talent of its players? What are the implications of high salary dispersion or equity for a soccer team? These are all questions that soccer superstar phenomenon literature has yet to answer.

Bibliography

Adler, Moshe. 1985. "Stardom and Talent." *American Economic Review* 75 (February): 208–12.

Alvaredo, Facundo, Anthony B Atkinson, Thomas Piketty, and Emmanuel Saez. 2013. "The Top 1 Percent in International and Historical Perspective." *Journal of Economic Perspectives* 27 (3): 3–20. https://doi.org/10.1257/jep.27.3.3.

Bakija, Jon, Adam Cole, and Bradley Heim. 2012. "Jobs and Income Growth of Top Earners and the Causes of Changing Income Inequality: Evidence from U.S. Tax Return Data." Department of Economics Working Paper 2010–22. Department of Economics, Williams College. https://econpapers.repec.org/paper/wilwileco/2010-22.htm.

Borghans, Lex, and Loek Groot. 1998. "Superstardom and Monopolistic Power: Why Media Stars Earn More Than Their Marginal Contribution to Welfare." *Journal of Institutional and Theoretical Economics (JITE) / Zeitschrift Für Die Gesamte Staatswissenschaft* 154 (3): 546–71.

Brandes, Leif, Egon Franck, and Stephan Nüesch. 2008. "Local Heroes and Superstars: An Empirical Analysis of Star Attraction in German Soccer." *Journal of Sports Economics* 9 (3): 266–86. https://doi.org/10.1177/1527002507302026.

Bryson, Alex, Giambattista Rossi, and Rob Simmons. 2014. "The Migrant Wage Premium in Professional Football: A Superstar Effect?" *Kyklos* 67 (February). https://doi.org/10.1111/kykl.12041.

Carrieri, Vincenzo, Francesco Principe, and Michele Raitano. 2018. "What Makes You 'Super-Rich'? New Evidence from an Analysis of Football Players' Wages." *Oxford Economic Papers* 70 (4): 950–73. https://doi.org/10.1093/oep/gpy025.

Coates, Dennis, Bernd Frick, and Todd Jewell. 2016. "Superstar Salaries and Soccer Success:

   The Impact of Designated Players in Major League Soccer." *Journal of Sports Economics*

   17 (7): 716–35. https://doi.org/10.1177/1527002514547297.

Cross, John. 2021. "Football Hooliganism Has Returned to Its Worst and the FA and Police Must

   Act." Mirror. October 18, 2021.

   https://www.mirror.co.uk/sport/football/news/english-football-hooliganism-returned-wors

   t-25242895.

Dan Moskowitz. 2022. "A Look at the 10 Richest People in the World (Updated April 2022)."

   Investopedia. April 2, 2022.

   https://www.investopedia.com/articles/investing/012715/5-richest-people-world.asp.

Fernandez, Gabriel. 2021. "Lionel Messi-Barcelona Contract Details: $674 Million Earnings

   Leaked by Spanish Paper in Bombshell Report" cbssports.com. January 30, 2021.

   https://www.cbssports.com/soccer/news/lionel-messi-barcelona-contract-details-674-milli

   on-earnings-leaked-by-spanish-paper-in-bombshell-report/.

Franck, Egon, and Stephan Nüesch. 2008. "Mechanisms of Superstar Formation in German

   Soccer: Empirical Evidence." *European Sport Management Quarterly* 8 (2): 145–64.

   https://doi.org/10.1080/16184740802024450.

Franck, Egon, and Stephan Nüesch. 2012. "TALENT AND/OR POPULARITY: WHAT DOES

   IT TAKE TO BE A SUPERSTAR?" Economic Inquiry 50 (1): 202–16.

   https://doi.org/10.1111/j.1465-7295.2010.00360.x.

Frank, Robert H, and Philip J Cook. 1995. The Winner-Take-All Society: How More and More Americans Compete for Ever Fewer and Bigger Prizes, Encouraging Economic Waste, Income Inequality, and an Impoverished Cultural Life. New York: Free Press.

Franzini, Maurizio, Elena Granaglia, and Michele Raitano. 2016. *Extreme Inequalities in Contemporary Capitalism: Should We Be Concerned About the Rich?* 1st ed. 2016. Cham: Springer International Publishing : Imprint: Springer. https://doi.org/10.1007/978-3-319-28811-6.

Frick, Bernd. 2008. "Salary Determination in the German 'Bundesliga': A Panel Study," July.

Garcia-del-Barrio, Pedro, and Francesc Pujol. 2004. "Pay and Performance in the Spanish Soccer League: Who Gets the Expected Monopsony Rents?" April.

Hess, Abigail Johnson. 2018. "As Cristiano Ronaldo Joins Juventus the Team Sells $60 Million Worth of His Jerseys in 24 Hours." CNBC. July 19, 2018. https://www.cnbc.com/2018/07/18/juventus-sold-over-60-million-of-ronaldo-jerseys-in-just-one-day.html.

Jewell, R. Todd. 2017. "The Effect of Marquee Players on Sports Demand: The Case of U.S. Major League Soccer." *Journal of Sports Economics* 18 (3): 239–52. https://doi.org/10.1177/1527002514567922.

Kahn, Lawrence M. 2000. "The Sports Business as a Labor Market Laboratory." *Journal of Economic Perspectives* 14 (3): 75–94. https://doi.org/10.1257/jep.14.3.75.

Kalter, F. 1999. "Ethnische Kundenpräferenzen Im Professionellen Sport? Der Fall Der Fußballbundesliga." *Undefined*.

https://www.semanticscholar.org/paper/Ethnische-Kundenpr%C3%A4ferenzen-im-profes
sionellen-Der-Kalter/f2016a7a929b93f71448c350be19c9dda1e22eb8.

Knueven, Liz. n.d. "The Average Net Worth in America by Age, Race, Education, and

Location." Business Insider. Accessed April 28, 2022.

https://www.businessinsider.com/personal-finance/average-american-net-worth.

Kuethe, Todd H., and Mesbah Motamed. 2010. "Returns to Stardom: Evidence From U.S. Major

League Soccer." *Journal of Sports Economics* 11 (5): 567–79.

https://doi.org/10.1177/1527002509354268.

Kuhn, Peter, and Catherine Weinberger. 2005. "Leadership Skills and Wages." Journal of Labor

Economics 23 (3): 395–436. https://doi.org/10.1086/430282.

Lehmann, Erik, and Gunther Schulze. 2008. "What Does It Take to Be a Star? – The Role of

Performance and the Media for German Soccer Players." *Applied Economics Quarterly
(Formerly: Konjunkturpolitik)* 54 (February): 59–70.

Lucifora, Claudio, and Rob Simmons. 2003. "Superstar Effects in Sport: Evidence From Italian

Soccer." *Journal of Sports Economics* 4 (1): 35–55.

https://doi.org/10.1177/1527002502239657.

MacDonald, Glenn M. 1988. "The Economics of Rising Stars." *The American Economic Review*

78 (1): 155–66.

Rosen, Sherwin. 1981. "The Economics of Superstars." *The American Economic Review* 71 (5):

845–58.

Scarfe, Rachel, Carl Singleton, and Paul Telemo. 2021. "Extreme Wages, Performance, and Superstars in a Market for Footballers." *Industrial Relations: A Journal of Economy and Society* 60 (1): 84–118. https://doi.org/10.1111/irel.12270.

Smith, Adam. 1776. *The Wealth of Nations*. Penguin. 1982. *The Wealth of Nations: Books 1-3*. 1st edition. London: Penguin Classics.

Smith, Rory. 2021. "The Wisdom of the Crowd." *The New York Times*, August 12, 2021, sec. Sports.

https://www.nytimes.com/2021/08/12/sports/soccer/soccer-football-transfermarkt.html.

Walker, Charlie. 2022. "Prem Dominates Bundesliga and La Liga Attracting 3.2BN TV Viewers." Mail Online. January 17, 2022.

https://www.dailymail.co.uk/sport/sportsnews/article-10409843/Premier-League-dominates-Bundesliga-Ligue-1-La-Liga-Serie-attracting-3-2-billion-TV-viewers.html.

Wilson, Dennis P., and Yung-Hsiang Ying. 2003. "Nationality Preferences for Labour in the International Football Industry." Applied Economics 35 (14): 1551–59. https://doi.org/10.1080/0003684032000010048.