On-Pitch Success in UEFA Champions League
An Empirical Analysis of Economic, Demographic and Traditional Factors

Master’s thesis within Economics and Management of Entertainment & Art Industries

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Abstract

This paper’s aim is to discover the impact of economical, demographic and traditional determinants on clubs’ on-pitch success in UEFA Champions League. Generally it is assumed by people that financially strong clubs tend to win on the pitch most of the time. Is it really true? Is it always the same wealthy teams which win in the end? Football is a type of entertainment and people would like to see games with uncertain outcomes and a balanced competitiveness between two sides. In this way they can enjoy this entertainment. In that case, how uncertain is the outcome and how balanced is the competition in UEFA Champions League? In order to answer all these questions a multiple regression analysis is built including economic, demographic and traditional variables both at club and country level. These mentioned explanatory variables are GDP per capita of the home country, population of the host city, total market value of the team’s players, capacity of the stadium, country’s participation in international tournaments, club’s age, rank of the next best team from the same country and country’s hosting an international tournament. It turned out that financially advantageous clubs which have stadiums with larger capacities and located in more populated cities have more chances of winning than the others. Then again, it is observed that countries’ football tradition and dedication does not have a significant impact on clubs’ on-pitch success in UEFA Champions League.
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1 Introduction

“You can have the top stars to bring the attention, you can have the best stadium, you can have the best facilities, you can have the most beautiful project in terms of marketing and all this kind of thing. But if you don’t win... All the work these people are doing is forgotten.”

Jose Mourinho (2004)

If we make a survey and ask people “what is the first thing that comes into their mind when they think of sports” we could possibly get hundreds of different answers. An Italian or a Turkish person would probably utter the name of the football club he supports. On the other hand, a Canadian would probably say ice hockey and an Indian would say cricket. If you took this research to Ethiopia, there is a big chance that people would pronounce the name of an Olympic gold medal winner athlete such as Haile Gebrselassie or Tirunesh Dibaba. If they are not interested in spectator sports they would simply answer our question by saying going to gym, doing pilates or yoga.

This of course is a highly general outlook about sports, so first things first; a line needs to be drawn between professional team sports and individual sports. On one hand there is an individual competing against other individuals; on the other hand there are a certain number of people who are dependent on one another in order to succeed. Among all professional team sports in the world, most people would probably agree on the fact that football distinguishes itself from the others in terms of popularity. Football is widely recognized as the most popular sport in the world, especially in Europe and South America. In Brazil there is a church and a football pitch even in the smallest village. If a game is important for billions of people then it transcends being just a game, football is never just football (Kuper, 1996; Hoffmann, Ging, & Ramasamy, 2002; Houston & Wilson, 2002; Giulianotti, 2005; González-Gómez & Picazo-Tadeo, 2009). Two questions arise at this point; in a game which is appreciated by billions of people, who are the ones making it to the top on the pitch and how do they do it? These questions are of vital importance when it comes to on-pitch performance in football.

Morrow (2003) calls football “the people’s game” a term evoked by the images of thousands of people rushing towards the temples of football like Santiago Barnabeu or Old Trafford, or cars parading in convoys and streets full of fans cheering and waving their flags over their team’s victory. As argued before, because it concerns billions of people the business of football distinguishes itself from traditional types of businesses. Besides, fans are committed to their clubs for long times and they identify themselves with those clubs. That is why the business of football is so interesting. Besides, there are not so many sports like football in which people participate to play all over the world with the highest number of participants (Hoffmann et al., 2002; Macmillan & Smith, 2007).

Professional team sports are as much an entertainment business as movies or performing arts are. However, product of professional team sports is called “the product joint” (Neale, 1964). This product is a form of entertainment and imperfect substitutes are produced by other industries for “the product joint” (Rotenberg, 2000; Vogel, 2007). Presumably there are two reasons why the product of professional team sports

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1 Real Madrid C.F.’s and Manchester United F.C.’s stadiums.
does not have perfect substitutes. The first reason is the interdependence between the teams producing the same product. The second reason is the diverse quality in each and every game. Every game has its own characteristics in professional team sports depending on the quality of the input. As mentioned before, the business of football is different from traditional types of businesses. It distinguishes itself from the others in entertainment world as well. One can easily question if someone from the audience would try to climb on the stage or throw empty bottles or lighters to actors when they did not like a play or an opera or listeners would try to attack a singer just because they did not like her last record.

As it is previously addressed, there are two parties in production of professional team sports and the outcome is “the product joint” which occurs as a result of a competition between these two parties. Football clubs constitute leagues in which they can compete with one another and their success is measured according to points they gather during a season and their place in the ranking table. Like quoted from controversial Portuguese football manager Jose Mourinho, financial wealth does not matter for audience unless their team wins in the end. The audience is not interested in a club’s wealth; they are interested in its on-pitch success. Of course there can be a strong correlation between financial wealth and on-pitch success. The audience just wants to see a winning team; they do not really care if the team does it with or without financial wealth. They just do not appreciate financial success as long as it is not accompanied by on-pitch success. Since, sometimes teams with financial wealth could be unsuccessful too.

Economists’ interest to professional team sports has recently been growing. However, not every kind of team sport might attract economic analyses. High schools can start a league or a tournament between them but it would not attract anyone to analyze it in economic way due to lack of monetary exchange. What is fundamental here are some certain inputs like labor (players, managers and administrators), physical equipment (stadium, training ground and playing equipment), a league and a fixture with other teams and consumers (supporters) (Dawson & Downard, 2000).

1.1 Purpose of the study

The purpose of this study is to examine how economic, demographic and traditional factors affect football clubs’ on-pitch success in UEFA (Union of European Football Associations) Champions League.

1.2 Disposition

The first section of the study offers a review of some fundamental properties in economics of professional team sports and its comparisons with conventional economics. The second section presents a review of previous theories, concepts and studies on which this study bases on. In the next section the hypothesis of the study is explained. Empirical analysis is developed in the fourth section including estimate of the model and discussing the results. The study ends with the conclusion section, encountered limitations and possible suggestions for future studies.
2 Previous Studies and Results

The economics of professional team sports as a research subject is not older than sixty years. Rottenberg is widely acknowledged as the first person who analyzed economic issues in professional sports in his seminal paper “The Baseball Players’ Labor Market” in 1956 (Cairns, Jennett, & Sloane, 1986; Dobson & Goddard, 2001; Rosen & Sanderson, 2001; Sloane, 2006; Krautmann, 2008).

While there was still no academic interest shown to economics of football in Europe, academics in the U.S. were writing mostly about baseball, basketball and (American) football. Hence, compared to the U.S. sports, the number of studies about economics of football is quite few. The reason of this imbalanced interest at different sides of the Atlantic is structural and organizational differences in sports leagues (Dobson & Goddard, 2001). One of the most important differences between Europe and the U.S. is the objective of the clubs. While the clubs in the U.S. have always been profit maximizers the ones in Europe have wanted to maximize their playing success, attendances and league health (Cairns et al., 1986; Dobson & Goddard, 2001; Szymanski, 2001; Barajas, Fernandez-Jardon & Crolley, 2005; Ascarì & Gagnepain, 2006; Kesenne, 2006b; García-del-Barrio & Szymanski, 2009). This different behavior can be seen through some properties that the U.S. and Europe leagues have. First of all the U.S. leagues are “hermetic” and there is no relegation and promotion between different divisions. Secondly, interventions by league authorities to labor market and revenue distribution in order to preserve competitive balance are stronger than Europe. A good indicator to see the difference between clubs’ objectives in the U.S. and Europe is that clubs in the U.S. can relocate for financial reasons. However, clubs in Europe have a strong traditional bond to cities. Besides, attitudes of many managers and owners like paying high wages, creating large and inefficient squads and admitting financial losses in the long run in European football implies that the win maximization is the main objective. In other words, win maximization behavior means having the highest winning percentage at the end of the season under breakeven constraint (Hoehn & Szymanski, 1999; Kesenne, 2006b; Avgerinou, 2007).

As much as it has economic importance football also has social and cultural importance. Although football has been appreciated by millions of people in stadiums and in front of televisions for a long time, economists did not contribute to economics of football as much as the public interest football has received. Not only academics but also people in business and finance did not pay so much attention to football as a business sector for a long time. However, recently academics have started realizing football’s impact on society, culture and economics (Dobson & Goddard, 2001; Hoffmann et al., 2002; Torgler, 2006). Furthermore, football has grown into a multibillion dollar industry all over the world today (by one estimate it is valued at £150bn.) thus it is worth being analyzed economically in its own (Szymanski, 1998; Hoffmann et al., 2002).

Wellbeing which is created by professional football is probably larger than the revenues created by it for people. For working class people, football creates a big popularity for people as a participant sports. At higher level, international success of the national and club teams creates prestige for the nation as an intangible benefit. Thus, not only clubs but also individuals and national and international organizations benefit from huge revenues which are created by the football industry (Dobson & Goddard, 2001). Payrolls of people working in leisure industry such as commercial sports, recreation
services and miscellaneous amusements increased by two times in the U.S. from 1987 to 1995. Similar growth has been seen globally as well (Houston & Wilson, 2002).

In the following parts some prominent properties of professional team sports and results from previous studies about sporting success will be explained.

2.1 Uncertainty of Outcome

It might have happened to most of us, while talking about a movie which you have not seen before, one of your friends jumps to the very last part of it and tells you how the story ends and kills all the joy you expect to get from that movie. Football events are the same in this sense.

Neale (1964) explains this phenomenon as “Louis-Schmelling Paradox”. He introduces this paradox by giving an example from heavyweight boxing; world heavyweight champion Joe Louis needs a stronger contender to fight due to the fact that higher uncertainty of outcome will lead to higher interest to the fight and correspondingly to higher revenues. Otherwise, Joe Louis becomes a pure monopoly and Neale calls this pure monopoly a “disaster” adding that Joe Louis would not make any more income if he had no one to fight. Accepting also that boxing is an extraordinary example he makes his point giving the following example:

“Suppose New York Yankees used their wealth to buy up not only all the good players but also all of the teams in the American League: no games, no gate receipts, no Yankees. When, for a brief period in the late fifties, the Yankees lost the championship and opened the possibility of a non-Yankee World Series they found themselves – anomalously – facing sporting disgrace and bigger crowds. If the Yankees, then, do not wish to monopolize their own league, why don’t they buy out the National League? The answer is, of course, all those World Series receipts” (Neale, 1964, p. 2).

Consequently, in a football league one side wants to be better than the other to win, yet not too good, otherwise there will be neither output nor revenue (Rottenberg, 1956; Neale, 1964).

Sloane (1971) also supports previously mentioned phenomenon uncertainty of outcome saying that it creates as much interest as quality does and emphasizes that domination of the league in terms of winning the title over a long period especially by one or two teams may result in a decline in other teams’ attendances because of the intense competition between those teams.

Uncertainty of outcome is first defined in two different types by Jennett (1984); short run uncertainty of outcome occurs during one season while long run uncertainty of outcome is about a dominance of winning the title in a league over time by one or few clubs. Later, it is defined more widely in three different forms.

Three different forms of uncertainty of outcome (Cairns et al., 1986):

1- Uncertainty of match outcome
2- Uncertainty of seasonal outcome
3- Lack of domination by a certain club in the long run for several seasons.

Previous studies agree on the fact that uncertainty of outcome has positive effects and it is also widely agreed that it is a fundamental concept of the economics of professional
team sports (Peel & Thomas, 1988). Sloane (1971) argues that attendance is not necessarily affected by uncertainty of one single game. It is affected by the importance of that game in overall success throughout the league. Besides, the importance of the game is different if it is in the beginning of the season or in the end of it. Additionally, he finds a strong relationship between uncertainty of outcome and attendance to a football game if the game is at the end of the season and has an effect on championship (Jennett, 1984).

Uncertainty of outcome is the bedrock of professional team sports. Without it team sports would be no different than an exhibition. Besides, although fans are more interested in winning teams, too certain outcomes kill their interest and the game per se (Jennett, 1984; Dobson & Goddard, 2001; Vrooman, 2007).

Later in this study, it will be analyzed what is the level of uncertainty of outcome in UEFA Champions League. Question which should be asked here is; if the outcome is not uncertain what kinds of factors make it more certain?

### 2.2 Competitive Balance

Competitive balance can be easily accepted as a prerequisite for uncertainty of outcome. Since without competitive balance in a single game or in a league, expectations for uncertainty of outcome would be extremely low (Dobson & Goddard, 2001; Krautmann, 2008). Competitive balance means that sporting abilities of two teams should be balanced in order to see an uncertain outcome from a game and a league (Michie & Oughton, 2004).

Competitive balance up to some degree is recognized as a crucial property of team sports; because, before a contest starts each participant has the same chance of winning if there is a competitive balance between them. On the other hand, if competitive balance does not exist, the result of a game becomes more predictable. Therefore, great level of domination by certain teams results in less competition and eventually in lower interest and attendances to the games (Cairns et al., 1986; Szymanski, 2001; Kesenne, 2004).

In order to secure persistence and prosperity of a league in future, competitive balance is highly important; because, without competition and uncertainty that league is going to become more unsurprising and the interest is going to decline gradually. Accordingly, this situation would create consequences such as bankruptcy and growing intra and inter-league financial gaps, which might push the clubs into risky investments, and lower revenues. (Michie & Oughton, 2004).

In a sporting competition if one side is much better than the other sides, the results in that competition during a season are expected to be in favor of the side which is much better than all the others. Then this situation is followed by little interest and a decrease in attendances through the season. In order to prevent such things from happening, precautions like maximum wage, salary cap and draft system are argued (Rosen & Sanderson, 2001; Forrest & Simmons, 2002).

Other precautions in order to maintain competitive balance are argued for marketing of broadcasting rights as well. English Premier League does not allow clubs to market broadcasting rights individually; because, shared revenue in broadcasting rights allow the teams operating in small markets to compete against the ones operating in larger markets.
markets. This rule is believed to maintain competitive balance in the games (Forrest & Simmons, 2002). Based on their attendance demand model derived from the betting market Forrest & Simmons (2002) deducted that the more the probability of competing teams is balanced the more attraction is shown by spectators to the games.

Competitive balance is not only important for match day attendance but also for television audience’s attendance. If competitive balance was increased in a league, television audience would be more attracted to the league as it comes closer to the end. Since there would be more games in the fixture which could affect championship, relegation and European Cups places (Morrow, 2003; Michie & Oughton, 2004; Forrest, Simmons & Buraimo, 2005).

If competitive balance is low in a league then that league is expected to face concentrated sporting success. According to Morrow (2003) concentrated sporting success in top four European leagues between 1998 and 2002 in terms of finishing the league in top-five is as follows:

- England: 8 teams out of possible 25
- Germany: 9 teams out of possible 25
- Italy: 10 clubs out of possible 25
- Spain: 10 clubs out of possible 25

Competitive balance has been declining because 31 different teams won the national title in five different countries between the years 1947-1956. However, this number declined to 20 between the years 1997-2006. In theory every team competing in a domestic league in Europe could join Champions League and win the title. However, increasing inequality creates a win concentration for certain countries and the circle of winning is getting smaller. Besides, in the beginning every country used to have one place for their domestic champion in Champions League but later big five countries (England, Spain, Italy, Germany and France) demanded more places claiming that they create the most of the revenue for the league. As a consequence, UEFA granted them more places which made big five countries financially stronger than the rest. Therefore, concentrated sporting success in domestic leagues was transferred to Champions League as well (Szymanski, 2006).

![Figure 2-1 Concentrated Sporting Success in UEFA Champions League; Source: “UEFA Champions League's Annual Statistics Handbook” (UEFA, 2010b).](image)
As it is seen from Figure 2-1, in seventeen years history of UEFA Champions League, 68 spots for semi-finals are gained only by 9 countries out of possible 31. Besides, almost half of these spots (33) are gained only by 2 countries out of possible 9. As it is stated by Szymanski (2006) competitive imbalance does exist in UEFA Champions League. This study aims to investigate which factors to what extent create this imbalance.

Figure 2-2 Concentrated Sporting Success in UEFA Champions League by Per Capita; Source: “UEFA Champions League’s Annual Statistics Handbook” (UEFA, 2010b).

2.3 Revenue Pooling (Cross Subsidization)

Revenue pooling among clubs is one of the most well-known arguments in order to create a healthier league in terms of more balanced competition and more uncertain outcomes (Kesenne, 2004). There are different views about revenue pooling in the literature. According to Rottenberg (1956) pooling all the revenues of the teams and sharing them equally put all the clubs at the same financial level when they want to bid for a player. Therefore, if there were no incentives to win in order to get bigger shares teams would not spend on players and create a winning team. This might result in an equal distribution of average players and consumer substitution to other entertainment options.

On the other hand, cross subsidization is suggested in order to maximize uncertainty of outcome in professional leagues where clubs are win maximizers. The reason is that, without competitive balance leagues become less uncertain and entertaining. Besides, leagues are responsible for creating an acceptable level of competitive balance for the fans. Without cross subsidization from strong teams, weak teams do not have an incentive to compete to maximize league revenues and this argument is used all the time to defend revenue sharing (Sloane, 1971; Jennett, 1984; Fort & Quirk, 1995; Syzmanski & Kesenne, 2004; Kesenne, 2006b).

It is found that revenue pooling improves competitive balance if teams are win maximizers like in Europe (Kesenne, 2004; 2005). Without revenue pooling, the gap between rich and poor clubs increases. As a result, games become more predictable and attendances decrease. It can even result in bankruptcy or breakaway of leagues by rich clubs. In order to fight against concentrated success on the pitch by certain teams and
increase the interest towards football, revenue redistribution should be applied (Michie & Oughton, 2004).

2.4 Economics of Football vs. Conventional Economics

As it has been strongly stressed in the beginning, professional team sports are different than other types of entertainment because of the mutual interdependence between both competing sides. Rottenberg (1956) draws a very clear line between sports and regular business activities. He argues that success comes from a sufficient difference between two teams. If one side is too good and exceeds the opponent totally it has no other club to compete anymore. In fact previously mentioned “the product joint” by Neale (1964) was clearly explained by Rottenberg in his paper as follows:

“Two teams opposed to each other in play are like two firms producing a single product. The product is the game, weighted by the revenues from its play” (Rottenberg, 1956, pp. 254-255).

Almost a decade after Rottenberg, Neale (1964) shed more light on professional team sports economics by calling it “peculiar” which also supports the line drawn by Rottenberg between regular and sports business activities. Neale (1964) adds that more (sporting) competition between teams ends up in bigger profits and “the product joint” produced by two or more separate firms (teams) can also be sold separately through seats in stadiums and TV viewing. Depending on these, Neale concludes that in economic theory a team is not the firm itself but the whole league is. This situation theoretically and necessarily makes each type of professional sports a natural monopoly.

Different from traditional industries, cooperation emerges from mutual advantages in sports industry (Neale, 1964; Sloane, 1971). This unique characteristic of competition is defined as a paradox by Sloane (1971) due to the fact that while a team is trying to be more successful and have a better position in the league it is also interested in its rivals’ success. Since more successful rivals create more interest to joint product.

In professional sports leagues teams are perfect competitors on the pitch; however, they are in absolute cooperation off the pitch in terms of rules of the game and labor market and product market restraints (Garcia-del-Barrio & Syzmanski, 2009). Seabright (1999) explains this situation as follows:

“...what is the good that football clubs supply and what differentiates the markets in which they operate from markets for other goods? Football is like theatre in many ways. The players supposedly ‘competing’ are in fact collaborating to produce a show that satisfies the spectators who pay to see it” (cited in Hoehn & Szymanski, p. 236, 1999).

Although they are not technically used in the analysis part, seeing the differences between economics of football and conventional economics is of vital importance. In this way, the motives of teams to be successful on the pitch and levels of those motives could be understood more easily.

2.5 Labor Market

Another interesting and relevant part of the economics of football is properties of labor market. As a matter of fact, players are mainly an input to produce football games. Therefore, in order to create a quality output quality players are needed by the teams. In
order to see how this input is used, how are they paid and why are they paid so much, it is essential to take a look at the structure of labor market in football. Professional team sports labor markets have traditionally been acknowledged as monopsonistic (Avgerinou, 2007). In his paper “The Baseball Players’ Labor Market” Rottenberg (1956) deals with the issue “reserve clause” which basically means that when a player signs a contract with a team that team has the exclusive rights of that player. When the contract expires, the player either extends his contract with the team getting a wage of no less than 75 per cent of his current wage or the team can assign the player to another team in the league regardless of what the player wants. Other teams cannot even negotiate with the player directly for his services; they are allowed to negotiate only with the contract holder.

Rottenberg explains that there is invariance between allocation of talent and the ownership of players’ services. Under reserve clause player ends up playing in a team where the marginal revenue product is the greatest. Under free agency, player ends up playing in a team in which he gets the highest salary. As a result under both allocation schemes the results would be the same (Krautmann, 2008).

The interdependency which exists between teams in order to produce a joint product exists between players who are in the same team as well. When we go for a dinner we evaluate the overall quality of that meal depending on the particular quality of wine, appetizers, main course and dessert. Players’ values are similar to this situation. If there are several players who are competing for one single output this output is of course dependent on the talents of each and every player in the same team (Rosen & Sanderson, 2001).

Dowson & Downard (2000) supports a perfectly competitive model for players’ labor market where neither clubs nor players have power over wages. It is assumed that both players and their output have the same quality and there is nothing exclusive about neither of them. As a consequence, uncertainty of outcome for all the games and profits for the league could be maximized. Other possible models are described in the figure below;

<table>
<thead>
<tr>
<th>Player power / Club power</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Perfect competition: ‘just wage’</td>
<td>Monopoly: ‘star model’</td>
</tr>
<tr>
<td>High</td>
<td>Monopsony: ‘exploitation of players’</td>
<td>Bilateral monopoly: ‘bargaining over rents’</td>
</tr>
</tbody>
</table>

Figure 2-3 the Players’ Labor Market Structure; Source: “Economics of Professional Team Sports” (Dawson & Downard, 2000).

People always question how a player can be paid so much money in a day which could be earned in years by most of the supporters (Morrow, 2003). Besides, football players’ wages are compared with wages of other professions such as teachers and doctors. The question behind this comparison is ‘is playing in a football team more important than
teaching?’ Well, technically it is (Rosen & Sanderson, 2001). The reason is, there is a difference between ‘personal scale of operations’ which means that teachers have the chance to teach a class with limited number of students while players perform for lots of spectators, so players’ fortune is based on ‘low mark-ups’ but ‘high volume’ (Mayer, 1960). Unfortunately there is not enough data available for clubs’ payrolls which can be used in this study. However, it is still important to take a quick look at football players’ labor market in order to see its effect on teams’ finances and joint product.

2.6 Football and Television Broadcasting

The relationship between football and television broadcasting attracts some attention even if it is not able to be used in analysis part of this study. The reason why it attracts attention is that, fast increase in broadcasting revenues led clubs to spend more on player wages. Consequently, it resulted in big financial and on-pitch imbalance between rich and poor clubs (Hoehn & Szymanski, 1999; Andreff & Staudohar, 2000; Avgerinou, 2007).

Television has a big effect on economics of football, while in 1985 total broadcasting value of English, Spanish, German, Italian and French leagues’ was less than €30 million. As a result of technological developments such as pay-TV, satellite, cable and digital broadcasting, clubs’ broadcasting revenues dramatically increased (Szymanski, 2006).

According to Deloitte’s yearly Football Money League (2011) report on European football business, the aggregate revenue of the richest 20 clubs in Europe is now almost €1.9 billion and the mean share of broadcasting revenue is 44%. For 8 of these 20 clubs this share is over 50% and the highest club with 65% and the lowest with 23% share.

The reason why broadcasting revenue cannot be used in our analysis is the different ways of selling across Europe. In most of the countries like England, Germany and France broadcasting rights are sold by the league organization on behalf of football clubs, the same system is also applied in most of UEFA competitions. There are different models for sharing broadcast revenues in every league and UEFA Champions League. On the other hand, in countries like Spain and Italy clubs sell their rights individually and this situation creates a big gap between rich and poor teams in these leagues (Deloitte, 2011).

In the last part of this section some results from studies about sporting success will be presented.

2.7 Results from Previous Studies

One of the biggest problems about this study is the lack of enough number of studies dealing with on-pitch success on club level. In order to deal with this problem, a more general approach is used in this study. Prominent properties of economics of football has been carefully analyzed and presented. Then, these properties are related to analysis part of this study.

Most of the studies dealing with sporting success are about the determinants of success in Olympic Games. The ones dealing with football success are mostly about national teams’ success in international competitions. However, it would still be reasonable to infer that variables used in those studies to some extent can explain football clubs’ on-
pitch success as well. Most of the studies performed about international football success of countries are mostly based on FIFA (International Federation of Association Football), all time FIFA World Cup and other international rankings (Garcia et al., 2007). Below the variables used in previous studies and their affects will be evaluated.

GDP per capita is found to have a positive effect on sporting success. Young players need good organizations and physical equipments to become world class players and this situation requires public and private spending on sports facilities and organizations. Besides, higher income levels generate more leisure time and money available to spend on football (Houston & Wilson, 2002; Hoffmann et al., 2002; Torgler, 2006; Garcia et al., 2007; Leeds & Leeds, 2009). GDP per capita is found to be significantly related to national Olympic success as well (Ball, 1972; Grimes, Kelly, & Rubin, 1974). However, the crucial point about GDP per capita’s effect on sporting success is there is a “quadratic” relationship between countries’ football success and GDP per capita. In other words, early increases in GDP per capita improve countries’ performance; however, after exceeding a certain optimal level every additional increase creates smaller returns (Hoffmann et al., 2002; Torgler, 2006). This relationship is valid not only for GDP per capita but also for time and other resources spent on football. As a result, GDP per capita, time and effort spent on football are all subject to law of diminishing marginal returns (Houston & Wilson, 2002; Torgler, 2006).

Population is also found to be statistically significant depending on the fact that more populous countries have bigger pools for talent (Houston & Wilson, 2002; Leeds & Leeds, 2009). On the other hand, according to Torgler (2006) it is not statistically significant because of some good performances shown by countries with small populations like Belgium, the Netherlands, Sweden and Portugal. Hence, it does not necessarily mean that countries with larger populations are to be more successful on the pitch. Furthermore, according to Hoffmann et al. (2002) and Torgler (2006) population has an impact on performance in World Cup tournaments only if the country has a Latin origin. In their study about the economic geography of football success in UEFA Champions League, Garcia et al. (2007) assert that cities with increasing population and economic development (GDP per capita) have bigger probability to host more successful teams, which they call “elite cities”. Thus, an increase in population and GDP per capita of a city enhances on-pitch performance of the teams, which are hosted by that city. Walker (1986) also found out that bigger city teams get higher places in league tables.

Football tradition, including countries’ hosting and participating to an international football tournament in other words their experience and devotion to football is also found to have a positive relationship with sporting success. According to Hoffmann et al. (2002) hosting an international tournament has a positive impact on countries’ performances. Houston & Wilson (2002) and Torgler (2006) revealed that world cup appearances have a positive effect on football proficiency. Countries’ football history reveals that country has strong football institutions and football has an important part in countries’ culture. Besides, people are devoted to football (Leeds & Leeds, 2009).

Stadiums are important for clubs in terms of revenues. Unfortunately there are not empirical results about stadiums’ effect on sporting performance. However, according to Deloitte Football Money League (2005), especially in England, a lot of clubs improved their stadiums into an important source for income. Besides, they did this not only for match day but also for non-match day activities like concerts. Generally,
hosting an international tournament is an important push for such developments. Although it might not look like there is a direct relationship between stadium capacity and performance, improved and bigger stadiums can lead to higher ticket prices and successively to higher revenues (Deloitte, 2008).

According to Deloitte Football Money League (2011) there is a positive relationship between the amount clubs spend on wages and on-pitch success. This strong relationship exists between clubs’ revenues and on-pitch success as well. Clubs which become champions in their domestic leagues has either the highest payroll or the highest income in half of the leagues. Again this strong relationship is also valid between the performance at European club competitions and financial resources of clubs (UEFA, 2010a). However, based on years 2008 and 2009 because of the knock-out nature of Champions League large spending on wages does not necessarily promise on-pitch success (UEFA, 2011a).
3 Theory

In this section of the study, theories related to economics of football and objectives of a football club are going to be reviewed.

3.1 Demand for Professional Team Sports and Leisure Time

Demand is a plan to consume and it is dependent on different situations and factors. According to common economic theory, people allocate and spend their time and money in order to maximize the utility they get from this consumption. Hence, people have to make their decisions about spending leisure time under a constraint. This constraint is called “leisure time constraint”. Individuals’ utility function is subject to wage income per year and number of leisure hours per year. Besides, there is a negative relationship between wage rates and working hours and a positive relationship between wage rates and leisure time. Thus, as the wages increase working hours decrease and as a result of this decrease per capita leisure time is expected to increase for most of the population. Therefore, as the wages per hour increase leisure time increases as well. (Andersson & Andersson, 2006).

Normally rapid changes in leisure time are not expected. However, since the industrial revolution there has been a rapid decrease in working hours. Increases in people’s wealth allow them to spend more on leisure activities. When people get wealthier, they become more willing to spend on leisure (Houston & Wilson, 2002; Vogel, 2007).

In the end of 80’s and the beginning of 90’s a gentrification started in football. Before it was a working class spare time activity but then it started to become a middle class entertainment (Hoehn & Szymanski, 1999). Combined with this gentrification, football also enjoyed the growth in per capita income and per capita leisure time all over the world. In this way, more and more people started flowing to stadiums everyday paying more and more for football games causing higher demand and successively higher revenues for football clubs and for the industry as a whole.

Depending on the data of twenty eight countries from 1953 to 1960 Andersson & Andersson (2006) found that, a decrease in yearly working hour rates for Western Europe and North America was observed. As a result of decreases in per capita working hour and increases in per capita income the constraints on time and income have been significantly loosened. To sum up, increases in per capita income and per capita leisure time have created a great opportunity to consume entertainment which has never existed before.

Product of football industry is a form of entertainment like movies or performing arts and this product is consumed as a leisure activity. Households with higher income tend to spend more on recreation and entertainment as they consume more leisure time (Houston & Wilson, 2002). People’s share for disposable income to spend on leisure activities has been increasing in many of the developed countries (Andersson & Andersson, 2006). Leisure as an industry has also grown spectacularly. The yearly payroll of professional sports, recreation and various amusements from 1987 to 1995 increased almost twofold in United States. For professional team sports, several countries have allocated large amount of resources for youth training facilities. It initiated the commercialization of important international sporting events like Olympics...
and FIFA World Cup (Houston & Wilson, 2002). As a result, spectator sports enjoyed this growth as well and people’s demand for spectator sports has increased stepwise.

According to Simmons (2006) and Avgerinou (2007) demand for spectator sports depends on following economic and other determinants:

- Price of the event (including cost of complements)
- Income effect
- Substitution effect
- Market potential
- Public familiarity with the game and the players
- Fans preferences and tastes
- Team quality
- Importance of the contest in terms of competition outcomes
- Uncertainty of outcome, and
- Quality of the sports facilities

Although most of these determinants are valid for conventional consumer theory as well, it is harder to apply conventional theory to professional team sports; because, according to Simmons (2006) fans are not as rational as other consumers who are less interested in sports. They devote themselves to a team and it is almost impossible for them to support any other team different than theirs. As a result of this, sometimes because of their addiction, fans can keep demanding no matter what are the circumstances (Simmons, 2006). However, not all the consumers of football are devoted fans.

3.2 Vicious and Virtuous Circles

In European football different than the U.S. sports leagues, clubs have strong traditional bond to their host cities. They are not able to relocate just because of financial difficulties (Avgerinou, 2007). Additionally, not every city has the same opportunities, population and audience. For this reason, imbalance for football clubs start in the very beginning. According to Rottenberg (1956) market size, people’s taste for the sport, income levels, accessibility and so on create differences in revenues between teams. If a team is better off because of these differences it can bid for better players. Thus it can get increased attendance and revenues and this cycle keeps going on and on. Vice versa happens for a team if it is worse off. Sloane (1971) calls this situation a “virtuous circle” (or a vicious circle).

“The virtuous circle implicitly assumes that the purchase of star players automatically results in improved performances. This may not necessarily follow since football is increasingly a team game relying on constructive combination of individual talents... Nonetheless concentration of resources does threaten to remove uncertainty which provides an essential part of the game’s attraction (Sloane, 1971, p.137).

Very similar to Sloane’s (1971) circle theory and supporting Neale’s (1956) approach about calling professional team sports economics “peculiar”, Michie & Oughton (2004) underlines the difference between regular businesses and sports business. They argue that clubs need to balance their objectives between financial and sporting success; in other words, between win and profit maximization behavior. This balance is quite
complicated because of two fundamental characteristics of sports leagues, which are as follows (for each team):

- If teams spend more on wages they will be more successful on the pitch.
- When they become more successful on the pitch this will necessarily affect the revenues in positive direction as well (Hoehn & Szymanski, 1999; Michie & Oughton, 2004).

Better on-pitch performance is appreciated by more spectators and sponsors and this appreciation results in increasing revenues for clubs. Moreover, clubs with better on-pitch performance use these increasing revenues for better players and better performance in future (Michie & Oughton, 2004).

On the other hand, clubs with worse on-pitch performance find themselves caught in a vicious circle. When clubs get caught in the vicious circle, the worse they perform the less they are appreciated by spectators and sponsors. This depreciation makes these clubs end up with smaller revenues. As a result, they reduce investment in players which results in a decline on clubs’ on-pitch performance. In order to prevent teams getting caught in these virtuous and vicious circles sports leagues should act like Robin Hood and cross-subsidize between rich and poor clubs (Michie & Oughton, 2004; Baroncelli & Lago, 2006).

Figure 3-1 The Virtuous Circle between Sporting Results and Economic Gain (Leading Clubs); Source: “Italian Football” (Baroncelli & Lago, 2006)

This theory about virtuous and vicious circles are confirmed by Kuypers and Szymanski’s (1999) research about the relationship between wage expenditure and league position in which they used a sample of 39 English football clubs between 1978 and 1996 and found a positive significant relationships between them (cited in Hoehn & Szymanski, 1999). Besides, according to Szymanski (2007) the more clubs spend on player wages the more successful they become; furthermore, as clubs keep earning more money they spend it on player wages.

3.3 The Objectives of a Football Club

The empirical interest in firm objectives in professional team sports has been quite slight. One of the most important difficulty is that the empirical difference between win
and profit maximization in the team sports has not been able to be clearly distinguished yet. (Cairns et al., 1986).

Neale (1964) explained that sports economics are peculiar; however, despite this peculiarity professional team sports behavior is studied in a traditional economic framework. This might be sensible for professional team sports in the U.S.; however, it is not quite possible to apply this at worldwide level (Dobson & Goddard, 2001).

Sloane (1971) suggests following five different objectives for a football club:

- **Profit**: although profit is not the only and the most important objective it should still be included in the utility function.
- **Security**: instead of maximizing playing success teams simply may focus on their financial security in order to survive in the long run through, for example selling players.
- **Attendance**: attendance can easily be regarded as an important objective due to the satisfaction created by high attendance and atmosphere. Different than the early times, teams started realizing that not every game has the same level of willingness to pay so they started charging tickets according to games’ importance and quality which resulted in bigger revenues.
- **On-pitch success**: since football is a consumption activity this naturally is the most important objective.
- **Health of the league**: Due to mutual interdependence between teams, this should also be a club’s objective.

Based on these objectives Sloane (1971) asserts that football is a consumption activity, so it can be easily said that win maximization is natural. Clubs operate in order to maximize utility which is subject to on-pitch success, average attendance, health of the league and recorded profit. He concludes his analysis with two implications; first one is that making assumptions through win maximization for professional sports might be more accurate than doing it through profit maximization. Secondly, regardless of its form some restrictions in competition are obviously necessary for the maintenance of sporting competition and financial stability of the game.

According to Sloane (1971) directors and shareholders investing in football are already successful businessmen. The main reason why they invest in football is psychological, desiring for power and prestige, more than financial ones. Football clubs’ tradition and connection to the cities they are located creates external social benefits which also attracts investors.

Football clubs are mostly interested in winning. The best way to create a winning team is to employ the best players; in other words, employ the highest possible number of talents within the given budget (Kesenne, 2006a).  


In this figure the horizontal axis indicates number of talents and the vertical one indicates the total season revenue and cost. Apparently revenue and cost increases as the number of talents increase. However the revenue decreases because the more talents a team has the less will be the uncertainty of outcome and so will be the revenues. So here, the profit maximizer hires $x_1$ number of talents where marginal revenue equals marginal cost. On the other hand, the win maximizer hires $x_2$ number of talents where total revenue equals total cost (Kesenne, 2006a).
4 Hypotheses of the Study

Based on previous studies and theories about the economics of professional team sports and football and leisure industry economics, it seems that some certain economic, demographic and historical factors have an impact on sporting performance of football clubs. This study aims to investigate the following relationships for UEFA Champions League:

Clubs based on more populous cities with better financial conditions and from prosperous countries with old football tradition and deep devotion towards football are expected to perform better on the pitch. Clubs competing in national leagues with higher competitive balance and with bigger and better stadia are also expected to have a better performance in international competitions. Besides, factors mentioned above, which makes some clubs better than the others, do not let uncertainty of outcome and competitive balance to be fully maximized in football leagues with win maximization behavior. Thus, following four hypotheses will be tested in this study:

1. Financially stronger clubs with larger stadia and located in more populous cities are expected to perform better on the pitch.
2. Clubs from countries with higher GDP per capita are expected to perform better on the pitch. However, this situation is subject to law of diminishing marginal returns.
3. A country’s football tradition and people’s devotion to football positively affects that country’s clubs’ on-pitch performance in UEFA Champions League.
4. Economical, demographic and traditional factors create a gap between teams; thus, competition becomes less balanced and this situation causes more certain outcomes for the games.
5 Empirical Analysis

5.1 Methodology, Data and Model

The data for the empirical part of the study has been collected from multiple secondary sources. Similar to most of the previous studies focused on socio-economic determinants of football success, an international football ranking is used as a dependent variable. All time ranking list (1992 - 2010) of UEFA Champions League is used as a dependent variable. This list is prepared by UEFA depending on teams’ on-pitch performances at group and further stages of Champions League. Per capita gross domestic product based on purchasing power parity of the countries for 2001 is retrieved from IMF’s World Economic Outlook Database. Values collected from IMF were in the U.S. Dollars, so they are converted into Euros due to the fact that total market values of the teams are in Euros. This conversion is done by using yearly average exchange rate for 2001 provided by Oanda.com. Populations of the cities are collected from Urban Audit which is coordinated by EUROSTAT. For the city populations LUZ\(^2\) (larger urban zone) values are taken into account. These data corresponds to 2004. Populations of the cities which are not available on Urban Audit are collected from national statistics services of each country. The closest values to 2004 are collected for these cities due to varying census years by different countries. These values correspond to 1999, 2001 or 2009. Market values, stadium capacities and the foundation years of the teams are collected from German website Transfermarkt.de which is a famous football database and has been evaluating players’ values since 2000. Since there is no widely available data about all clubs’ payrolls, gate and broadcasting revenues, values of the players are used instead as a financial indicator. Countries’ number of participation in FIFA World Cup and UEFA European Football Championship is taken out from FIFA’s and UEFA’s websites. For the dummy variable if a country has ever hosted FIFA World Cup or UEFA European Football Championship since they have started to be organized, the information is taken from FIFA’s and UEFA’s websites as well.

In order to see the interrelationship among the variables, their effect to predict a particular outcome and which variable is the best predictor of the outcome, multiple regression analysis is used for the model. Besides, to avoid skewness problems some of the variables are log transformed.

5.1.1 Dependent Variable

On-Pitch Performance / UEFA Champions League all-time ranking points (1992-2010) (LogONPITCH)

On-pitch performance of a team is the basic measure for supporters to evaluate their teams’ success. The general assumption for on-pitch success is the teams with the greatest financial power and the highest revenues can buy the best players in the market and pay them high wages so that they can create teams with more talented players and perform better on the pitch (Deloitte, 2008). Dependent variable of this study is the performance of UEFA member teams in UEFA Champions league between the seasons 1992 - 1993 and 1999 - 2010. All time ranking list of clubs is prepared by UEFA and

\(^2\) LUZ covers the share of the residents commute into the city.
includes all the teams which competed in Champions League at group stage and further elimination rounds. Clubs’ points in the ranking list are used as proxy. The ranking list used in this study is up to date as of 1st of June, 2010 (UEFA, 2010b). UEFA Champions League is the highest level club competition in Europe and one of the most prestigious and popular sports events in the world. It actually started in 1955 with the name of “European Champions Clubs’ Cup” as a knockout tournament which was not really initiated by UEFA. In 1992 it evolved into UEFA Champions League with a group stage and then traditional knockout stage. During the years the format of the league has been through some changes and the competition which started with eight teams has become a big league with thirty two participants now with matches being played on Tuesdays and Wednesday all over Europe (UEFA, 2011b). Original data for on-pitch success has been log transformed so as to avoid skewness problem.

5.1.2 Explanatory Variables

Following explanatory variables are used for the regression model. Explanatory variables are selected to reflect their impact on the outcome of the model.

**GDP per capita of the home country (based on purchasing power parity) (GDPPC)**

The first explanatory variable is GDP per capita of the clubs’ home country for the year 2001 which is used for two reasons. The first reason is it is an indicator of higher disposable income that people can pay and demand more for football games. The second reason is it leads to more investment for physical facilities and youth training in order to offer people a better environment for sports both to perform and watch them. Hence, higher GDP per capita is assumed to enhance sporting performance. On the other hand it is assumed by previous studies that the effect of GDP per capita on sporting performance is subject to law of marginal diminishing returns.

**Population of the host city (LogPOP)**

The second variable is populations of the cities hosting the football clubs. This variable is used for two reasons. First of all, the economics of professional team sports claim that clubs with larger markets are better off compared to clubs with smaller markets (Vrooman, 1995). Considering the fact that gate revenue is one of the most important income opportunities of football clubs, cities with higher population could trigger higher revenues at the gates. Second reason is about talent pool. Although nowadays clubs can easily transfer players from other countries, especially the EU countries after Bosman Ruling, cities with higher population are still better off to find more talents. In order to avoid skewness problem, original data for population has been log transformed.

**Total market value of the team’s players (LogVOT)**

Teams consisting of players who have higher market values are expected to perform better on the pitch. Logically, more valuable players are more successful on the pitch than less valuable ones. The aggregate value of the players in a team is expected to have a positive impact on a team’s sporting performance. Values of the players are perceived depending on their on-pitch performance.

---

3 Bosman Ruling was a case which put an end to reserve clause and created a free market for players and a notable change in football at club level during the last decades. It deeply affected the whole structure of professional football in Europe (Morrow, 2003) (Goddard, 2006) (Avgerinou, 2007).
**Capacity of the stadium (LogSTAD)**

Larger capacities allow larger crowds; however, not necessarily lead to higher revenues because a club might have a large stadium with cheaper tickets or a small one with more expensive tickets. So, the important point here is the aggregate amount that clubs collect from gates. Therefore, it is also related to purchasing power of the supporters of the club. On the other hand, stadia have psychological effect as well for the players. Supporters can be a big push for the team competing on the pitch. As a result it is assumed that larger stadia enhance sporting performance. The original data for this variable, like the two previous ones, has also been log transformed.

**Country’s participation in international tournaments (PART)**

“PART” stands for clubs’ home countries’ participation in FIFA World Cup and UEFA European Football Championship. FIFA World Cup has been organized since 1930 and European Football Championship has been organized since 1960, both in every four years. It is used as a proxy for football tradition of the country and people’s devotion to football. Since countries which have more participation in international tournaments are expected to perform better on the pitch, ceteris paribus (Houston & Wilson, 2002).

**Club’s age (AGE)**

Similar to countries’ participation in international tournaments, it is used as a proxy for football tradition and experience as well. Moreover, it could be assumed that the older a club is the more stable economical and organizational foundations it has. It is calculated by subtracting clubs’ years of foundation from 2010.

**Rank of the next best team from the same country (RANK)**

As discussed earlier, competitive balance is one of the most important features in economics of football. In order to observe the level of competitive balance among teams from the same country, rank of the next best team in the ranking table from the same country for each club has been added.

**Country’s hosting an international tournament (HOST dummy)**

Host dummy is the third variable for football tradition. Similar to participation in international tournaments and age of the club, hosting an international tournament is also assumed as an indicator for a country’s strong sporting culture and devotion to football. Moreover, almost all of the countries hosting an international tournament are expected to build new stadia or improve the current ones. It is somewhat connected to stadium variable as well. In order to test this effect a value of 1 is assigned to countries which have hosted either FIFA World Cup or European Football Championship since they have begun to be organized.

The variables of the model are summarized in table 5-1 below.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Hypothesized Sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>LogONPITCH</td>
<td>UEFA CL all-time ranking points (June, 2010)</td>
<td></td>
</tr>
<tr>
<td>GDPPC</td>
<td>GDP per capita of the home country</td>
<td>+</td>
</tr>
</tbody>
</table>

21
**LogPOP**  Population of the host city  
**LogVOT**  Total market value of the team’s players  
**LogSTAD**  Capacity of the stadium  
**PART**  Country’s participation in international tournaments  
**AGE**  Club’s age  
**RANK**  Rank of the next best team from the same country  
**HOST**  Host Dummy  

### 5.1.3 Model
Following regression model has been built up for the regression analysis. Short descriptions of the variables could be seen in Table 5-1 above.

\[
\log (\text{ONPITCH}) = \beta_0 + \beta_1 \text{GDPPC} + \beta_2 \log (\text{POP}) + \beta_3 \log (\text{VOT}) + \beta_4 \log (\text{STAD}) + \beta_5 \text{PART} + \beta_6 \text{AGE} + \beta_7 \text{RANK} + \beta_8 \text{HOST} + e_i
\]

### 5.2 Findings and Analysis
In this section descriptive statistics and correlations are going to be presented respectively. Afterwards, the section is going to be ended with regression analysis and findings.

#### 5.2.1 Descriptive Statistics
In table 5-2 below, descriptive data is presented. It displays an overview of the minimum, maximum, mean and standard deviation values of the variables.

<table>
<thead>
<tr>
<th></th>
<th>Obs.</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>LogONPITCH</td>
<td>110</td>
<td>2.71</td>
<td>1.34</td>
<td>.000</td>
<td>5.37</td>
</tr>
<tr>
<td>GDPPC</td>
<td>113</td>
<td>19903.86</td>
<td>7410.30</td>
<td>3069.69</td>
<td>36055.31</td>
</tr>
<tr>
<td>LogPOP</td>
<td>113</td>
<td>13.65</td>
<td>1.52</td>
<td>9.74</td>
<td>16.29</td>
</tr>
<tr>
<td>LogVOT</td>
<td>113</td>
<td>17.68</td>
<td>1.25</td>
<td>13.93</td>
<td>20.13</td>
</tr>
<tr>
<td>LogSTAD</td>
<td>113</td>
<td>10.33</td>
<td>.62</td>
<td>8.59</td>
<td>11.50</td>
</tr>
<tr>
<td>PART</td>
<td>113</td>
<td>14.15</td>
<td>8.18</td>
<td>0</td>
<td>27</td>
</tr>
<tr>
<td>AGE</td>
<td>113</td>
<td>97.07</td>
<td>23.26</td>
<td>18</td>
<td>137</td>
</tr>
<tr>
<td>RANK</td>
<td>113</td>
<td>43.73</td>
<td>37.85</td>
<td>0</td>
<td>112</td>
</tr>
</tbody>
</table>

Number of the teams which competed in UEFA Champions league between 1992 and 2010 is 113. Log transformation of dependent variable resulted in missing of three
observations. However, the size of the total observations is still satisfactory for a regression analysis.

Variables LogONPITCH, LogPOP, LogVOT and LogSTAD are log transformed because of their skewness problem.

### 5.2.2 Correlations

The correlations between the dependent variable and explanatory variables are shown in table 4-3 below. Linear relationships and their strengths among each of the variables which are used in the regression model can be seen from the table.

**Table 5-3 Correlations**

<table>
<thead>
<tr>
<th></th>
<th>LogONPITCH</th>
<th>GDP PC</th>
<th>LogPOP</th>
<th>LogVOT</th>
<th>LogSTAD</th>
<th>PART</th>
<th>AGE</th>
<th>RANK</th>
<th>HOST</th>
</tr>
</thead>
<tbody>
<tr>
<td>LogONPITCH</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDPPC</td>
<td>0.040</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LogPOP</td>
<td>0.477**</td>
<td>-0.292**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LogVOT</td>
<td>0.678**</td>
<td>0.168</td>
<td>0.376**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LogSTAD</td>
<td>0.626**</td>
<td>0.163</td>
<td>0.541**</td>
<td>0.672**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PART</td>
<td>0.324**</td>
<td>0.525**</td>
<td>0.012</td>
<td>0.557**</td>
<td>0.527**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AGE</td>
<td>0.204*</td>
<td>0.226*</td>
<td>0.140</td>
<td>0.108</td>
<td>0.254**</td>
<td>0.223*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RANK</td>
<td>-0.097</td>
<td>0.142</td>
<td>-0.213*</td>
<td>-0.091</td>
<td>-0.172</td>
<td>0.032</td>
<td>-0.086</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>HOST</td>
<td>0.239*</td>
<td>0.655**</td>
<td>-0.105</td>
<td>0.439**</td>
<td>0.387**</td>
<td>0.817**</td>
<td>0.254**</td>
<td>0.090</td>
<td>1</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level.
* Correlation is significant at the 0.05 level.

From the correlation matrix above, it is seen that four of the eight explanatory variables have a significantly positive correlation with the dependent variable on-pitch success. The strongest positive correlation is observed between on-pitch success and total market value of the team’s players. At 1 percent significance level a highly positive correlation is observed between these two variables. Stadium capacity also has a highly positive correlation with on-pitch success at 1 percent significance level.

At 1 percent significance level, positive and medium correlation is observed between on-pitch success and population of the host city, as well as with country’s participation in international tournaments.

Other noteworthy positive correlations observed at 1 percent significance level are as follows: country’s hosting an international tournament and its GDP per capita, country’s hosting an international tournament and capacity of the stadium, total market value of
the team’s players and capacity of the stadium, GDP per capita of the country and participation in international tournaments and finally population of the host city and capacity of the stadium. Important point about these correlations is, as it is mentioned before hosting an international tournament has an effect on stadium capacities. Besides, countries with higher GDPs have more participation in international tournaments similar to previous studies.

At 5 percent significance level, small and positive correlation is observed between on-pitch success and age of the club, as well as with hosting an international tournament. No significant correlation is observed between on-pitch success and GDP per capita.

In the next section the regression analysis will be presented. In order to test multicollinearity following steps are taken. The correlation matrix is checked for correlated independent variables and the only problematic correlation is observed between country’s participation in international tournaments and if a country has ever hosted an international tournament with a value of 0.817. The same variables have the two highest VIF values as well although the values are not high enough to create a serious multicollinearity problem for the model. Perfect value (2) for Durbin-Watson is not observed for this model. Durbin-Watson value tests for autocorrelation between error terms and if the Durbin-Watson value is less than 2 it implies a positive autocorrelation. However, Field (2009) recommends that as a conventional rule of thumb, if the Durbin-Watson value is not less than 1 or greater than 3, it does not cause a problem. Besides, looking at the normal probability plot of regression standardized residuals and the residuals scatter plot it is observed that there is no deviation from normality. Plus linearity and homoscedasticity assumptions have been met by the model.

Nevertheless, in order to avoid any possible concerns about VIF and Durbin-Watson values, the two variables which are highly correlated with each other are going to be added into regression successively. Afterwards, effects of this action on VIF, Durbin-Watson and R² values are going to be checked.

When the dummy variable HOST is removed from the model, VIF value of variable PART falls to 2.272 from 3.880. On the other hand, Durbin-Watson value of the model increases only 0.001 point while the R² value does not change at all. When the variable PART is removed from the model, VIF value of variable HOST falls to 2.299 from 3.807. Once again, Durbin-Watson value of the model does not show a significant increase with only 0.015 points from 1.243 to 1.258. On the other hand, 0.004 points decrease is observed at R² value of the model from 0.553 to 0.549. As a result, it is clearly seen that this action does not affect the results too much.

5.2.3 Regression Analysis

This multiple regression model intends to show how well a set of independent variables are able to predict the model’s outcome and which one of these variables are the best predictors of this outcome. As it is addressed before, in this model the outcome is on-pitch success in UEFA Champions League.
### Table 5-4 Regression Output

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>-14.919</td>
<td>1.967</td>
<td></td>
</tr>
<tr>
<td>GDPPC</td>
<td>.000</td>
<td>.000</td>
<td>.022</td>
</tr>
<tr>
<td>LogPOP</td>
<td>.157</td>
<td>.081</td>
<td>.179</td>
</tr>
<tr>
<td>LogVOT</td>
<td>.576</td>
<td>.109</td>
<td>.523</td>
</tr>
<tr>
<td>LogSTAD</td>
<td>.460</td>
<td>.247</td>
<td>.213</td>
</tr>
<tr>
<td>PART</td>
<td>-.022</td>
<td>.021</td>
<td>-.132</td>
</tr>
<tr>
<td>AGE</td>
<td>.006</td>
<td>.004</td>
<td>.101</td>
</tr>
<tr>
<td>RANK</td>
<td>.003</td>
<td>.002</td>
<td>.072</td>
</tr>
<tr>
<td>HOST</td>
<td>.087</td>
<td>.362</td>
<td>.031</td>
</tr>
</tbody>
</table>

N: 110  
F-Value: 15.650

### R² and Dependent Variable

R² is a measure of how much of the variability in the outcome is accounted for by the predictors. For this model, the value of R² is 0.553, which means that 55.3% of the variability of on-pitch success is explained by the significant predictors in the model.

The dependent variable is **On-Pitch Success**, with **significant at the 0.05 level**, and **significant at the 0.1 level**.

Unstandardized beta-coefficient values tell us about the relationship between the dependent variable on-pitch success and each predictor, whether this relationship is positive or negative. In the model, seven of the eight independent variables have positive unstandardized beta-coefficient values indicating a positive relationship with the dependent variable on-pitch success. The only predictor with a negative unstandardized beta-coefficient value is country’s participation in international tournaments (PART) indicating a negative relationship with on-pitch success. Therefore, except country’s participation in international tournaments all the other predictors increase a team’s on-pitch success in UEFA Champions League.

Unstandardized beta-coefficient values also tell us the degree of each independent variable’s effect on the outcome if the effects of all other variables are held constant. Looking at these values it could be seen that total market value of the team has the highest positive effect on on-pitch success. Stadium capacity has a medium effect on the outcome while population of the host city has a very small effect. However, the standardized versions of the beta values offer a better interpretation since they are not dependent on the units of measurement of the variables. The standardized beta values are all measured in standard deviation units and they are directly comparable with each
other. Hence, in order to get a better insight for the impact of predictors, we can take a look at the beta values. Once again, total market value of the team has the highest impact with a 0.523 beta value. In other words, this predictor has the greatest impact to explain 55.3 percent of the variability of on-pitch success. In addition to that, capacity of the stadium and population of the host city also have a contribution to the outcome but their significances are fairly small.

In order to see if a variable is making a statistically significant contribution to the model, values in the column marked Sig. need to be checked. First of all, as it could be seen from table 5-4, total market value of the team makes the strongest contribution to the prediction of the dependent variable at 5 percent significance level with a value of .000. It is the only predictor that is significant at 5 percent significance level. This value is in line with results from previous studies. As mentioned earlier in previous studies and results, and theories part, financial power of the team has a strong relation with on-pitch success. Clubs collecting high revenues and spending their money on more talented players and wages are expected to perform better than the ones collecting lower revenues when two of them compete against each other on the pitch. This result can also be a strong proof for the existence of vicious and virtuous circles. Once a club starts spending more money on transfer fees and wages they will be more successful on the pitch. Afterwards, the more successful they become on the pitch the higher revenues they will enjoy from different financial resources and then they will spend it on better players. Finally the club will find itself in a virtuous circle as a result of this on-going appreciation. In addition to that the exact opposite scenario will be experienced by unsuccessful teams by getting caught in a vicious circle. Of course it might not necessarily continue forever since football is a team game totally dependent on performance of individual players.

Second of all, population of the host city and capacity of the stadium also make a significant contribution to the prediction of on-pitch success at 10 percent significance level. They have the values of 0.056 and 0.066 successively. In the hypothesis of the study clubs with larger stadia and located in more populous cities were expected to perform better on the pitch. These results tell us that, there is a bigger possibility that “elite cities”, as it is called earlier, can host teams that perform better on the pitch. On the other hand, teams located in smaller cities in terms of population have a smaller chance to host successful teams than elite cities. Furthermore, clubs playing in bigger stadia in front of bigger crowds tend to perform better as well. This can be interpreted in two ways; the first one is more seats simply bring more income to the clubs. As a result of this, they spend this stadium income for more talents which as mentioned before enables the clubs show a better on-pitch performance. The second way is we can infer that other than financial advantage playing in front of more people can psychologically affect the players’ on-pitch success as well. Crowds cheering for their teams could turn into a real support for the players competing on the pitch.

Last of all, GDP per capita of the host country, country’s participation in international tournaments, club’s age, rank of the next best team from the same country and dummy variable country’s hosting an international tournament does not make a significant contribution to the model. The only predictor with negative effect on the outcome of the model is country’s participation in international tournaments. It is not statistically significant though. However, in order to see what happens to t and Sig. values of PART and RANK variables one of the two predictors is taken out from the model.
When $PART$ variable is removed from the model t value of $RANK$ falls from 1.038 to 1.006, and its Sig. value goes from .302 to .317. On the other hand, when $RANK$ variable is removed from the model t value of $PART$ falls from -1.005 to -.972 and its Sig. value goes from .317 to .333. It is seen that this action does not make a significant change on the values.

The results of the multiple regression analysis presented above show that total market value of the team, in other words financial wealth, makes the largest unique contribution to on-pitch success in UEFA Champions League.
6 Conclusions

The aim of this study was to outline a general model of the indicators of on-pitch success in UEFA Champions League. In order to outline this model, relevant previous studies are presented; previous concepts and theories about the subject are reviewed. Then finally, based on all these an empirical analysis has been performed.

Football is by far the most popular team sport all over the world and especially in Europe attracting millions of people to stadiums and in front of televisions every year. It is acknowledged as a type of entertainment as well. However, football distinguishes itself from other types of entertainment for two reasons. The first one is clubs’ mutual interdependence to create a joint product as an output. The second one is football consumers’ profound passion and addiction towards it.

Football is an experience good which is consumed at the same time and place of production. In addition, it includes competition and it is expected to have uncertain outcomes so as to attract consumers. Football clubs need to compete in a balanced competition if they want to produce games with uncertain outcomes. If the gap between clubs in terms of finances and talents is so big, neither competitive balance nor uncertainty of outcome will be expected to occur.

In contrast, leisure time and household income during the 20th century have affected football, as it affected other recreation activities. When these increases met the increase in supply of football events the result was more commercialized football in Europe. Particularly, broadcasting revenues which started to increase dramatically in the beginning of 90’s allowed clubs spend more on player wages and hire more talents. According to virtuous circle theory, when clubs earn more money they spend it on hiring more talents so that they can be more successful on the pitch. The reason for that is clubs in Europe behave as win maximizers. They create more successful teams by spending more money but if they do not win in the end, the money they earn and spend goes to waste.

The findings of the empirical study showed both similar and different results compared to previous studies. The similar ones are as follows. Financial wealth and on-pitch success are positively correlated with each other. Besides, more populous cities are more advantageous than less populous ones when it comes to hosting successful football clubs. Stadium capacity has a positive significant effect on clubs’ on-pitch success as well.

On the other hand, countries’ football tradition, devotion and history and clubs’ age do not seem to have any significant effect on clubs’ on-pitch success in UEFA Champions League. In fact, countries’ number of participation in international tournaments has a negative effect on clubs’ success, but this effect is not statistically significant. However, it should be kept in mind that variables about participation in and hosting international tournaments are at country level. What is measured in this study is clubs’ on-pitch success not countries’. Besides, some countries with high football tradition have more than 6-7 clubs in the table and while some of them are showing great success some of them are showing a really poor performance. Last of all, competitive balance amongst the same country teams in the list does not show any significant effect on teams’ on-pitch success either.
In summary, the findings explain that outcomes of the games in UEFA Champions League are not highly uncertain. Rich teams from big cities with high capacity stadiums have bigger chances of winning than the others. Generally there is an imbalanced competition and concentrated sporting success in UEFA Champions League. However, football has always been a game which is full of surprises.

Finally, as it is mentioned before, studies about the economics of professional team sports and football are still growing. However, there is still a lack of interest for on-pitch success and its determinants, especially at club level. Moreover, data about clubs’ different revenue items and payrolls are hardly available. Thus, for further research, with more available financial data more efficient studies could be performed. Besides, with more available data at regional level instead of national level for GDP per capita it would be more meaningful to see the effect of cities’ wealth on the teams they are hosting. Last but not least, instead of competitive balance amongst same country teams in the list, domestic league competitive balance measures could be used. In this way, it can be easily seen if domestic competitive balance affects clubs performances in international tournaments.
List of References


Appendices
Appendix 1 – Normal P-P Plot of Regression Standardised Residuals

Appendix 2 – Residuals Scatterplot