Bryant University

HONORS THESIS

Footballer Valuations: Valuing World-Class Football Players Against Transfer Fees

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ABSTRACT

This paper aims to create a model to value European football players. It will do so by comparing a player's transfer fee and then measuring their value based on performances in the season after the transfer has occurred. The model will be applied to Europe's top five leagues: the English Premier League, Serie A, La Liga, Ligue 1, and the German Bundesliga. This study takes variables from multiple past studies to be used in the model, and adds a valuation for goalkeepers, which has never been done before. The goal of this study is to measure the variables that contribute to players' transfer fees, and hopefully then be able to use the model prospectively to estimate the value of players.

INTRODUCTION

Soccer, known globally as football, is the world's most popular sport. The world's biggest clubs have been established for well over a century, creating a deep-rooted passion for fans all over the globe. Football has evolved as times have changed. For example, when the television was available for households, fans around the world were able to watch their team play instead of only listening on the radio. Most recently, as global coverage and social media have become a prominent part of football fan's lives, the game has changed even more. The last World Cup, which took place in Russia in 2018, tallied a total of 3.5 billion viewers worldwide (FIFA). To put that into perspective, only around 100 million people worldwide viewed the Super Bowl (Stelter 2019). Football clubs' players, now have fans from places all around the world, and footballers have become stars off the pitch. With this has come an exponential rise in the salaries and worth of football players. In the top leagues across the globe, the average salary is above one million dollars per year (Lange 2020). However, this comes with a large variance where some players are paid up to one hundred times others in the same league. This creates difficulties when assigning a monetary value to these players. Football clubs were originally started as local teams, and the players were not paid, having to work day jobs to pay their bills. Now, clubs such as Manchester United, Celtic, Juventus, Borussia Dortmund, Lazio, Roma, and many others have become publicly traded companies. The world's most famous and talented players are becoming more than just athletes, and this has seen Cristiano Ronaldo become the world's first billionaire footballer in history.

Many argue that the sport known as the beautiful game has turned into too much of a business, only increasing the importance of properly valuing players. In the 2011-2012 season, UEFA, the organization that oversees European football clubs, passed the financial fair play rule (FFP). The rule stated that a club was not allowed to spend more money in a transfer window than they earned in revenues for the year. The transfer window is a time where players can be purchased by other clubs, occurring every year for the entire month of January and again from the end of July to the beginning of October. The idea of FFP was to prevent wealthy owners from buying clubs and taking losses on their financial statements for a few years while personally funding the purchasing of world-class players. As the game became globalized, the powerhouses of world football were established.

LITERATURE REVIEW

This study will aim to create new valuation models on a per player basis, that can then be used to help selling clubs properly value the players they are selling and buying clubs not overpay for players they are purchasing. The models will have numerous variables, and some will differ based on the position of the player being valued.

Herm et al. (2017) aimed to understand the relationship between crowd-based judgements and a player's market value. The player characteristics studied were the player's age, height, footedness, nationality, and position. Player performance was measured by the number of minutes played, goals, assists, and yellow or red cards per season. Four Internet metrics where then used to measure player popularity: the number of times a player's Wikipedia page was viewed, how often a player's name was searched on Google, the number of times a player's name appeared in the "soccer" forum on Reddit, and how many videos about a player were shared on YouTube. Overall, the community's estimates can largely be predicted using an econometric model that contains two blocks of determinants: talent-related measures and variables that result from judgments of external experts (e.g., coaches or journalists) and Transfermarkt (global hub for football information) has been able to successfully determine the market value of a player. The study was also able to conclude that the observable variation in transfer fees can largely be explained by the same variables that also affect player salaries, meaning that once players are properly valued their salaries would theoretically reflect that.

Kalen et al. (2019) looked at players who competed in Champions League from 1992-2018 and wanted to find an aging trend in players competing in the competition. The main finding showed that an aging trend has occurred in the last three decades in the Champions League. A significant increase in average players' age (>1.6 years) was observed, rising from an age of 24.9 to 26.5 years. Goalkeepers and Center Backs tend to peak later than attackers, and their peak performance can last until an age of about 31 years. This is best shown by an inverted-U curve, depicting the association between market value and age, with peak value appearing in the 26–30 age range. These results provide useful information regarding at which age soccer players are likely to perform at the highest level, as well as the age they are likely to have the highest market value. Previous studies have demonstrated that professional soccer players

peak around their mid-20s; however, that age has increased with time. This correlates to Felipe, Fernandez-Luna, et al. (2020), where a player's market value was based on an algorithm, using virtually the same variables from the studies above. The analysis revealed there is a higher economic value for players in teams at the top of the table in comparison to teams situated at the bottom of the league. Players playing on teams competing in Champions League are of higher value than those not playing in it. Based on position on the field, this study found that attacking midfielders are the most valuable players by position, followed by forwards. The study also found that players in the Premier League (English top-flight) are of higher value than those playing in other top-flight leagues across Europe. Overall, the analysis concludes that players playing on a UEFA Champions League team in the Premier League, playing as an attacking midfielder are the most economically valued football players in the world. Many studies have found strikers/forwards to be the most valuable players on a football team, however similar to Pelechrinis & Winston (2018) this study found midfielders to be the best valued player for a team.

Lucifora et al. (2003) looked to understand the superstar phenomenon in Italian soccer. The study aimed to do so by looking at players from the 1995/1996 season in Serie A and Serie B (Top and second flight of football in Italy). The study looks to value players to their clubs, acknowledging that a player who plays on a bigger, more successful club may be perceived as more talented than a player who plays on a slightly smaller club. Similar to Kalen et al. (2019), which also concluded that a factor in determining a player's market value is the position of their team in their league. The median earnings were approximately 254 million lira (at 1995 prices) for non-international players, in any outfield position, who have career goal-scoring rates in Serie A less than 0.2. In contrast, the median forward player with a Serie A record of 0.2 or more goals per game commands 1,157 million lira. This comparison shows the difference in earnings based on the performance measure of scoring goals. Forward players in Serie A who have scored goals are paid more than 3 times as much as other players. This reveals a highly unequal distribution between players and shows that the most important statistic to fans is scoring goals. Pelechrinis & Winston (2018) and Kalen et al. (2019) found that the players who were scoring the most goals and providing the most assists were the highest valued players. This study will aim to create models that take away the heavy reliance

on goal scoring and assisting for players, meaning that defenders and goalkeepers can also be properly valued. Also, similar to Herm et al. (2017) this study concluded that a star player has a higher wage, which is directly correlated to the transfer fee of that player. Within top-flight European soccer, a goalscoring rate of 1 goal in every two games would be regarded as prolific, and strikers accomplishing this have gained value in fans eyes, leading to a higher value in their market and transfer values. The gained value from scoring goals also has increased popularity. At the time when this study was published there was no social media, however players scoring goals appeared more time on television shows and programs.

He et al. (2015) aimed to find the relationship between market value and the performance of players. Transfermark and WhoScored were the main sources used to gather data about player performance and personal data. The study looked at data for La Liga (Spanish top-flight), for the first half of season 2014/2015. The Lasso model created in this study had the following variables: (F) few fouls, shots and goals in penalty area (SP&GP), shots on Target (ST), goals from out of box (GB), dribble successfully (D), and assists total (A). Based on these variables, forwards were once again seen as the most valuable players.

Bryson et al. (2013) analyzed the impact of two-footedness on earnings and values of professional football players. Two-footedness is the ability to play with both feet and not have a designated dominant and weaker foot. It is crucial because there is an aspect of each footballer's game that is improved from this. The study looked at two data sets; for data set 1 information was captured from Transfermarkt and was looking at players from the 2005/2006 season under contract in the big five European leagues. Data set 2 was a Bundesliga (German top-flight) cohort from the 2005/2006 season. Both data sets were able to conclude that two-footed players are older, on average, and score more goals per game. For data set 1 and 2, respectively, there is an 18.6% and 13.2% increase in the value of players who are two-footed, showing that two-footedness increases performance and player value across all leagues. These findings are similar to those of (Muller, et al. 2017), who also found a positive correlation between two-footedness and player value. Two footedness is crucial because it adds to a player's market value, regardless of their position of on the field or their club's position in

their league. Similar to He et al. (2015) this study was able to provide proof of another performance metric that can be used to value players at all positions on the field.

METHODOLOGY

This study will aim to create a new valuation model on a per player basis, that can then be used to help selling clubs properly value the players they are selling and buying clubs not overpay for players they are purchasing. Player who are transferred in July (before the beginning of a new season) of 2018, will be measured for their new club. Measurements will be taken from the players performance in their domestic league, domestic tournaments, and European competitions. In addition, loan players will not be accounted for, as they are technically still under contract with their old club. This study will be different from past studies as it will have a different model for each position on the field. This will allow for the valuation of goalkeepers, and a more accurate valuation for defenders, which has not been done in the past.

The accuracy of player valuation models is crucial; however, they only hold value if football clubs and managers can use them to their advantage. Different football clubs play different formations based on the style of play the manager desires and the players at their disposal. Below is a basic 4-4-2 formation in soccer, which includes a goalkeeper (not included in the 4-4-2), four defenders (4), four midfielder (4), and two forwards/strikers (2). While there are numerous formations, for the purpose of this paper it is only important to understand the different categories (goalkeeper, defender, midfielder, forward) of positions on the field.

Because of the importance and differentiation between positions, this study will have four different valuation models, one for each category of position.

<u>Goalkeepers</u>

Transfer fee = β_1 + β_2 X Age + β_3 X Height + β_4 X Popularity + β_5 X Two-footedness + β_6 X Minutes played + β_7 X Games played + β_8 X Yellow cards + β_9 X Red cards + β_{10} X Fouls + **β_{11} X Goals conceded + β_{12} X Clean sheets**

<u>Defenders</u>

Transfer fee = β_1 + β_2 X Age + β_3 X Height + β_4 X Popularity + β_5 X Two-footedness + β_6 X Minutes played + β_7 X Games played + β_8 X Yellow cards + β_9 X Red cards + β_{10} X Fouls + β_{11} X Tackles won + β_{12} X Interceptions + β_{13} X Blocks + β_{14} X Clearances+ β_{15} X Assists + β_{16} X Goals + β_{17} X Ariels won

<u>Midfielders</u>

Transfer fee = β_1 + β_2 X Age + β_3 X Height + β_4 X Popularity + β_5 X Two-footedness + β_6 X Minutes played + β_7 X Games played + β_8 X Yellow cards + β_9 X Red cards + β_{10} X Fouls + β_{11} X Pass success percentage + β_{12} X Passes per game + β_{13} X Key passes per game + β_{14} X Assists + β_{15} X Goals

<u>Forwards</u>

Transfer fee = β_1 + β_2 X Age + β_3 X Height + β_4 X Popularity + β_5 X Two-footedness + β_6 X Minutes played + β_7 X Games played + β_8 X Yellow cards + β_9 X Red cards + β_{10} X Fouls + β_{11} X Pass success percentage + β_{12} X Shots per game + β_{13} X Ariels won + β_{14} X Assists + β_{15} X Goals

METHODOLOGY

In recent years a German website called Transfermarkt (https://www.transfermarkt.us/) was created. It is a global home for football information. It holds basic personal data on players, their statistics, and most importantly a market value. Transfermarkt has a hierarchical method to filter and narrow down their data to make it more reliable. Data is entered, altered, and refined by users, friends, experts, data scouts, moderators, and superadmins. The users can talk about any player, manager, or team they wish with a free account. Friends have access to more exclusive data for a ten Euro fee. Experts evaluate rumors and inputs from users and friends. Data scouts are data administrations that support users and refine the data to keep it up-to-date and relevant. Moderators manage any infractions within the site, and lastly superadmins are hired employees of Transfermarkt GmbH & Co. KG, and they oversee the entire website. The hierarchy of the business organization is an effective way of getting mass data inputs and narrowing it down to the most proper and accurate data. Both (Herm et al. 2014) and (Muller et al. 2017) concluded that Transfermarkt is the most accurate source of information in world football.

The next most accurate source of world football information is WhoScored (https://www.whoscored.com/). He et al (2015) acknowledges it as elite, along with Transfermarkt. WhoScored is based out of London, England, and is made up of a team of football analysts and software developers with backgrounds in the sector. Transfermarkt's hierarchy of collecting data makes it regarded as the best, and most accurate source for data collection, but WhoScored's use of professionals makes it a close second. This study will collect data from both Transfermarkt and WhoScored.

For the models of this study, here is a breakdown of which metrics will be taken from Transfermarkt and WhoScored. Transfermarkt will provide data for age, height, minutes played, games played, yellow cards, red cards, clean sheets, goals conceded, goals, and transfer value. WhoScored will provide data for tackles won, interceptions, blocks, clearances, assists, ariels won, pass success percentage, passes per game, key passes per game, and shots per game. Lastly, the list of players transferred and where they were transferred to and from comes from the Guardian. The Guardian is a British daily newspaper.

It was founded in 1821 as The Manchester Guardian and changed its name in 1959. Along with its sister papers The Observer and The Guardian Weekly, The Guardian is part of the Guardian Media Group, owned by the Scott Trust. The importance of soccer in England has made the Guardian important for scores and headlines, even though it is not the hub for statistics on players.

Player characteristics will follow (Herm et al. 2017) closely, and the variables will be player age, height, and popularity. Popularity will be measured by using Google Trends (https://trends.google.com/trends/explore?q=%2Fm%2F02wxzm). Google Trends will measure how popular, or frequent each player was searched in the last five years, globally, compared to Cristiano Ronaldo. Players will be assigned a number 1-3 based on their results; one being not popular, 2 being average popularity, and 3 being popular.

The player performance measures will be following (He et al. 2015) and (Bryson et al. 2013), as the measures used are two-footedness, minutes played, games played, yellow cards, red cards, and fouls. The two-footedness measure is a dummy variable in the model and will be measured using fifauteam (https://www.fifauteam.com/). Fifauteam measures a player weak foot ability based on a one to five-star rating (one being the worst and five being the best). The idea behind the five stars is to measure the percentage a footballer can use their weak foot compared to their dominant foot, with each star representing twenty percent. This study will consider all four and five weak foot players two-footed.

The characteristics listed above are constant in all four of the models, however, each model has position specific variables based on the different tasks performed throughout a match by each position. Goalkeepers have the addition of goals conceded and clean sheets, which measure the number of goals scored on them and the number of games in which they allowed zero goals to be scored on them, respectively.

Defenders have the addition of tackles, interceptions, blocks, clearances, ariels won, goals, and assists. Tackles represents the number of times the defender challenges for the ball while a player on the opposing team has possession. Interceptions represents the number of times in a match when the defender steals a pass between two players from the opposing team. Blocks

represents the number of times the defender gets in front of a shot taken by a player on the opposing team, blocking the ball from going towards their goal. Clearances represent the number of times in which a defender moved the ball from a danger area (their own third of the field), to the midfield or their attacking third of the field. Lastly, goals and assists measure the number of times the defender scores or assists a goal, respectively.

Midfielders also have the addition of goals and assists, along with pass success percentage, passes per game, and key passes per game. The pass success percentage represents the number of completed passes divided by the number of pass attempts in a match. The passes per game represents the number of completed passes in a match, and the key passes per game represent the number of passes completed which lead to an attacking opportunity or goal for the team.

Lastly, forwards have the addition of goals, assists, shots per game, pass success percentage, and ariels won. The shots per game is a measure of the number of shots the forward successfully places on the other team goal.

The different measures included for the various positions on the field will help measure a player's ability to perform their duties for their team. For goalkeepers, this primarily means keeping the ball out of their own net. For defenders, the main purpose is to shut down attacks from the opposing team. For midfielders, it is to make key passes and control the tempo of the game. For strikers it is to score goals.

RESULTS

The study consisted of 271 players. Keepers represent 42 players in the study, while defenders, midfielders, and forwards represent 67, 89, and 73 players, respectively.

Keepers

Table 1 presents summary statistics for goalkeepers.

Variable	Observation	Mean	Std. Dev.	Min	Max
Transfer Fee	42	7.37	15.86	0	71.6
Age	42	28.76	10.11	19	86
Height	42	1.91	.39	1.82	2
Popularity	42	1.1	.3	1	2
Minutes Played	42	1854.79	1466.09	0	4590
Games Played	42	20.67	16.31	0	51
Yellow Cards	42	.86	1.28	0	6
Red Cards	42	.48	.22	0	1
Fouls	42	1.29	1.63	0	8
Goals Conceded	42	24.71	20.95	0	71
Clean Sheets	42	6.48	5.6	0	27

Table 1

Keepers had the lowest average transfer fee by position, at 7.37 million Euros.

Table 2 presents keepers by popularity.

Popularity	Freq	Percent	Cum.
1	38	90.48	90.48
2	4	9.52	100
Total	42	100	

Table 2

As seen above, over 90% of keepers are not popular. A select few are average popularity and there are none from this study that are popular.

Table 3 presents keepers OLS regression.

Transfer Fee	Coefficient & Std. Err.
Age	-.26 .17
Height	-48.73 47.04
Popularity	34.32*** 7.18
Minutes Played	.08 .06
Games Played	-6.62 5.59
Yellow cards	-2.23 4.5
Red Cards	15.21 10.66
Fouls	.97 3.54
Goals Conceded	-.12 .47
Clean Sheets	.14 1.29

Table 3

Only two variables proved to be statistically significant, popularity and goals conceded. Popularity shows that for every whole number increased on the 1-3 popularity scale, a keeper's transfer value will increase by 34.32 million Euros. For goals conceded, every goal conceded decreases the keeper's transfer value by .12 million Euros. Though they were not 90% or above statistically significant, age and red cards were close. The higher the keeper's

age decreases their transfer value. I attribute this to the extreme athleticism needed to play the position, which naturally decreases with age. One might assume that red cards are harmful to a team, but in the case of keepers, they increase their transfer value. I attribute this to the aggressiveness that is required to the position. Fans and managers often see keeper's red cards as strategic or even a means to bring more enthusiasm to a game.

Defenders

Table 4 presents defenders summary Data.

Variable	Observation	Mean	Std. Dev.	Min	Max
Transfer Fee	67	8.15	9.34	0	35.5
Age	67	25.61	3.87	19	38
Height	67	1.84	.06	1.68	1.99
Popularity	67	1.07	.26	1	2
Two-Footedness	67	.21	.41	0	1
Minutes Played	67	2231.93	1130.66	202	4510
Games Played	67	28	11.79	4	50
Yellow Cards	67	5.09	3.32	0	16
Red Cards	67	.24	.46	0	2
Fouls	67	.92	.33	.1	1.8
Tackles Won	67	1.67	.77	.4	5
Interceptions	67	1.32	.63	0	2.95
Blocks	67	.45	.31	0	1.2
Clearances	67	3.02	1.6	.6	7.4
Assists	67	1.34	1.68	0	9
Goals	67	1.28	2	0	14
Ariels Won	67	1.75	1	0	5

Table 4

Defenders have the most minutes played, which I attribute to them being the least substituted per game.

Table 5 presents defenders by two-footedness.

Two-Footedness	Freq.	Percent	Cum
0 (NO)	53	79.1	79.1
1 (YES)	14	20.9	100

Table 5

Most defenders do not have two-footedness.

Table 6 presents defenders OLS regression.

Transfer Fee	Coefficient & Std. Err.
Age	-.92*** .3
Height	31.91 20.99
Popularity	5.93 4.01
Two-footedness	3.5 2.62
Minutes Played	0 0
Games Played	-.08 .44
Yellow Cards	.3 .41
Red Cards	.28 2.44
Fouls per Game	4.12 3.58
Tackles Won	.21 1.58
Interceptions	-4.11** 1.92
Blocks	10.35** 4.73
Clearances	-1.25 1.36
Assists	1.96*** .73
Goals	-.73 .63
Ariels Won	.93 1.7

Table 6

Age proves to be statistically significant, showing that the defender's transfer value decreases by .92 million Euros each year that they age. Interceptions is statistically significant, however, its effect on transfer value is in the opposite direction that I hypothesized. I attribute this to a differentiation in definition of interception from the data collection done by WhoScored. I understood interceptions to mean the defender intercepts the other team, but the results suggest that interceptions signify the number of times the defender is intercepted. This would mean that defenders transfer value falls by 4.11 million Euros for each time a pass they play is intercepted. This is logical, as defenders are the last line before opposing attackers face the keeper; meaning that if they misplace passes from their position, the other team gets that ball in a dangerous position of the field. Blocks and assists also increase the transfer value of defenders. Each blocked shot increases their transfer value by 10.35 million Euros, and each assist by 1.96 million Euros. Age height and popularity are all close to being 90% or above statistically significant, and they all raise the defenders' transfer values.

Midfielders

Table 7 presents midfielders summary data.

Variable	Observation	Mean	Std. Dev.	Min	Max
Transfer Fee	89	8.92	11.81	0	52.5
Age	89	26.34	3.63	19	34
Height	89	1.81	.07	1.66	1.96
Popularity	89	1.09	.35	0	3
Two-footedness	89	.42	.5	0	1
Minutes played	89	2040.45	1053.92	50	4391
Games Played	89	28.92	12.3	2	54
Yellow Cards	89	4.76	3.43	0	13
Red Cards	89	.2	.46	0	2
Goals	89	2.48	2.76	0	13
Assists	89	2.6	2.74	0	11
Fouls	89	1.08	.47	.1	2.6
Pass Success Percentage	89	81.16	7.11	54.9	90.45
Passes per Game	89	32.88	15.08	.4	70.15
Key Passes per Game	89	.83	.57	0	2.8

Table 7

Midfielders have the second highest average transfer fee and age.

Table 8 presents midfielders by two-footedness.

Two-footedness	Freq.	Percent	Cum.
0 (NO)	52	58.43	58.43
1 (YES)	37	41.47	100

Table 8

Compared to defenders, midfielders have a significantly higher percentage of players who are two-footed.

Table 9 presents midfielders OLS regression.

Transfer Fee	Coefficient
Age	-.79** .34
Height	-39.92** 19.78
Popularity	6.77* 3.6
Two-footedness	-2.11 2.41
Minutes Played	0 0
Games Played	.53** .25
Yellow Cards	-.68 .54
Red Cards	-3.77 2.68
Goals	.11 .59
Assists	-.56 .66
Fouls	1.57 3.1
Pass Success Percentage	-.17 .2
Passes per Game	.48*** .13
Key Passes per Game	-.78 2.57

Table 9

Age, height, popularity, games played, and passes per game are all statistically significant. Each year a player ages, it decreases their transfer value by .79 million Euros. Midfielders in this study represent the largest population of players, meaning that there are always new

young midfielders. While experience holds its value on the pitch, aging only hurts a midfielder's transfer value. Midfielders are also typically good at dribbling, which is a skill that is easier with a lower center of gravity. Therefore, being taller decreases a midfielder's transfer value. Each number increase on the popularity scale increases a midfielder's transfer value by 6.77 million Euros. This is because midfielders are usually involved in a teams' goal scoring, whether that be from scoring or assisting. Goals contributions relate to higher popularity. Lasty, each pass per game increases a midfielder's transfer value by .48 million Euros. This is because a midfielder's main function is to control the pace of a game, which is done through passing.

Forwards

Table 10 presents forwards summary data.

Variable	Observation	Mean	Std. Dev.	Min	Max
Transfer fee	73	12.86	23.06	0	159.3
Age	73	26.4	4	19	40
Height	73	1.82	.07	1.65	1.97
Popularity	73	1.16	.44	1	3
Two-footedness	73	.51	.53	0	2
Minutes Played	73	1908.34	928.22	255	3654
Hames Played	73	31.05	10.65	9	55
Yellow Cards	73	3.6	2.93	0	14
Red Cards	73	.12	.37	0	2
Goals	73	7.97	7.08	0	39
Assists	73	3.59	3.84	0	22
Ariels Won	73	1.31	1.37	0	7.4
Fouls	73	.98	.5	.1	2.5
Pass Success Percentage	73	54.54	7.69	56.8	88.75
Shots per Game	73	1.73	1.66	.2	13.3

Table 10

Forwards have the highest average transfer value, as well as the highest single transfer value in Cristiano Ronaldo.

Table 11 presents forwards by two-footedness.

Two-footedness	Freq.	Percent	Cum.
0 (NO)	37	50.68	50.68
1 (YES)	36	49.32	100

Table 11

Almost half of the forwards have two-footedness, which was not the case for any other positions. Being clinical in front of the opposing team's goal is crucial at this position, making it more important to have two-footedness.

Table 12 presents forwards OLS regression.

Transfer Fee	Coefficient
Age	-.62 .45
Height	3.98 29.13
Popularity	19.49*** 5.35
Two-footedness	-2.52 3.3
Minutes Played	-.01* .01
Games Played	.22 .39
Yellow Cards	.32 .8
Red Cards	15.63*** 5.3
Goals	1.19** .46
Assists	1.44** .68
Ariels Won	2.35 1.72
Fouls	-6.23 5.04
Pass Success Percentage	.29 .26
Shots per Game	-.46 1.12

Table 12

Popularity, minutes played, red cards, goals, and assists are all statistically significant. Each number on the 1-3 popularity scale raises a forward's transfer value by 19.49 million Euros. The effect on popularity is so large because forwards usually carry a lot of the fame for a

team, as they are usually scoring the most goals. Minutes played slightly decreases the forward's transfer value, and I attribute this to the fact that forwards are usually the players who are substituted off during matches. Playing too many minutes can be harmful to the body of a forward, leaving them not as fresh. Each red card received increases forwards' transfer value by 15.63 million Euros. Similarly, to keepers, I attribute this to the energy and intensity that many forwards bring to a team. In addition, forwards are typically fouled the most by the opposing team, meaning that they have more of a temper and less of a tolerance to being fouled at times. Each goal and assist raise forwards' transfer value by 1.19 and 1.44 million Euros, respectively. Assists raise the value of a striker more due to the fact that forwards are expected to score goals but assisting is a rarer skill for the position. This makes a forward that can do both extremely valuable. Age is close to being 90% or above statistically significant, and just like the other positions, older age decreases the transfer value of forwards.

CONCLUSION

The goal of this study was to understand what variables are most important in valuing world class footballers in Europe's top five leagues, by position. The data was collected for the 2018/19 season, which was the season after the player's transfer. I can conclude that strikers are monetarily the most valuable players, and that strikers who score the most goals and proved the most assists are the most valuable players. For all positions, the older a player is, the lower their transfer value will typically be. In addition, I can consider that two-footedness is an important factor in valuing a player. The more the mean transfer value rose by position, the number of players who are tow-footed did as well. In the modern age of technology and social media, I was also able to conclude that popularity carries a large positive effect on a player's transfer value. The players with the most popularity seem to be forwards. I was also able to see the importance of keepers and their shot-stopping abilities to their team, which has not been done in previous studies.

Some recommendations to consider when furthering the study would be to look at the effect of international soccer on players' transfer values. Some players play extra games each year to represent their countries, which effects their availability and energy for their club team. I also recommend looking into the different positions within a position group. For example,

defenders consist of center defenders and outside defends. While the attributes needed to be a defender are largely similar, there are some that may vary depending on which part of the defense a player plays.

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