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Significant Effects on Football (Soccer) Wages

Abstract

For this paper we will analyze the relevancy of various factors and their effects on the pay and performance of soccer players in England. In comparison to other professional athletes, soccer players have relatively strong bargaining power, and are able to negotiate extremely high wages unseen in other sports. In this paper, we will examine what variables have an impact on the wage received by players in the English Premier League, the top flight league in England.

These variables will include:
- Age
- Position (Offense, Defense)
- Do they play for a national team or not
- What position the club finished in the Premier League? (Club finish determines the amount of money the team receives from the league)
- FIFA Rating

Soccer leagues differ from other sports leagues in the way they deal with labor, frequently leading to fairer compensation for athletes relative to the amount of money they generate. This is due to the open market for player talent which exists in soccer leagues, in direct contrast to the significant restrictions on trade seen in, for example, Major League Baseball.

This paper considers the soccer industry as a dual labor market. One segment of this market could certainly be characterized by the traditional analysis of monopsony, in which a small number of clubs are willing to hire many potential candidates. The opposite occurs when studying the case for superstar players: a number of entities (not just Spanish clubs) would fiercely compete to hire a scarce few superstars, thus accumulating market power. In their paper. "Pay and Performance in the Spanish Soccer League: Who Gets the Expected Monopsony Rents?", authors Garcia-del-Barrio and Pujol suggest that the monopsony rents that the clubs would obtain from most of the soccer players "would eventually revert to the superstars" allowing them to enjoy "strong bargaining power" (3-7). This paper is able to demonstrate the significant factors a player or his management would be able to take into consideration when estimating value and negotiating a fair wage.

Introduction

As one of the world's most watched sports, professional football should theoretically have the highest average athlete salary in the world. Within the past few years, the world has seen transfers of players exceeding 100 million dollars with an uppermost bracket of nearly 200 million dollars. Part of the rationale behind these excessive transfer rates is the limited availability of superstar players and the obscenely high wages they demand through monopsony rent. While being a superstar player, one who disproportionately creates ticket revenue, merchandise sales, and long-term broadcasting contracts, is not itself a quantitative measure, the value one brings to an organization can not be understated.

This paper is focused on analyzing the effects of various factors on the wage of professional soccer players in the top flight of English football, the Premier League. While similar studies have previously been conducted using the German Bundesliga and the Spanish La Liga, focusing on the English Premier League allows us to draw conclusions from the most popular and most watched league in the world, giving us more authoritative findings. The metrics and methodology of this study are based off of the research done by the Bundesliga and La Liga papers. In order to obtain our results, we regressed (log) wage against multiple variables, including FIFA rating, age, weekly wage, various positions, and more. Our results confirm that only FIFA rating, age, and age squared are significant factors in determining players' wages. Being a defender was also found to be significant when omitting whether or not they are a forward, perhaps indicating a preference for crowd-drawing, offense generating positions. As a whole, this paper demonstrates the most effective ways in which it is possible to raise or lower players' wages.

Data

We can regard the data in the wage variable as accurate and not subject to error due to the regulations of the Financial Fair Play Act. This requires football clubs to accurately report the salaries of their players. Because of the enforcement of these regulations, wage can now be considered accurate, as opposed to in previous years, when this was not the case.

Table 1 below lists the variable used in this data set to test the impact of each on the given players wage. Among the variables listed is FIFA rating, a combination of other skills that are measured using a machine-learned algorithm.

Table 1

Variables	Description
idname	Name of the Player
clubfinish	Position the players team finished the 2017-2018 season in (1-17)
age	Age of the player
agesq	Age of the player squared
wage	The wage the player makes weekly under their current contract
lwage	The log function of the monthly wage
english	Variable that=1 if the player is an English citizen
uk	Variable that=1 if the player is a citizen of the United Kingdom
natteam	Variable that=1 if the player was a member of a national team appearing at the 2018 World Cup
fifa	The Fifa rating of each player
forward	Variable that=1 if the player is an offense man
midfield	Variable that=1 if the player is a midfielder
defense	Variable that=1 if the player is a defenseman

The data and observations used were taken from all the players available on sofifa.com for the Premier League. The decision to not include players on loan to other clubs was made considering the possibility that their wages may not be dependent on the same factors as the rest of the players in the league. Typically players are loaned to other clubs to either develop a player's potential without the risk of hurting team performance or to benefit from the abilities of a player whom a club would not be able to afford long term. Without being able to account for the reasoning of these loans or the wages of these players, we felt that in the interest of accurate results it was safer to leave them out of our data set.

We have also included in our dataset the reserves of each team, which is different from other studies of this nature. Reserve players are those who do not consistently play for the first team, however they still receive salaries based on these variables. Other studies may not have included these observations as they might possibly drag the average down. However, we chose to include them, as a star player who has a more than single week injury will often be moved to the reserve squad. It is therefore paramount to include these players in our data as they are still technically a part of the first team and earning first team wages. Our final dataset includes 660 observation of 33 players from each of the 20 teams in the Premier League.

Methodology

The results of this study should not be used to assume the pay of players in top flight leagues in other countries in Europe. Compensation for football players vary greatly between leagues as the rankings of various attributes are preferred at varying degrees across different leagues. Most leagues rank the same attributes highly while the lower ranked attributes change

between leagues. For example, quick reactions is a major attribute to determine salary in all major leagues except for Portugal's Primeira Liga. In the Primeira Liga reactions are also relevant to salary but are ranked comparably much lower when reviewed against other leagues. The Spanish La Liga places high value on finishing, the ability to score close to the goal, and volleying, the ability to kick a ball before hitting the ground, whereas heading accuracy is more highly correlated to salaries in La Liga, Germany's Bundesliga, and the Primeira Liga. The Polish Ekstraklasa is an interesting league in the attributes they prefer. The variable with the largest impact on salary is the team for which the player plays. This league also has a strong link with the attributes of jumping, weight, and acceleration. The dominant foot of a player has a larger impact on the wages of players in England and France. Salary standards for each league can depend on the popularity of football in that given country, the strength of the economy at the time of the contract and the style of play in the league.

The study was done using a simple regression of factors against their change in log(wage). A potential limitation of this study is that the data isn't randomized given that the data is from every person in the Premier League, a specifically chosen sample.

Results

Table 2: Frequency and number of players in each field position for the data set.

Field Position	# of observation	Frequency
Forward	299	0.45
Midfield	126	0.19
Defense	235	0.36

Above is a table detailing the concentration of players' positioning on the field in our data sets. As you can see the positioning of forward occurs the most often, being 45 percent of our observations, the forward variable is comprised of forwards and strikers. Defense is the next most common position in our data being 36 percent of observations. This variable includes all wingback, left and right backs, center backs, and goalies. The least common observation of the position variables was that of midfield composing just 19 percent of observations. The variable of midfield includes all center, right and left midfielders, as well as attacking and defending midfielders.

Table 3:

Independent Variables	1	2	3
natteam	-0.053	-0.053	-0.053
	(0.038)	(0.038)	(0.038)
fifa	0.101	0.101	0.101
	(0.004)	-0.004	-0.004
clubfinish	-0.016	-0.016	-0.016
	(0.011)	(0.011)	(0.011)
age	0.423	0.423	0.423
	(0.043)	(0.043)	(0.043)
agesq	-0.007	-0.007	-0.007
	(0.001)	(0.001)	(0.001)
english	0.066	0.066	0.066
	(0.087)	(0.087)	(0.087)
uk	-0.002	-0.002	-0.002
	(0.088)	(0.088)	(0.088)
forward		0.225	0.074
		(0.040)	(0.042)
midfield	-0.074	0.15	
	(0.042)	(0.04)	

defense	-0.225		-0.15
	(0.040)		(0.036)

For Table 3, three separate regressions were run, each time with a different one of the position variables excluded to avoid multicollinearity. In every regression the variables *fifa*, *age*, and *agesq* are all significant at the one percent level. They are significant because all of their p-values are less than .01. In regression one, defense is also statistically significant when forward is omitted. In regression 2, defense is omitted and forward and midfield are both significant at the one percent level. In regression 3, midfield is omitted and defense is once again significant at the one percent level.

The analysis of our data may suffer from omitted-variable bias. There are many factors that impact the wage of professional athletes, particularly soccer players in Europe. The wages of these players are often inflated past their potential based solely on playing ability due to mostly intangible variables. Teams with superstar players have a higher chance of collecting more ad revenue, as well as having increased ticket and merchandising sales. The significance levels of some of our variables also change in the regression level due to needing to omit position variables in an effort to avoid multicollinearity. In addition to these limitations, we only used cross-sectional data, as opposed to time-series, and as a result we found the effect of these variables on wage at the current point in time, rather than the overall impact of these variables on wage. This is a problem when considering the variable of FIFA rating, which is updated as often as weekly, while players are often stuck in contracts that often extend multiple years, meaning the FIFA rating shows less of an effect on the wage of a player than it may actually have. Our data also includes the club finish of the 17 clubs who remained in the top flight, this again causes

problems for our accuracy of results as it does not measure the impact of club finish over time. To better use the variable of team finish we could instead do the top 10 teams, as they have a very low chance of being relegated to the Championship.

Conclusion

In conclusion, this paper effectively summarizes that the significant factors which determine a player's wage are FIFA rating, age, age squared, and if the player is a defender when forward is omitted. It is clear that these are the most significant factors in determining what a player should be paid or how much a player may be able to demand for his wage. These findings are impactful in deciphering the impact of the football transfer and wage markets.

This study potentially includes human error, in that the data we collected might have been interpreted or entered incorrectly. Furthermore, because we used teams that were promoted from the Championship, a lower league, they did not technically have proper rankings in the Premier League for the previous season. We ranked them in order of who finished 1st, 2nd, and 3rd in the Championship in order to attempt to account for this discrepancy. This study also did not take into account other aspects related to the game, such as the popularity of a player and predicted merchandise sales, which would be incentives for acquiring a player as it would increase profits from things like t-shirt sales. These factors, however, are not directly related to a player or his skills in football.

It may be better in the future to use multiple teams but limit the study in each league to teams that are not in the lowest levels of the English soccer leagues, as they have a much smaller chance of being relegated. This may be done to ensure that the data is not changing year to year

and that the results may be valid for a longer time. Another possibility to further this research would be to look at the difference in wages between male and female footballers, and whether the same factors that are significant in determining male footballers' wages would also be the same for females' wages.

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