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# Analyzing the Home-Field Advantage in Major European Football Leagues

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#### ABSTRACT

Although the home field advantage is an important factor in determining the results of football matches, the precise reasons for it are not clear. For this reason, many studies that dwell on different aspects of the subject have been conducted. Home field advantage has become a phenomenon which is often discussed by footballers, technical teams, fans and media organizations, but which is at the same time a controversial subject on whose precise existence they cannot be sure of. The home field advantage ratio is determined by the ratio of the points that the teams get from the games they play as home teams at the end of the season to the overall score. It is possible that if the ratio is more than 50% it is not possible to mention home field advantage ratios in the top professional football leagues of some European countries. For this reason, 54 seasons and N = 140,826 matches were analysed starting from 1963 to 2017. The data was obtained from the official sites of the leagues. According to the results obtained, in all seasons analysed, it was found that the teams playing at home earned more than 50% points. In the study, a mean home field advantage of  $63.8\% \pm 1.81$  was found. When the literature is examined, this study can be seen to show similar results with it.

Keywords: football, analyzing, home-field, advantage, soccer, European, leagues

#### INTRODUCTION

Various sports are followed with passion everywhere in the world. Football, particularly, is the sports field that has the most fanbase in almost all regions of the world. Today, the number of people who regularly follow football on a global scale is expressed in billions. When it comes to media visibility, football stands out as the most prominent sporting event. Organizations such as FIFA and UEFA, which have international competition environments, make billions of football fans settle in front of TV screens at the same time. It is said that the average number of live viewers in the World Cup final may reach up to 450 million. The cost of the 2014 Brazil World Cup is estimated to be about \$15 billion. FIFA has announced that the broadcasting rights agreements for World Cup 2018 and 2022 has been concluded for approximately 2 billion dollars. With the broadcasting rights to be marketed, the 2018 Russia World Cup will be watched and followed in 134 different countries, over internet, radio, television and mobile technology tools.

In parallel with the widespread use of digital broadcasting facilities, especially internet publishing, the popularity of football has been increasing. There are hundreds of millions of searches per day on the internet related to football. Different social media pages or areas are filled with football-related content and users share them with each other. Developments related to football are progressing in Europe, where football was born,

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as in the rest of the world. UEFA earned 1.1 billion dollars from broadcasting rights of Euro 2016. Other football-related revenue resources included \$ 530 million in sponsorship and licensing agreements, accompanying \$ 441 million in ticket sales and \$ 2 billion in revenues from accommodation. In Euro 2016, an average of \$ 42 million was earned per game.

European football market revenues, which continued to rise with the increase in the values of broadcasting rights in the biggest leagues of European football and UEFA Euro 2016, neared 24.6 billion euros in 2015/16. Among the 20 clubs with the highest revenue in Europe, the revenue of the first 3 clubs was 2 billion Euros, while the total revenue of 20 clubs was 7.9 billion Euros. (Deloitte 2018). We can say that the most important reason why football is popular today is that the match results cannot be predicted in advance. In the event that the other conditions are equal, the fact that the results of the match cannot be predicted in advance creates a great interest in the fans, leading the fans to be increasingly interested in following the competitions in the league.

Even if it is sometimes by chance to win or lose a certain competition, given the nature of football, there are many variables that affect the result of a game. It is known that one of the important variables affecting the results of matches is the home field advantage. In addition, there are many reasons that affect the home field advantage as well.

There are many previous studies available related to the subject. Most of the studies have focused on the development of conceptual models that explain why the home field advantage exists in different sports over a different period of time. Carron, Loughhead, & Bray, 2005; Courneya & Carron 1992 stated in their studies that the home field advantage exists in all kinds of sports. In a meta-analysis study conducted for ten different sports branches by Carron et al.,2005, the home field advantage in football as a field was found to be higher. When the studies related to the subject were examined, it was emphasized that the advantage of being the home team is especially important. Jones, M. (2007) analyzed quarters and the lengthening of all matches played in NBA for two seasons. Green, 1983; Jurkovac T. (1983) handled the home field advantage with a different dimension, stating that the majority of the players in basketball felt better and more secure while playing in front of an active and supportive audience crowd. Several academicians have examined how various factors affect the home field advantage in their studies in the field of football such as Nevill and Holder (1999), volleyball (Marcelino et al., 2009), rugby (Thomas et al., 2008) and baseball (Adams and Kupper, 1994)

The home field advantage is one of the important variables that affect the results of a football event. After initial analysis of the home field advantage in football by Morris (1981), Dowie (1982), Pollard (1986) and Clarke and Norman (1995), various variables were determined concerning this advantage. The home field advantage was examined from the beginning of the English Football League from 1888-1889. (Pollard & Pollard, 2005).

Seckin and Pollard (2008) studied 10 seasons of Turkish First Football League in terms of the home field advantage (from 2005-2006 to 2014-2015). Pollard (2006b), in his study on football in relation to the home field advantage in different countries, came to the conclusion that the home field advantage in the south of Europe is generally higher than that of northern European countries. Despite many researches on the football home field advantage, it still continues to be relevant.

It is known that there are many variables that affect the futuristic home advantage. The studies conducted with these variables are frequently encountered in sport researches literature. The studies conducted on the home field advantage have been carried out under such subheadings as the referee bias, the travel effect, the crowd effect and the stadium.

As you can see, studies conducted on the home field advantage in sports events have continued to be popular since the 1977 study by Schwartz and Barskynin in which they studied the concept of home field advantages in ice hockey, basketball, baseball and American football. When we look at the literature, it is seen that many of the researchers have searched the social, psychological and quantitative methods of the home field advantage in various sports branches. Because the home field advantage is a worldwide phenomenon. It shows differences both locally and over time.

# MATERIALS AND METHODS

A total of 140,826 matches played in 54 seasons between 1963 and 2018 were analyzed in the study involving European football leagues such as England (Premier League), Germany (Bundesliga), France (Ligue 1), Spain (La Liga), Italy (Serie A), Turkey (Super League) Netherlands (Eredivisie), Portugal (Primeira Liga).

Table 1. Number of matches analysed									
UK	DE	$\mathbf{ES}$	IT	$\mathbf{FR}$	TR	NL	PT		
22,856	16,466	18,408	16,132	19,854	16,622	16,326	14,162		

Analysis was made according to the official data obtained from the national federation web sites of the 8 leagues. In all of these leagues, a double-circuit league method was used in which the teams played with the other team two times, one at home and one away. Such league programs are scheduled for each team to provide a neutral home field advantage.

There were teams in different numbers in 54 seasons in the 9 leagueswhich were analyzed. In the Premier League there were 22 teams between 1963-1987, 21 teams in the 1987-1988 season, 20 teams in the 1988-1991 seasons, 22 teams in the 1991-1995 seasons and 20 teams in the 1995-2017 seasons. On the other hand, there were 16 teams between 1963-1965 in the German Bundesliga, 18 teams between the 1965-1991 season, 20 teams betwee then 1991-1992 season and 18 teams between the 1992-2017 seasons.

In La Liga in Spain, there were 16 teams between 1963-1971, 18 teams between 1971-1987, 20 teams between 1987-1989, 19 teams between 1989-1990, 20 teams between 1990-1995, 22 teams between 1995-1997 and 20 teams between 1997-2017 which played a match with each other. The Italy Serie A had 18 teams between 1963-1967, 16 teams between 1967-1984 seasons, 17 teams in the 1984-1985 season, 16 teams between 1985-1988, 18 teams between 1988-2004 and 20 between 2004-2017 seasons.

In the France Ligue 1, the number of the teams were 18 between 1963-1965, 20 between 1965-1967, 18 between 1967-1970, 20 between 1970-1997, 18 between 1997-1998, 20 between 1998-1999, 18 between 1999-2002 and 20 between 2002-2017 seasons. On the other hand, there were 20 teams in the 1987-1988 season in Turkey Super League, with 19 in 1988-1989, 18 in 1989-1990, and 16 teams during the four seasons between 1990-1994 and 18 in 1994-2017 seasons. As for the Netherlands (Eredivisie), there were 16 teams between 1963-1966, while there were 18 teams between 1966-2017 seasons. In the Portugal Primeira Liga, the number of teams playing between 1963-1970 seasons was 14 and 16 between 1970-1981 seasons, 18 between the 1981-1982 season, 16 between 1982-1987 seasons, 20 in the 1987-1989 seasons, 16 between the 2006-2014 seasons and 18 teams between 2014-2017 seasons. As the study data, (N = 140.826) matches were analyzed. The distributions of analyzed matches by league are shown in **Table 1**.

In this study, the method described by Pollard and Polard (2005) was used to determine the home field advantage. According to the method, it is important for the balance of the league to schedule a league where each team plays the same numbers of games with each other both at home and away. The calculation of the home field advantage in a balanced league is expressed as the percentage of the total points earned by teams at the end of the season to the total points earned from all matches. This method is used to calculate long-term trends in many sports.

As a result of the calculation, if the ratio is 50%, it indicates that the equal amount of success has been achieved at home and away, meaning that there is no home field advantage. In the case of where this figure is less than 50%, it indicates that there is no home field advantage, while it means the opposite when it is over 50%. It can be said that the home field advantage also increases as the number grows. The study data was evaluated with Statistical Package Software for Social Sciences (SPSS). A descriptive statistic of the obtained data was made.

# **FINDINGS**

This part of the study contains the findings obtained from the analysis results. The scores of eight football leagues in Europe were calculated based on the end-of-season table. A total of 22,856 match results from England, 16,466 from Germany, 1,840 from Spain, 16,132 from Italy, 19,854 from France, 16,622 from Turkey, 16,326 from the Netherlands, and 14,165 from Portugal were analyzed and the number of matches analyzed is shown in **Table 1**.

The descriptive statistics of these leagues having home field advantage for 54 seasons between 1963-2017 were made in the SPSS program. Mean and standard deviation values of the data obtained are shown in **Table** 2.

	Min	Max	Mean	Std. Deviation
Premier League	55,95	68,71	61,8796	$\pm 2,74668$
Bundesliga	55,41	72,22	64,2320	$\pm 4,43579$
La Liga	57,10	77,29	66,4394	$\pm 5,89242$
Seria A	56,86	74,74	63,2420	$\pm 2,93614$
Ligue 1	56,98	72,63	66,0102	$\pm 3,76191$
Super League	55,37	75,96	63,9820	$\pm 4,58775$
Eredivisie	54,58	67,14	61,1789	$\pm 2,79837$
Primeira Liga	56,15	72,71	64,1515	±3,93198

**Table 2.** Descriptive statistics of the leagues

According to the findings obtained following the analysis, Spain (La Liga) was detected to be the league where the home field advantage was the highest in terms of matches played at home with a mean value of  $66,43 \pm 5,89$ , whereas the Netherland league (Eredivisie) was found to be the league where the home field advantage was the lowest with a mean value of  $61.17 \pm 2.79$ .

The findings obtained from the study were calculated to be over 50% for all leagues. Pollard and Polard (2005) indicated that it is possible to mention the home field advantage for a given match if a score average of over 50% in home matches is found in favour of the home team. It is possible to say that it was advantageous to be the home team in matches played at home in all the leagues in which the studies were carried out. The home field advantage ratios of the leagues involved into the study for 54 seasons are given in **Table 3** (see Appendix).

Apart from this, the findings of the study indicate that all of the European leagues involved in the study have experienced a general decline in their home field advantage ratios in recent years. The home field advantage ratios of the leagues are shown in graphical appendix. It is clearly observed that the linear trend line attached to the graphs has a downward trend in the recent years.

# DISCUSSION AND CONCLUSION

When we examine the resources on the sport economy and performance analysis in sports, we can say that the studies on home field advantage in sports have gained intensity. This also shows that the interest towards determining the home field advantage from the past to the present in sports still continues.

Courneya and Carron (1992) analyzed the games played in different sports branches. The researchers found that the winning percentages of home teams are 53.5% for baseball, 57.3% for American football, 61.1% for hockey, 64.4% for basketball and 69% for football. Carron and Hausenblas (1998) reported that it was possible to mention the home field advantage in both professional and amateur sports and that the advantage was in favor of the home team and that this home field advantage would also apply to international competitions.

There are many studies in the literature conducted on home field advantage for amateur and professional sports branches. Armatas and Pollard (2014) analyzed the home field advantage in Greek Super League with 2,160 matches in 17 seasons. They found that the home team' throws, corner hits, steals and goals scored were higher than those of the away teams. In line with the data regarding the home field advantages of the teams for at least 4 seasons, they found that the points advantage that teams enjoyed as home teams varied between 60.14% and 74.54%.

Pollard and Gomez (2014), who made a different contribution to the literature, examined the male and female football teams in the European Football Leagues. In their study, the home field advantage between 2004 and 2010 was examined and this advantage was found to be lower in female teams than that of male teams (59.98%) with 54.18%. Apart from this, Page and Page (2007) found a 54.44% home field advantage in the second-leg matches of the two-legged Champions League and 53.95% in UEFA Cup. When the studies were examined, it was found that there was a big amount of research about football and in particular about the football in England with many different studies being conducted. These studies go back to the 1888 -1889 season when the first league was formed in England.

Looking at more recent studies, Leitte (2017) studied football leagues during the 2015-2016 season in 10 different countries and found the home field advantage to be 56% in a total of 380 matches in the English Premier League. The same figure was also found at the same time in our study.

In another study, Allen and Jones (2014) retrospectively analyzed 20 seasons from 2011-2012 to1992-1993 in the English Premier League. In his study comprising of analysis for 7720 matches, he noted that the teams wearing red uniforms which were more successful than the other teams both at home and away. At the same time, he also states that the teams ranking higher in the league table have a tendency to have higher home field advantage ratios than those in lower rankings in the table, adding that 66,77% of the total points ( $\pm 8.30$ ) earned in matches at home were earned by the home teams in English Premier League, meaning there is a visible effect of home field advantage.

Pollard (2006) analyzed 2280 games in the Premier League in England and found that the home teams won 1076 games, lost 610 games and tied in 594 games. He also stated that the home teams had an average home field advantage of 61.19% for six seasons. In the analysis conducted in 1996-2002 the English Premier League, Pollard and Polarard (2005) found that home field advantage was favored by the home teams with an average of 60.7% during the six completed seasons.

Carmichael and Thomas (2005) examined the games played in the Premier League of England in terms of the home field advantage and found that 48% of the 380 games played in the 1997-1998 Premier League season were won by home teams, 27% by the visiting teams, while 25% of them were a draw.

In his study of English football based on the starting year of football in the country, Pollard (1986) stated that almost a century old home field advantage of the English League between the years 1888-1984 decreased from 67.9% to 63.9%, accounting for a total decrease of 4%.

Lago-Penas and Lago-Ballesteros (2011) analyzed 380 games played in Spain's La Liga during the 2008-2009 season. Analysis findings showed that 61,95% of home matches were won by the home teams, while 38% of them were won by the visiting teams. They also found that the percentages of the possession of the ball, accurate shots and successful pass numbers were higher than those of the away teams. In another research on La Liga in Spain, Sanchez et al. (2009) had examined the advantage of being a home team in 2 professional leagues of Spain. According to the findings of the research, they found that the home field advantage between 1980 and 2007 was 62.09% in the first league and 59.51% in the second league. In their study aiming to identify the home field advantage in Turkey Super League, Seckin and Pollard (2008) analyzed the Turkish Super League for 12 seasons and found the home field advantage in the English Premier League (61.0%) and the Turkey Super League to be 61.5%. According to the findings they obtained from the study, they stated that the two countries showed similarity. Apart from the research above, there are other studies with extensive scopes and contents that examine the home field advantage in football leagues of many countries. Pollard (2006) retrospectively reviewed six seasons of football leagues of various countries starting from 2004. In a study on the home field advantage in home competitions, the percentages were 63.83% in Italy, 62.81% in Germany, 61.19% in England and 63.90% in Spain, which are the leading countries of European football.

Da Silva and Moreira (2008) conducted a six-season study on different leagues between 2002-2007. In their study, they found that the home field advantage was 60.5% in Brazil (64.6%), 58.1% in Argentina, 60.1% in Spain, 63.8% in France, 61.0% in England, 61.3% in Italy and 60.8% in Portugal.

In his study in 2017, Leitte reviewed football leagues with the aim of determining the home field advantage ratios of 10 different countries during the 2015-2016 season. By examining a total 3,223 matches from 10 football leagues in Europe, the study found a mean home field advantage of 61.2% in Spain, 61% in Turkey, 60.7% in Belgium, 59.3% in Italy, 57.5% in the Netherlands, 57% in France, 56.4% in Portugal, 56.2% in Germany and 55.3% in Russia.

According to the 54-year end-of-season table of the study, the mean home field advantage in games played at home are shown in **Table 2**. The home field advantage was detected to be in favour of the teams playing at home in England (Premier League), Germany (Bundesliga), France (Ligue 1), Spain (La Liga), Italy (Serie A), Turkey (Super League) Netherlands (Eredivisie) and Portugal (Primeira Liga). Findings derived from research findings are seen to be deviated from previous studies in small quantities, but it is thought that this situation is due to the fact that research data belong to different years.

The results clearly show that over 50% of the home field advantage is enjoyed by home teams in all leagues. The results obtained are parallel to the findings of similar studies. The results indicate that playing a match as a home team in all leagues and all seasons is an important factor to influence the results of the match. Another result obtained from the data is that the home-field advantage rates have been on a declining trend over the years in the football leagues involved in this study. You can see this decreasing trend with the graphic trend line attached in the appendix section.

The downward trend we detected for the home field advantage also correlates with Pollard (1986) who found that almost a century old home field advantage in the English League between 1888-1984 was reduced from 67.9% to 63.9%, meaning a 4% decline. In another study, Pollard (2008) expressed that the home field advantage has declined in the major leagues in Europe over the past 15 years. This data shows that, over time, there has been a continuous downward trend, that is, the percentage of advantages inherent in the field gradually decreases within years. In another study by Marques (2002) on the Portuguese football league based on the time period when British football started, during the 1960-2001 seasons, teams also experienced an improvement in their performance while playing away, especially since the early 90s.

In the study, in line with the findings of previous studies, it is seen that playing at home is a significant advantage. Being the home team in football matches is one of the important factors determining the results of the match. In the meantime, it is also evident that the advantage of playing at home has lost its appeal in terms of the home field advantage in Europe's leading football leagues or that different variables are becoming more effective.

Research in the literature shows that the advantage of being the home team, which increasingly tends to decline, is an advantage in terms of the concept of the home field advantage, but it is not enough alone. It is thought that the handling of different variables in football in terms of the home field advantage research is important to raise the possibility of giving a more accurate picture of the situation. However, it is very difficult to investigate, isolate and quantify these variables. Along with this, factors such as the crowd effect, travel influence, referee bias, team qualities, tactics, familiarity with the venue, and the team that scores the first goal may be considered as factors to have significant effects on the variables mentioned.

#### Disclosure statement

No potential conflict of interest was reported by the authors.

### Notes on contributors

Tuğbay Inan: sport economics, sport management, sport statistics, sport econometrics.

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# **APPENDIX**

Table 3. Home-field advantage rates of leagues

	UK	DE	ES	IT	FR	TR	NL	РТ
1963-1964	61,04	65,21	75,42	60,62	68,63	60,62	59,58	63,19
1964-1965	65,80	63,75	72,92	65,36	66,34	66,25	55,00	62,36
1965-1966	64,18	66,01	70,00	64,38	70,00	57,29	61,04	65,11
1966-1967	62,12	65,36	73,96	62,58	70,00	62,87	62,09	63,19
1967-1968	64,83	66,50	71,04	64,38	66,18	64,71	64,54	67,03
1968-1969	65,58	68,79	70,00	64,38	66,18	65,42	66,67	64,01
1969-1970	59.85	69,44	68,96	61.67	68.30	65.83	59.64	66.48
1970-1971	61.15	69.12	71.04	62.08	68.03	66.67	62.58	70.33
1971-1972	63.10	71.67	71.04	64.38	66.84	69.58	59.64	61.67
1972-1973	65.15	72,06	70.92	62.29	68.82	67.92	61.60	65.21
1973-1974	63.31	65.52	75.98	64.58	68.82	69.17	62.42	69.38
1974-1975	64.29	69.12	77.29	64.17	72.63	65.63	66.18	62,50
1975-1976	63.31	70.10	76.96	63.54	70.79	69.58	62.25	63.96
1976-1977	66 77	67.81	75.00	62 71	70.26	68 75	65.85	67.08
1977-1978	62.55	72.22	76.80	61.46	69.74	72.08	63.56	66.04
1978-1979	60.82	68.14	74.35	60.63	67.89	75.96	63 73	67.29
1979-1980	63.85	70.42	72.16	61 46	68 55	70	65.36	66.67
1980-1981	65.37	66 67	67.97	60.21	66 45	75.1	59.48	68.96
1981-1982	60.32	68.95	72.88	61.46	68.82	63.05	62.09	72 71
1982-1983	68 71	68.46	71.41	63 54	72.63	69.28	61.93	70.21
1983-1984	62.78	67.65	68.46	66.88	66.18	67.16	59.15	68 75
1984-1985	63.96	67.48	59.97	65.21	69.61	66.99	62.09	66.04
1985-1986	62.46	67.32	67.32	67.29	70.66	67.54	62.42	67.08
1986-1987	66 27	67.48	70.92	65.21	67.76	65.35	57.03	67.08
1987-1988	60.11	65.36	65.26	66.04	69.21	67.05	60.29	63.95
1988-1989	56 71	64.38	60.79	62.58	67.76	67.65	63.24	65 39
1989-1990	62.25	65.36	66.20	64.87	70.79	63 76	61.60	68.63
1990-1991	64.80	57.52	67.37	64 22	67.24	62.92	64 22	66 58
1991-1992	60.67	62 11	67.24	59.97	64.61	61.57	58.01	68 79
1992.1993	61.46	64.38	62.53	64 71	63.95	58.13	54 58	66,99
1993-1994	57 72	63.65	63.42	63.07	66.32	65.02	63 15	66.83
1994-1995	60.06	62.09	62 50	65.32	67.60	67.69	59.67	64.22
1995-1996	62.96	58.89	60.75	68.26	67.12	60.07	60.26	65.09
1996-1997	59.43	63.44	61.48	65.07	63.18	63 73	59.48	61.62
1007 1008	61.91	62 42	63.69	61.01	63.38	63 41	63.20	65.95
1998-1999	60.68	62.45	64 24	69.89	65.74	60.99	60.24	65 29
1999-2000	62.31	62.24	64.01	65 29	66.83	60.26	60.19	65.39
2000-2001	62.85	64.66	66.86	62.29	64.03	61.81	60.14	64.02
2000 2001	57.36	64.47	63 43	61.01	67.67	63 51	67.14	64 77
2001-2002	62.00	60.52	61.16	63.08	64.22	61.4	62.06	63 15
2002-2005	59.01	65.48	58.47	58 70	62.82	57.75	59.41	63 51
2003-2004	61.07	60.02	65.00	61.38	65.77	61.87	55 76	60.84
2004-2005	61.43	59.49	57.10	74.74	61.45	55.37	59.79	58.91
2006-2007	61.80	57 33	58.93	64.07	64.36	62.85	62 74	57.80
2000-2007	60.38	60.36	60.11	61.96	60.25	60.97	59.20	62.56
2007-2000	59.06	61.02	60.08	64.21	59.05	60.64	61.40	58.69
2000-2003	65.92	55.41	64.78	63.58	60.79	58 59	60.86	58.28
2003-2010	62.97	56.84	63.15	60.96	59.50	57.13	65.13	56.42
2010-2011	57.88	59 19	69 01	61 58	62 50	61 4	61 75	59.67
2011-2012	58 79	55 71	61.65	60.64	60.00	60.96	58.91	56 15
2012-2013	57.01	58 49	50 11	60.90	50.00	61.65	61.97	59.10
2013-2014	58 17	61.94	57 59	56.96	50.02	57 55	58.05	50.10
2014-2010	55.05	56 20	57 59	50.00	56.09	60.71	57.67	56 41
2010-2010	61 00	62.00	57 50	50.00	69.99	56 50	59.94	50,41
2010-2017	01,00	04,09	01,00	55,64	04,33	50,52	00,04	00,40



Graphics. Home-field advantage rates of leagues



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