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The Relation of Financial Performance and the Sports Performance in Football Clubs

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Dissertation

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Supervisors

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Biographical Note

Tiago Manuel Valente Pereira was born in Vila Real, Portugal, on 3 May 1995. He has concluded high school in *Escola Secundária S. Pedro* in 2013. In the same year, he started his graduation in Economics at the University of Trás-os-Montes e Alto Douro. During his degree, Tiago worked in insurance intermediary P. Valente and enrolled in a volunteer program in Zagreb, Croatia.

After finishing his degree, he started the Master in Finance, in 2016, at Faculty of Economic of University of Porto (Faculdade de Economia do Porto).

Before finishing his master, Tiago started working at Sonae Capital, in 2018, as a credit risk manager, where he remains until today.

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I would like to thanks to all my friends who have walked with me during my entire life and who made the person I am today. To all them, the biggest thank you.

Finally, I would like to dedicate this dissertation to my deceased grandmother Adelaide and to my deceased grandparent Joaquim, who I know have been always with me.

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1. Introduction

Nowadays, football is much more than the sport that the majority of the supporters can imagine. Although fans still are the most important component in this sport, the developments that have occurred in the last years have transformed football in a real business and into an activity with a huge impact in society. In fact, the current management of a club is much more complex than the general supporter can understand. Besides that, there are a group of new notions like strategic planning, risk management or financial indicators which are not easy to comprehend. Furthermore, some sports objectives can enter into conflict with the investors' objectives (Nagy, 2012), which have turned necessary a greater knowledge.

Football, as a sport and as an industry, has changed dramatically in the last years. There were several changes that increased the impact that the football has, becoming this sport a universal phenomenon. One important change occurred in 1995 with the Bosman Case when the European Court of Justice modified the player transfer system and respective restrictions. After this decision, it became easier to a player to move between clubs even during the contract and also to have a higher number of foreign players, turning the player harassment higher and consequently a huge raise of wages and having a huge financial impact (Andreff & Staudohar, 2000). These structural changes created a different way to understand the football, both for supporters and for club managers and shareholders. In one hand if the supporters need to have a more realistic perception of financial responsibility and management, in other hand, shareholders and managers need to discover the formula to balance a good sport performance and good financial performance. In fact, a very well managed club is that which balances the financial and sporting performance because in the sports industry one can't succeed without the other (Baroncelli & Lago, 2006). This fact is easily proven in the past, having several examples of successful teams that went bankrupt. This last detail leads the clubs to adopt strategic planning and an effective management model. According to Leocini & Silva (2000), a good management model must should contemplate several characteristics such being stable enough; a model that considers profitability and/or field performance as goals or expected results; a model that facilitates access to the information necessary for such analysis. However, as we explain before, it is possible the existence of some agency conflicts between shareholders and supporters, and their main goals, i.e. between the objective of winning trophies or having a good financial

performance. In fact, these two different goals can create some incompatibility between the stakeholders of one club.

According with Lago et al (2004), there is a Virtuous Circle between sportive results and financial resources. This circle stars with some financial power needed to purchase enough talented players to create a competitive team and to reach good sporting results. This fact will, consequently, increase the club revenues through match tickets, advertising rights, asset appreciation, TV rights or merchandising, all mandatory to restart the circle.

As we explained before, football has turned a real business with capacity to generate great amounts of income, revenues and an increased volume of football's audience and media attention. Also, bigger transfers and higher expenses with wages are currently normal. These developments have attracted a significant interest from economists. Despite this popularity, most studies were focused on English football or Spanish football. According with these studies, better performance on the pitch implies higher revenues. However, it is not well defined the main objective of the clubs. Thus, it is important to know how the sportive performance can impact the financial performance, how the financial performance can impact the sportive performance, what time is needed to the sportive performance has to impact in the financial performance or to the financial performance has to impact in the sportive performance. With this study, we want to know if it is possible to reconcile both goals or if the clubs need to prioritize one of them.

The answer to these problems and others is mandatory at the moment that is defined the strategic plan of the clubs and essential to determining if the purpose of the sporting performance is more or less important than the financial performance or whether both affect each other. Also, these answers are very important to clubs in order to determine the efficiency level that they must achieve. Through statistical methods, we will check if there is any middle ground or any point where the club can guarantee most of the financial, sporting goals, and consequently conclude if there is any significant correlation between these two different topics.

In the Literature review section, we can find some studies about this subject but mainly related with revenues, wages or profits. With this study, we want to approach a higher number of financial indicators and check their relevance in the sportive performance. This topic becomes also relevant when it is necessary to adopt new corporate governance mechanisms and to react to the constants financial changes in the football industry.

2. Literature Review

2.1. The Football Industry

The football industry has changed in the last decades in many areas, being more than a simple sport, but even more a real business and a giant industry. In fact, some of these changes have turned the football industry in a constant growth market. One of those changes, happen with the appearance of bigger and more competitive competitions, and Champions League is probably the most important and profitable tournaments of the world, being seen as a supranational competition once it can have a great impact on financial and sportive performance at the national level (Peeters, 2011). Another relevant difference occurred in 1995 with the Bosman Case, that as it was explained before, raised the mobility capabilities of the players between clubs and caused an inflationary trend of the wages costs, and consequently an increase in the amounts of money, capital and income of the clubs. According to Delloite Annual Review of Football Finance 2017, this market presents high levels of revenues, following the increase of the wage costs levels (Fig. 1).
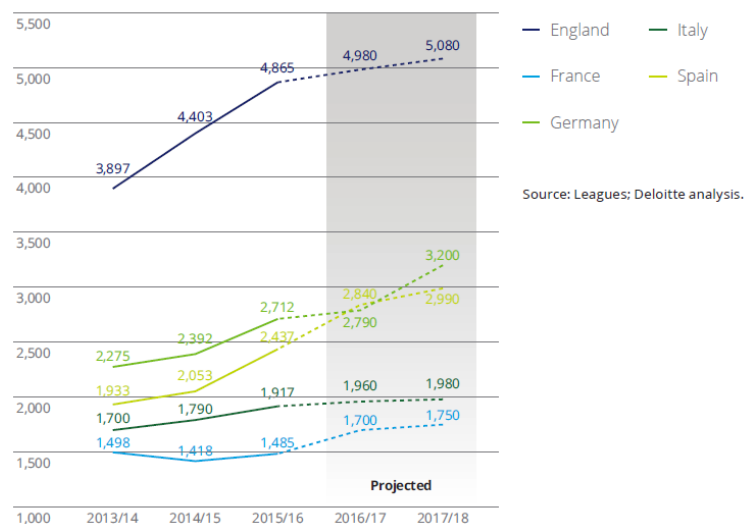

Figure 1: 'Big five' European league clubs' revenues – 2013/14 to 2017/18 (€m).

Observing the revenues trend in the "big five" European league in the period between 2013 and 2018 (seasons between 2015 and 2018 represent projections), it is easily visible that

there is a growth trend (average 7.3% per season), even higher than the inflation rate in a period after a financial crisis. This fact confirms the growth tendency of the football market. This market is also characterized for several different ways of raise revenues by the clubs, everyday more diversified and complex. In fact, we can explain the constant revenues growth by these new forms of produce revenues, especially because of the new broadcast rights arrangements, explaining about 80% of this growth. Atkinson et al. (1988) found a relation between the increases of the tickets price (one of the relevant revenue sources) and the sporting performance on the previous year. Still related with the attendance to the stadium (match day revenues), Bird (1982) tried to explain the total attendance for the four divisions of the English football league, analysing 92 teams. The author concluded that the ticket price, the number of goals scored during the current and previous seasons were the major factors to explain the number of spectators attending games. In the same line, Burkitt and Cameron (1992) concluded that the position in the ranking is a key factor in explaining the number of spectators.

Looking to the Figure 2, we can conclude that the broadcasting always makes the most part of the total revenues in the 'Big five' European leagues, referring to the season 2015/2016. This greater impact of the broadcasting revenues together with a higher interest in these principal leagues, consequence of a superior access to information all around the world, has made the differential between the revenues level of these five leagues and the others competitors even higher. Comparing these five principal leagues, we can see a gap between the English Premier League and the other four big leagues. Picture of this difference is the highest revenue per club and the higher utilization of the stadium, not reflecting the lowest capacity of the stadiums, in general.

In other hand, this inflationary tendency of the revenues is accompanied by wage growth, which represents a greater demand for talent. This relation is significantly explained by Szymansky & Kuypers (1999), who present a directly proportional relationship between wage expenditures and championship success and consequently a directly proportional with the revenues level. These authors emphasize that the greater the expenses of a club with salaries, the greater the probability of this club achieving better performances in the field. In the same line, Leocini & Silva (2003), start concluding that the players market is quite efficient, that is, the best salaries are usually paid to the best players and the better their performance in the field, bigger should be their revenue production.
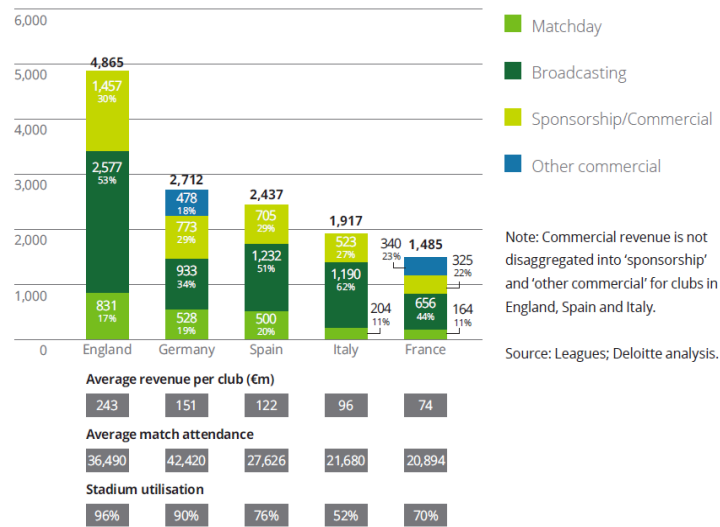
Matchday
Broadcasting
Sponsorship/Commercial
Other commercial

4,865
1,457 30%
2,577 53%
831 17%

2,712
478 18%
773 29%
933 34%
528 19%

2,437
705 29%
1,232 51%
500 20%

1,917
523 27%
1,190 62%
204 11%

340 23%
1,485
325 22%
656 44%
164 11%

Note: Commercial revenue is not disaggregated into 'sponsorship' and 'other commercial' for clubs in England, Spain and Italy.

Source: Leagues; Deloitte analysis.

	England	Germany	Spain	Italy	France
Average revenue per club (€m)	243	151	122	96	74
Average match attendance	36,490	42,420	27,626	21,680	20,894
Stadium utilisation	96%	90%	76%	52%	70%

Figure 2: 'Big five' European league clubs revenues – 2015/16 (€m).

According with Delloite Annual Review of Football Finance 2017, wage costs across Europe's 'big five' leagues still growing year per year, following the growth in revenues. Quoting the previous report, "57% of additional revenue generated by the 'big five' European leagues in 2015/16 was spent on wage costs" and overall the wage costs represent 61% of the revenues gains. Regarding the Figure 3, we can conclude that the gap between the English league and the other of the "big five" group, which was present in the revenues side is also present when we talk about wage costs. This fact is easily observable in the average club wages, where comparing the "England value" with the other "countries values", we can see that Premier League values are more than the double.

With these changes in the football industry, the sustainability of the industry is one of main concerns that clubs and football organizations must be aware. Haas (2003) found evidences that clubs are spending too many resources in order to obtain good sportive results and not getting good financial results. Because of this fact, clubs have the necessity to adopt some corporate governance mechanisms, which without they cannot be enough efficient (Dimitropoulos, 2011). The implementation of these mechanisms will allow achieving better financial results and the sustainability that is so important (Dimitropoulos & Tsagkanos, 2012). One of the steps taken was the implementation of the Financial Fair Play (FFP) regulation, by UEFA, which main reason were to "introduce more discipline and rationality in club football finances; decrease pressure on salaries and transfer fees and limit inflationary effect; encourage clubs to compete with(in) their revenues; encourage long-term investments

in the youth sector and infrastructure; protect the long-term viability of European club football; ensure clubs settle their liabilities on a timely basis". Also Mourão (2012) described the sustainability of the clubs as a priority of the industry and proposed that a more egalitarian distribution of TV rights should be imposed. This author considers the broadcast rights revenues as one of the most important sources of revenue concluding that this measure would improve the financial sustainability of more clubs.
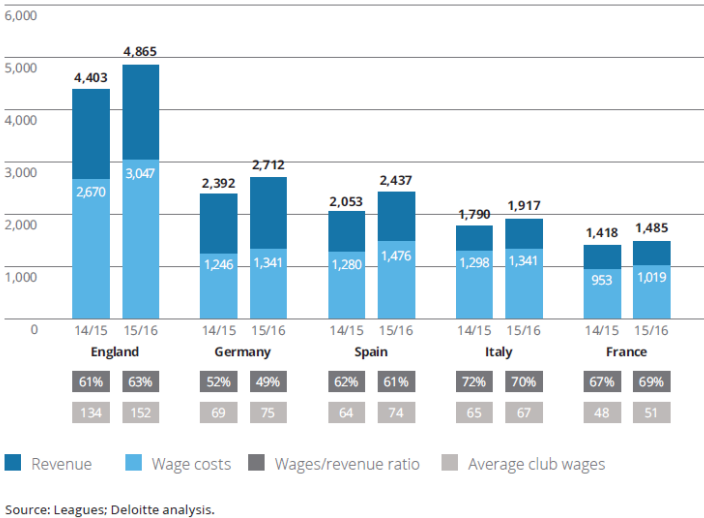
Figure 3: 'Big five' European league clubs' revenues and wage costs – 2014/15 and 2015/16 (€m).

2.2. What should be the main purpose in this industry?

The football industry is a universal phenomenon able to create and run a great amount of money and capital, being necessary a rigorous strategic planning regarding the risk and management required. However, sometimes it can have a conflict between sporting objectives and investor's objectives (Nagy, 2012). Lago et al. (2004) analysed the Italian championship concluded that there is a Virtuous Circle (Fig. 4) between sportive results and financial resources, being necessary acquirer good players in order to achieve a good sportive performance, which consequently will bring more revenues, sponsors, fans and increase the power and competitiveness of the club. This author described this process and a never-ending cycle that repeats itself.

Figure 4: Virtuous Circle, according with Lago et al (2004).

According with Szymanski (1998), the performance of one club is reflected basically in two fields: financial and sportive performance. As determinants of that performance, the literature gives us several determinants: management of clubs guided by the market (Ozawa, Cross & Henderson, 2004), skills of players (Gerrard,2005) and coaches (Dawson & Dobson, 2002), the change of coach (Audas et al., 2002; Bruinshoofd & Weel, 2003; Hope, 2003), market size or base of support from club (Buraimo et al., 2007), the strategic actions undertaken by the clubs (Heij et al., 2006).

However, in order to get an overall successful performance, it can exist a conflict between the clubs boards, which try to obtain good financial results, and the team sportive objectives, which normally represents good final positions or the achievement of trophies. Thus, we can distinguish two different types of clubs profile: a win maximization club and profit maximization club. Yet, there are evidences that football clubs are still poorly managed because there aren't efficient corporate governance mechanisms as well as win maximizing strategies (Barros, 2006).

A win maximization club/business is that one that attracts better players, paying higher wages in order to get better sportive results. This policy can make the costs increase and sometimes leads to financial constraints. In fact, there are several examples of successful sportive teams that bankrupt. In other hand, a profit maximization team/business is a team aware of its financial responsibilities and with the sustainability value very present. But, in opposite way, this policy can lead to bad sportive results and non-compliance with sporting objectives. The club strategy can differ depending of the country culture. Solber & Haugen

(2010) found evidences that North American clubs are profit maximizers, instead European clubs are win maximizers.

Despite the differences, there is no consensual opinion about the right strategy to adopt, so important in the decision about the strategic objectives to be achieved. Quirk and El Hodiri (1974) assumed that teams are profit maximizers, but Késenne (2007) and Sloane (1971) consider that teams must be utility maximizers in the search of non-profit goals (games won, popularity of the club) subject to a financial constrain. Késenne (2009) also argued that players in a win maximizing league are overpaid, which can lead to financial problems. Vrooman (1997, 2000) considers that managers seek to maximize both financial and sporting performance. The same perspective is expressed by Szymanski and Kuypers (1999) who explained that in the long term, there is a combination between profit and performance objectives. Dobson and Goddard (2004) argued that English clubs, in a context of financial constraints, try primarily maximizing revenues and wins, and after that the maximization of the profit. Samagaio et al. (2009) explained that sports managers look for possibilities to achieve a minimum level of profit and maximize sports performance, and found evidences that revenues are correlated with a good sportive performance. However, that evidence is not so clear when measured by operating profit or net profit. Gerrard (2005) showed that clubs that seek to reconcile the financial and sporting performance for a given level of resources can get best sporting performance at the expense of deterioration in financial performance. Morrow (1999) refers that the sports performance should be maximized in combination with a good financial solvency of the club.

Besides the studies above, we can find in the literature some empirical works that analyse the relation between sport and financial performance. Szymanski (1999) is one of the authors who analyze this subject deeper. This author studied the correlation between sports results and profit before taxes of 40 English clubs in 20 years, concluding that only 54% of cases the improvement (decrease) in performance sport were reflected in an increase (decrease) in profits. Szymanski & Kuypers (1999) analysed 40 English football teams over the period 1978-1997 with a very high goodness of fit ($R^2 = 92\%$) for the simple log linear regression of average league performance against average relative wage expenditure and concluded that better sports results represent a higher wage level means better sports results but consequently correspond to a higher level of revenues. Arnold (1991), through an OLS model, concluded that the level of revenues for English clubs was strongly correlated with their sportive performance over the period from 1905 to 1985.

According to Barajas et al. (2005), there is no evidence of one relation between revenues as a cause of a good sportive performance. However, these authors argued that there is a connection that builds a virtuous circle, i.e., a good sportive performance implies higher turnover and financial resources that can be invested on improving the sports results.

Bollen & Frehen (2010) found evidences that there is an exponential relationship between expected revenues of Dutch football clubs and sports performance. These founded results are consistent with some other conclusions taken by some other authors that we mentioned before (Deloitte & Touche (2000) for English football and Barajas et al. (2005) for Spanish football), and concluded that sports performance is relevant to the achievement of revenues. Therefore, the level of revenues is strongly affected by the past sportive performance.

Barajas et al. (2007), through an OLS model, studied the relation between sports performance and revenues and net profit of the Spanish clubs over the period 1998 to 2002. It was found a relevant correlation which represents that an increase in the revenue level "allows the club following season recruiting players with more talent and thus achieve better sporting performance."

Szymanski & Smith (1997) studied the relation of the final position in League and the amount of skill a club purchase in the English League and found evidences that the amount of skill a club purchases determines the final position in the championship. In the same line, after studying the Spanish League, Barajas & Rodríguez (2010) found evidences that the production function in football is related with the sports entertainment offered in the matches to the audience, and because of that players are key parts of the football production, being that the reason why clubs are so committed and affected by the expenses on players. These authors also found a correlation between total revenues and expenses on players and almost all debt belong to the most competitive clubs. Also, Murphy (1999 a & b) analysed the English football and Scottish football and concluded that the economic resources have an inevitable impact in the sportive performance.

Hoffmann et al. (2002) analysed how some socio-economic determinants can impact the sports teams' performance and found evidences that there are some factors such as demography, per capita level, culture or geography are significant determinants of the success of the team. Like Hoffmann, also Mourão (2010) found evidences that the sportive performance is directly impacted by some social factors such as population, the income per capita and the urban populations the area of the club.

Deloite & Touche (2000) examined the influence of the financial performance on sports performance for English Clubs. They concluded that the greater the club's wealth, the higher its ability to spend money. Consequently, the probability of performing better on the pitch is also higher. The same report also analyses the effects of relegation and its relation with the levels of attendance. It claimed that in the season that follows relegation, fans continue to be present at matches through force of habit.

Gerrard (2002) approached the same subject and the respective impact of relegation on club's finances, concluding that relegation has a double effect from a financial point of view. After analysing the clubs relegated from the English Premier League in 1999 and 2000, this author concluded that relegated clubs have greater incomes compared to the rest of clubs in their division. However, they also have greater wages costs, running a higher financial risk, finishing his theory that most of the clubs in this situation reduces the payroll.

Noll's (2002) concluded that players under promotion and relegation situations have higher wages. A promotion or relegation situation has a positive impact in the club. In a promotion case, revenues and attendance at league matches tend to increase significantly. This impact of a promotion seems to bear for a while after a team is relegated. However, these conclusions are only applicable in league competitions, not being relevant in the case of European competitions.

In fact, the competition which the club is present is very relevant regarding the revenues level. Goossens (2006) explained that the more attractive, higher will be the stadium attendance, more broadcasters will invest as investors. Therefore, a more competitive competition, more attractive it is and more revenues the clubs gain. As we explained before, revenues sources are nowadays more complex and diversified. Since broadcasting, sponsorship, match day revenues, merchandising, donations, capital markets, not forgetting the income obtained from sales of players to other clubs, clubs have several sources of money. Dobson and Goddard (1998) claimed that the sharing of the total revenue among the clubs then depends on two factors:

1. On the sports performance, which determines the level of revenues quoted before;
2. On mechanisms which main goal is to redistribute revenues among clubs. This can include "rules leading player transfers, explicit arrangements for sharing attendance receipts and rules leading the share of television and sponsorship monies raised through deals other than those that apply particularly to individual clubs".

In Table 1 is present the top 20 clubs worldwide with the highest revenues, according Deloitte in the report Football Money League 2017. These values are exclusive net transfers. Only one club (FC Zenit) doesn't belong to the top five European leagues which we mentioned in the previous section. Thus, this list is composed by 8 English clubs, 4 Italians, 3 Spanish, 3 Germans, 1 French and another Russian.

Table 1: Top 20 football clubs ranked for revenues in millions of euros (€M).

Rank	Club	Country	Rev. (€M)	Rank	Club	Country	Rev. (€M)
1	Man United	England	689.0	11	B Dortmund	Germany	283.9
2	Barcelona	Spain	620.2	12	Tottenham H	England	279.7
3	Real Madrid	Spain	620.1	13	Atlético Madrid	Spain	228.6
4	Bayern Munich	Germany	592.0	14	Schalke 04	Germany	224.5
5	Man City	England	524.9	15	AS Roma	Italy	218.2
6	Paris SG	France	520.9	16	AC Milan	Italy	214.7
7	Arsenal	England	468.5	17	FC Zenit	Russia	196.5
8	Chelsea	England	447.4	18	West Ham	England	192.3
9	Liverpool	England	403.8	19	Internazionale	Italy	179.2
10	Juventus	Italy	341.1	20	Leicester City	England	172.1

Source: Deloitte, *Football Money League 2017*

Another authors approached the potential relation between sports performance, financial performance and also the stock market performance. Samagaio et al. (2009) assumed the same line than other authors that we mentioned and confirmed a strong correlation between financial and sports performance, after analysing English clubs over the period 1995 to 2007. Besides that, the same authors also claimed that "financial and sports factor scores are statistically correlated with stock returns, but not with risk."

Renneboog & Vanbrabant (2000) investigated the impact of sporting results on football share price and concluded that there is a correlation between these two fields. "Events studies corrected for thin Bayesian updating reveal that at the first day of trading after a game, positive abnormal returns of almost 1% can be expected following a soccer victory. In contract, defeats or draws are penalized, respectively, by negative abnormal returns of 1.4% and 0.6%."

3. The Measurement of Sport Performance

The sport performance is a complex task to be measured once there are different types of competitions with different impact in the season of the respective club and which the priority of the club can also differ regarding the strategic planning of the season.

In the literature, we can find some authors that used different types of measuring the sport performance in their scientific work. Dawson et al. (2000) and Marques (2002) used variables such as the percentage of victories; Palacios-Huerta (2002) used the number of goals scored by match; Koning et al. (2001) used the team's goal average weighted by relative quality of rival team; Boulier & Stekler (2003) and Palacios-Huerta (2002) used the score/goal difference; Koning (2003) used the average goal difference, goals conceded and goals scored; Cocco & Jones (1997) studied the sport performance through the playing style; Goddard (2005) also developed two models based on results and other based on goals.

In our scientific study, we will measure the sports performance regarding the competition in order to consider all the main competitions which the clubs are present and those competitions which have more impact and recognition by the clubs. The competitions which we will measure will be the national championship, the national cup and the two main European cups (Champions League and Europe League).

Regarding the national league, as we explained before, the past authors used different ways to measure the performance of the clubs; however, we decided to use the same line of thinking of Szymanski and Kuypers (1999), who used the following formula:

$$\mu(C_l) = -\log\left(\frac{p}{n+1-p}\right)$$

Equation 1: National league measure indicator.

Where n is the number of teams who take part in the competition and p is the position they achieved in the ranking. For instance, Manchester United in the season of 2012/2013 was the English champion with 89 points. According this measure, the national championship classification will be $-\log\frac{1}{20}$, once there are 20 teams in this league. Thus, the

classification of Manchester United in this season was 1.301. This measure will be adjusted to the national championship of the club in question.

Talking about the national cups, this subject becomes more complex once this competition has a knock-out format. This complexity is easily observable in the literature because almost all the research papers work excludes the national cups measurement, once these competitions are more complex. In this study, we will follow the measurement system used by Barajas et al. (2005), who developed a diagram where each stage represents a different level of points to the clubs.

Figure 5 shows the measurement of position and point schema for cup-style competitions. This method will be applied to the national cups of each country. This ranking assumes that the champion would be placed first and the runner-up second. In the same way, once there is no game to determine the 3rd and 4th position, both teams will be awarded with the same number of points. In the previous rounds, the system will be the same. Therefore, teams that were eliminated in the same stage will be awarded with the same number of points. For instance, Roma in the season 2013/2014 lost in the semi-finals of the Italian Cup. Regarding with this measure, Roma will be awarded with 27 points.

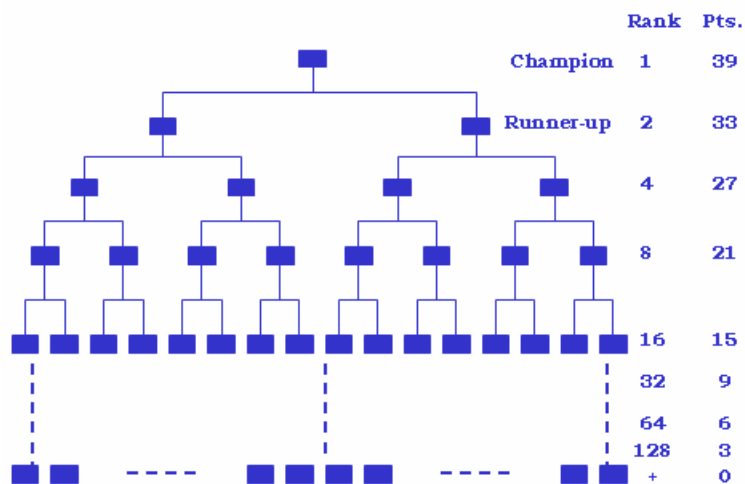
Figure 5: Diagram of measurement of result variable for cup-style competitions.

Regarding with the two European tournaments (Champions League and Europe League), the measurement system needs to be a little different once in these tournaments

there are group stage, where we consider that the number of victories and draws must be measured, even because the premiums in these cases are must higher when compared with the national cups premiums for victories and draws.

Those teams in analysis that do not take part of the competitions will not be awarded with any point. Those one which guarantee the group stage through the qualified stage will assign 1 point for each match won and 0.5 for draws matches, once this way is awarded with prizes higher than the direct qualification. The group stage will be awarded with the number of points in accordance with the UEFA criteria; that is, 3 points for a victory, 1 for a draw and 0 for defaults. The next phases will give points according with the presence in each stage. Thus, the round of 16 will guarantee 6 points, the quarter-finals 7, the semi-finals 8 points, final 9 points. Furthermore, we also allocate 3 points for each victory and 1 for a draw during the knock-out phases. Those teams that are eliminated from the UEFA Champions' League and join the UEFA Cup will get points from both competitions. For instance, in the season 2015/2016, Real Madrid won the Champions League with 5 victories and 1 draw in the group stage (after being direct qualified), and 4 victories and 2 draws in the following stages. Regarding this measure, Real Madrid will guarantee 60 points in the Champions League this season. In the same line, Chelsea won the Europe league in the season 2012/2013 after being relegated from Champions League. Regarding this method, Chelsea will guarantee 10 points from group stage of Champions League, 49 points for the knock-out stages in Europe League and all the victories and draws achieved. However, in these cases is necessary to differentiate the competitions and measure the different effects of the competitions, not also the European but also the domestic competitions. To do that, we will follow the same method used by Barajas et al. (2005), who defined a compound index (IND) in order to differentiate the different competitions and their impact. Therefore, the compound index is represented in the following formula:

$$IND = \sum_{i=1}^{4} \alpha_i P_i$$

Equation 2: Compound Index presented by Barajas et al (2005).

Where P_i represents the points achieved in the i competition in question and a_i represents the weight of each competition considered. Thus, like these authors, we will weigh

the different competitions according with an economic overview. The national championship will be ranked with 2, the national cup with 1, the Europe League with a weigh of 2 and the Champions League with a relative importance of 3. The expression of the index is represented below:

$$IND = Cup\ Pts.\ +\ 2*UEFA\ Pts.\ +\ 2*League\ Pts.\ +\ 3*UCL\ Pts.$$

Equation 3: Compound Index presented by Barajas et al. (2005).

4. Data, data sources, sample and methodology

The main objective of this scientific work is to study the relation between the financial performance and the sportive performance in some European clubs. Taking into consideration that football has a huge impact in local and national economies, it looks important to understand how the management of a club works and how to apply the financial resources in order to obtain the maximum reward of those resources. Additionally, understanding this circle, the clubs can comprehend in a more efficient way how a good sport performance can impact and bring better financial results to their management.

To do this analysis, it will be used mainly information from public clubs, getting their financial and sportive data from the year 2010 to 2017. Our sample contain 30 clubs whose respective annual reports are easily available.

In this study, we decided to analyse some important variables that can summarize the financial performance of the club/company. With these variables, it will be tested some of the economic theories related with this thematic and draw the conclusions.

In this set of variables, we will include variables such as total assets, total liabilities, total revenues, total operating expenses, net income, total equity, return on equity (ROE), return on assets (ROA), wages, wages revenues ratio and EBITDA margin, which we consider variables that can explain the financial situation of the club/company in analysis.

4.1. Data Sources and Sample

The sportive information was collected from some highly reputed soccer websites, like Zerozero, Soccerstats and Soccerbase while the financial performance such as the income statements, balance sheets as well some key ratios of the clubs was taken in the DataStream Eikon and Amadeus for the listed clubs in support to the annual reports that the clubs provide publicly on their websites. The Bloomberg platform was also an important search engine to get some financial information that was missing in the annual reports and in the other databases. Some information was also retrieved from the Bloomberg platform. Also the information related with the exchange rates needed to convert the financial data of the clubs outside of the Euro zone was collected from the website Pound Sterling Live and the plataform OANDA.

The sample used in this study is composed by 36 European clubs. In this group of clubs are included mostly listed clubs and clubs that are used to be present in the most important European competitions. However, it was included some less known clubs which information is easily available.

Table 2: Description of the sample.

SL Benfica	Aalborg
FC Porto	Ruch Chorzow
Sporting CP	Ajax
Aarhus	Teteks
AIK	Manchester City
AS Roma	Aberdeen
Juventus	Glasgow Rangers
Lazio	SC Braga
Celtic	Vitória SC
Dortmund	Besiktas
Fenerbahce	Barcelona
Paris Saint Germain	Atlético de Madrid
Galatasaray	Real Madrid
Trabzonspor	València
Lyon	Arsenal
PARKEN Sport & Entertainment	Manchester United
Brondby	Everton
Silkeborg	Tottenham

4.2. Independent Variables

In the last decades, there were several studies related with the relation of sportive performance and the financial performance. Some of the most important studies in this area (Barros, 2006; Dimitropoulos & Limperopoulos, 2010, 2014; Lago et al., 2006) tried to make a connection between the financial performance and the sports performance studying some variables such the players contracts and respective wages, finding evidences that higher investments in player contracts also attained greater success in their competitions. We can also find studies related with the relation between financial instability and the sports performance (Barros, 2006; Boscà et al., 2008; Dimitropoulos, 2009, 2010; Lago et al., 2006) and the main conclusions are a positive relation between these two areas.

The main purpose of this study is to conclude if good financial results can lead to better sportive results and study specifically which financial indicators should a club/company prioritize in order to get the maximum point of efficiency and the achievement of the main sportive objectives.

Like it was explained, the sample is composed by 36 European clubs and it was collected data from the 2009-2010 to the 2016-2017 season. In total, we observed 192 cases for each financial indicator examined (discussed below) as well as club performance with regards to 36 clubs that we collect data.

It was used the panel data analysis in order to study a set of temporal and cross-sectional observation times multiplied by T periods of time. Using this method, we can gain some advantages over cross-sectional or time-series models. According with Baltagi (2001) and Hsiao (2003), using this method, the analysis has more information to study the phenomena and additional degrees of freedom, allowing controlling the effect of some variables not observable. Besides that, using this method will permit to decrease the multicollinearity between the explanatory variables, improving the quality of the parameters estimation (Hsiao, 1986). Baltagi (2005) also explained that using panel data allows having a better control of individual heterogeneity and better results of dynamics of adjustments. All of these arguments led us to use this method which will allow us to achieve better results than using than purely cross-section or time-series data.

In total, analysing 36 clubs and specifically 192 cases in a period of time since 2010 to 2017, we took into consideration financial data collected in databases and each club annual report and considered three key areas of financial performance (profitability, liquidity and

liability). Financial ratios are commonly used to analyse the financial performance of a company, however not all fit for study the football industry. In the literature, we have faced some work studies related with this thematic where there are financial ratios used to relate the financial performance with the sportive performance.

Taking into consideration the profitability, we decided to analyse some financial ratios. Dimitropoulos (2010) affirmed that "profitability is the most crucial goal of every business activity since it reflects the ability of each football club to earn a satisfactory income which will ensure its future viability". Following this thought, we decided to use the Wage/Turnover ratio. Késenne (2009) explained that this ratio must be fewer than 67% to create profit in a club. Beside this ratio, it is also analysed the wages level in order to test a possible relation between this indicator and the sportive performance. Moreover, we use the ratio Turnover increase to check the capacity of a club to record revenues.

We will also consider the ROE and ROA, the first one to understand how managers are employing the funds invested by the football club's shareholders in order to generate returns. ROA will be considered in the same way in order to analyse how profitable a company is for each asset that owns. Beside these, it will be also considered financial indicators such Total Assets, Total Debt and Net Income in order to analyse the sportive performance according with the club size. It can also make sense analyse this type of indicators in the year prior to the test, thus we decided to include a variable referring to Net Income of the previous year. This variable will help us to understand if the previous result can impact the sportive performance of the current year.

It was also considered other ratios of the assets turnover, EBITDA, EBITDA margin and total operating expense. In fact, Majundar (1997) and Barbosa & Louri (2005) argued that the size of a firm impacts the sports performance once large firms can generate higher profits since they can exploit economies of scale and be more efficient in their activities compared to small clubs. Thus, we can expect that bigger clubs are more efficient and have more profitability compared with smaller clubs.

In order to approach the liquidity of the clubs, it was chosen the current ratio. This ratio is used to analyse the capacity of a business to accomplish the short-term and long-term obligations, taking into consideration the current assets and current liabilities of the blub.

Finally, the last key area that we considered fundamental to study the financial performance was the liabilities. Debt ratios are considered in order to interpret the relation between equity capital and debt (Ecer & Boyukaslan, 2014). We used the ratio Total

Debt/Total Assets to represent the amount of debt compared with assets. This ratio shows us the portion of the business investments covered by the liabilities. Thus, it is easy to associate a high financial risk to a high value of this ratio. Some authors, who studied this type of analysis, argued that it should be less than 100%; in the opposite case, the company will not be able to face its debt using the assets it owns but it should resort to further borrowing. Another ratio chosen to analyse the financial performance was the Total Debt/Equity. This ratio shows us the relation between these two areas and defines how much debt the business needs to finance its assets. The higher this value is, the higher the degree of leverage and respective financial risk. This ratio has also the advantage of including the long-term and short-term debt (borrowings maturing within one year), as well as all assets – tangible and intangible. After analysing these financial ratios, we understood that can exist other indicators that can describe the greatness of a club. Thus, we decided to include a variable representing the average club attendance and also another referring to the previous year with the main goal to comprehend if an increase (decrease) can provide more (less) resources and as a result a better (worst) sportive result.

Other indicator that we found interesting was the presence (or not) of the best player in the world of that year. The player who receives this prize is always a player that plays in a team which has conquered/won important competitions. Winning these competitions has a great impact in the financial accounts of that team, establishing a relation between having the best player in the world, winning trophies and financial performance.

The definitions of the variables presented in the above model are displayed in Table 3.

Table 3: Variable Definition.

Variable X	Definition
$\text{Ln}\,W_{it}$	The logarithm of Wages
$\text{Ln}\,\dfrac{TI_{it}}{TI_{i,t-1}}$,	Turnover Increase
W/T	Wages/Turnover
ROE	Return on Equity
ROA	Return on Assets
$ROA_{i,t-1}$	Lagged variable of the ROA
TA	Total Assets
TD	Total Debt
NI	Net Income
NI (-1)	Net Income of the previous year
EBITDA	Earnings Before Interests, Taxes, Depreciations and Amortizations
EBITDA (-1)	Earnings Before Interests, Taxes, Depreciations and Amortizations of the previous year
TOE	Total Operating Expense
CR	Current Ratio
TD/TE	Total Debt/Total Equity
TD/TA	Total Debt/Total Assets
Aver_Stad	Average Club Attendance
Aver_Stad(-1)	Average Club Attendance of the previous year
GOLD	Presence of a player in the top-3 ranking of the world best player of the current year
GOLD (-1)	Presence of a player in the top-3 ranking of the world best player the previous year

4.3. Dependent Variable

To analyse the sportive performance, the variable INDEX_DESPORTIVO was used. This variable was developed following the method used by Barajas et al. (2005), who defined a compound index (IND) that encompasses the main competitions which a club can enter (national league, national cup and main European competitions). As explained before, the compound index is represented in the following formula:

$$IND = \sum_{i=1}^{4} \alpha_i P_i$$

Equation 4: Sportive index.

Where P_i represents the points achieved in the i competition in question and a_i represents the weight of each competition considered. Each competition will have respective weight, where the national league will be ranked with a weight of 2, the national cup with 1, the Europe League with a weigh of 2 and the Champions League with a relative importance of 3. The sum of these weights will compose the dependent variable, representing the sportive performance. Thus, the points won by the clubs and the respective index value are calculated as presented in the following tables:

Table 4: Sports performance indicator of European tournaments.

European Tournments	Points
Qualifying stage	1point for victory
Qualifying stage	0,5 point for draw
Group stage	3 points for victory
Group stage	1point for draw
Round of 16	6
Round of 8	7
Semi-final	8
Final	9

Beside these values, each victory or draw after the group stage will be count as 3 points and 1 point respectively.

Table 5: Sports performance indicator of national cups.

National cup	Points
Round of 64	3
Round of 32	6
Round of 16	9
Round of 8	15
Round of 4	21
Semi-final	27
Final	33
Winner	39

With regard to the national league, the method used is the same used by Szymanski & Kuypers (1999) and analyse the internal performance following the next formula:

$$\mu(C_1) = -\log\left(\frac{p}{n + 1 - p}\right)$$

Equation 5: National league measure indicator.

Where *n* is the number of teams who take part in the competition and *p* is the position they achieved in the ranking. After collecting each indicator of the respective competition, the index is represented in the following formula:

IND = Cup Pts. + 2*UEFA Pts. + 2*League Pts. + 3*UCL Pts.

Equation 6: Compound Index presented by Barajas et al. (2005).

5. Estimation Results and Discussion

After the description of the dependent and independent variable, the main goal of this section is to analyse if in fact the financial performance can have an impact in the sports performance of a club. It will be estimated a set of hypotheses, using panel data regressions covering the period between 2010 and 2017.

As explained in the literature review, a good management of the financial statement of the company/club can bring several sportive advantages for the club, since higher level of revenues to an increase in the assets capacity for instance, which can have reflection in the sportive performance of the team. To understand this relation, it will be estimated several models with different variables at the time in order to obtain the most accurate results using fix effects for the clubs.

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$$IND_{it} = \alpha_i + \beta_1 \ln W_{it} + \beta_2 \frac{TD_{it}}{TE_{it}} + \beta_3 \ln \frac{TI_{it}}{TI_{i,t-1}} + \beta_4 ROA_{i,t-1} + \beta_5 GOLD_{it} + u_{it}$$

i=1,2, ..., n and t=1, 2, ..., T , N=n x T

Equation 7: The Impact of the Financial Performance in the Sportive Performance.

Where,

IND, represents the sportive performance;

Ln W_{it}, represents the logarithm of the level of wages;

$\frac{TD}{TE}$, represents the ratio between the debt and equity level;

ln $\frac{TI_{it}}{TI_{i,t-1}}$, represents the percentage change of the level of revenues;

$ROA_{i,t-1}$, represents the lag of the variable ROA;

GOLD, represents the presence of a player of the top-3 ranking of the world best player;

where the individual effects for the club αi;

The Tables 6 shows us the estimated coefficients of the fixed effect panel regression. Observing this table, we can conclude that the model is globally significant, such as all the variables are statistically significant, with different level of significance.

The variable LN(W) proves us that, how we conclude in the literature, if a team increases its wage bill, it has a great impact in the sportive performance. This though is also coherent with the idea of Szymanski & Kuypers (1999) who found a correlation between the wage bill and the sportive success of the team. These results are also in line with the findings of Ferri & Zampella (2017), Barajas & Rodriguez (2010) who concluded that the salary level paid to the staff is relevant impactful to the sportive performance.

The variable $\ln \frac{TI_{it}}{TI_{i,t-1}}$ is also relevant being in the same line of the results concluded by Rey & Santelli (2017). These authors concluded that successive increases in the revenues level can achieve better level of financial stability and consequently increase their capacity to invest in players (for instance paying higher salaries and hence having the best players). This sequence is correlated with the "virtuous circle" explained in the literature and approached by Lago et al. (2004). This theory, known as the Virtuous Circle, explains a directive relation between sports results and financial resources obtained through the increase of revenues. These authors explained empirically that a higher level of revenues will allow to purchase more talent and to reach better sportive results. An improvement of the sportive performance will attract more revenues and the circle will repeat itself.

The results of the variable $\frac{TD}{TE}$ show us that a good performance of this ratio can impact the sports performance. In fact, as explained before, this ratio defines the level of liabilities that needs to be covered by the club assets. A low level of this ratio forces the club to borrow in order to pay its liabilities. This fact explains us that if a club doesn't need to go to the market to finance itself has more capacity and resources to invest in better player and pay higher wages which represents, as explained in the literature, a better capability to achieve better sportive results.

Analysing the variable $ROA_{i,t-1}$ our main objective is to understand if exists a relation of reverse causality; this is, if the sportive performance can also explain the financial performance. Thus, we decided to include this lagged variable in order to validate this question and to validate if this possible causality goes in a certain sense. Observing the statistics results, we can conclude that this variable is also statistically significant and such as Dimitropoulos (2009) explain, that the ability of football clubs to convert assets into cash can help them to use their resources quickly so as to achieve higher levels of profitability. This profitability will be useful to get better players and to achieve better sportive results, which is in the same line of thinking than the theory of Lago et al. (2004). However, these

results seem to reopen the discussion related with the main goal of the clubs. In the literature, we can find several opinions about if the clubs must be profit maximization teams instead winning maximization. These results are in the same line of the theories defending the winning maximizations teams once prioritize the financial goals will have a negative impact in the performance on the field. As Késenne (2007) and Sloane (1971) explained, football clubs must be utility maximizers in the search of non-profit goals (games won, popularity of the club) subject to a financial constrain.

Finally, the variable GOLD, which represents the presence of a player in the top-3 world ranking of the best players in the world in the current year, confirms our theory that this fact is very relevant. In fact, only the best teams of the world can have the best player and it is obvious that those teams are closer to achieve trophies and better sportive performances.

At the same time, we decided to estimate additional models to check the the robustness of model I. Firstly, we decided to estimate a model with just one variable representing the wages level ($\ln W_{it}$). This option is justified by the relevance and importance that the literature gives to the wage level paid to the players. Remembering the past studies, several authors defined the wages as a fundamental factor to attract better players who will improve the performance on the field and the probability of the team to achieve trophies.

As we can see at table 6, the introduction of new explanatory variables does not change the magnitude of the estimations. We can also conclude that the significance of each variable does not change during the addition of these new variables. We can also conclude that all the variables that we test have impact in the sportive performance of a club, which coincides with the literature that we found and with the results that we expected to find.

With our results, we can conclude that the weight of the wages and the respective impact of this variable in the definition of the sportive results and the performance on the field. This thematic seems obvious once, if the club is rational, paying high salaries it is possible to attract the best players who will allow achieving more trophies and victories.

Table 6: Results of the estimation of the models

Variable	Model I	Model II	Model III
Constant	-32.5821	-24.5344	-25.5160
	(-1.7749)	(-1.2871)	(-1.361)
Ln W	27.2811***	25.1936***	25.0611***
	(5.6175)	(5.0221)	(5.0758)
TD/TE	-	-0.1018***	-0.1015**
		(-2.3892)	(-2.3756)
Ln $\frac{TI_{it}}{TI_{i,t-1}}$	-	33.8146**	33.5513***
		(3.8118)	(3.7879)
ROA$_{i,t-1}$	-	27.8185**	30.1125**
		(2.4419)	(2.5215)
GOLD	-	-	44.3134***
			(4.452)
R-squared	0.641423	0.672590	0.6839
Adjusted R-squared	0.577234	0.606696	0.6179
F-statistic	9.992632	10.20716	10.358
N	192		

The asterisk indicates level of statistical significance

Where ***, ** and * denotes significance at 1%,, 5% and 10% level, respectively

6. Conclusions

The purpose of this study was to analyse the relation between the financial situations of the major European clubs with the respective performance on the field and with those results understand how the boards must prioritize such the financial and sportive performance without harming any of the planned objectives of each area. This analysis used a sample of 36 European clubs from the year 2010 to 2017.

The literature shows us several studies related with this thematic and this relation, however, some of them are contradictory, being not consensual the opinion about these issues. Besides that, it is easily observable that there is a demand on the part of the clubs for answers to this problematic and there are numerous examples of clubs with stable financial situations which cannot achieve good sportive results and, in another hand, countless successful clubs that have not reach the stability needed to maintain the club in the winning road. Thus, despite the literature mentioned, it still being an issue in the daily routine of the clubs.

There were some limitations that we need to highlight. Firstly, the difficulty in obtaining the financial data from the non-public clubs was one of the biggest barriers. Also, the quality of the information founded was not the input required to a further analysis of bigger sample.

As mentioned before, the main goal of this dissertation is to explain if the welfare of the financial accounts will represent in the future a better sportive performance of the club and more winnings and trophies. After analysing the results of this study, we can conclude that the club's sportive performance is dependent of the level of wages. This conclusion is in the same line of thinking of Barajas & Rodríguez (2010), Szymanski & Kuypers (1999) who found evidences that a higher level of wages will allow the club to own the best players and consequently achieve better results. This argument matches with the theory of the Lago et al (2004) Virtuous Circle which explains that the acquisition of better players, who require a higher level of salary, will consequently result in better sportive performance and better financial results. Also, according with this theory, we can find another relation which is observable in our results. The correlation between the increase of the revenues and the sportive performance is proven analysing both estimations. These results are in agreements not only with the conclusions of Lago et al (2004). Rey & Santelli (2017) are in the same line of our results and also found a direct relation between the increases of the revenues level

with the performance on the field. In fact, clubs with a constant increase of revenues are logically closer to practicing a higher investment in players and to achieve better sportive results. This assumption leads us to the reality of the modern football mainly as business. It's fair to say that football is nowadays more than a sport and the diversity of financial sources bring to the clubs more capacity to invest in better players. However, this assumption is appearing principally in the major leagues which are increasing discrepancies between the most important leagues in Europe and those ones considered smaller. Besides that, the new trends of the modern football such as the ideas to create a European league and the higher level of premiums for participation and good results in the European competitions will result in the strong clubs even stronger and the smaller and weak clubs with more difficulties to deal with these strong clubs. In this stage, it will be even weirder to see situations like the English championship in the year of 2016, when a team usually from the second half of the table got the national title. In our opinion, it should exist a more equalitarian distribution of the funds reserved to few clubs and more control through new investments from natural resources (like is happening in some European clubs such PSG or Manchester City) and private funds. These new sources of investment are inflating and increasing the turnover around the club. If from one side, this represents a higher capacity of the clubs to invest and be closer of getting more winnings, it can lead some clubs to a financial stress and posteriorly the bankruptcy of those clubs. In another hand, this fact causes more differences between the clubs and can steal some mystique to the king sport.

In the literature we can find studies with relation between the total liabilities and the sportive performance of the clubs. Authors like Dimitropoulos (2009) and Wilson et al (2013) proved that total liabilities are negatively correlated with the performance on the field. Those results are also present in our estimations which make us believe that clubs with higher level of debt will in the long run achieve worst results on the field. This fact must be present in the daily decisions of the clubs in order to guarantee financial stability which will allow achieving more winnings and more trophies.

After analysing our results, we can conclude that clubs with more stability in financial terms can achieve better sports results. Taking these results into consideration, it becomes relevant to discuss the distribution of revenues and premiums in order to improve the competitiveness of the competitions. Another important issue to football take into consideration is the question related to the regulation which needs to be well present. The utilization of private funds as source of investment can unbalance the competiveness of some

tournaments. It´s not by chance that in the recent years appeared some teams fighting for competitions which in the past was not usual their presence. This new source of investment has caused an incredible inflation of the values that players are transacted nowadays, values which are not possible to practice for the majority of the clubs, resulting in discrepancy between the teams, championships and the general competiveness.

Finally, another important priority for the teams is the well definition of the main goal of the club. It is important to balance the financial stability and the success on the field in order to guarantee the club growth in the medium and long term. Only this strategy will allow the sustainability of the clubs and ensure the football as the king sport and as entertainment in the future.

References

Andreff, W., & Staudohar, P. (2000). The evolving European Model of Professional Sports Finance. Journal of Sports Economics

Arnold, A. J. (1991). An industry in decline? The trend in football league gate receipts. The Service Industries Journal, 11: 179-188.

Atkinson, S., Stanley L. and J. Tschirhart (1988). Revenue sharing as an incentive in agency problem: an example from National League. Rand Journal of Economics, 19(1): 27-43.

Audas, R., Dobson, S. & Goddard, J. (2002). The impact of managerial change on team performance in professional sports. Journal of Economics and Business, 54: 633-650.

Baltagi, B. H. (2001), Econometric Analysis of Panel Data, Chichester: Wiley.

Barajas, A, Fernandez-Jardon, C & Crolley, L. (2005). Does sports performance influence revenues and economic results in Spanish football? MPRA Paper No. 3234.

Barajas, A., & Rodriguez, P. (2010). Spanish football clubs' finances: Crisis and player salaries. International Journal of Sport Finance, 5: 52–66.

Barajas, A., Fernández-Jardón, C. & Crolley, L. (2007). Does sports performance influence revenues and economic results in Spanish football?.

Barbosa, N. and Louri, H., (2005). Corporate Performance: Does Ownership Matter? A Comparison of Foreign-and Domestic-Owned Firms in Greece and Portugal. Review of Industrial Organization. 27: 73-102.

Baroncelli, A. and Lago, U. (2006), "Italian football", Journal of Sports Economics, 7(1): 13-28.

Barros, C.P. (2006). 'Portuguese Football'. Journal of Sports Economics 7: 96–104.

Bird, P. (1982). The Demand for League Football, Applied Economics, 14(6): 637-649.

Bollen, P., Frehen, R. (2010). Influence of sports performance on financial performance in Dutch football.

Boulier, B. L. & Stekler, H.O. (2003). Predicting the outcomes of National Football League games. International Journal of Forecasting, 19: 257-270.

Buraimo, B., Forrest, D. & Simmons, R. (2007). Freedom of entry, market size, and competitive outcome: Evidence from English soccer. Southern Economic Journal, 74: 204-213.

Burkitt, B. and Cameron, S. (1992). Impact of league restructuring on team sport attendances: the case of rugby league, Applied Economics, 24: 265-271.

Cocco, A., & Jones, J.C.H. (1997). On Going South: the Economics of Survival and Relocation of Small Market NHL Franchises in Canada, Applied Economics, 29: 1537-1552.

Dawson, P. & Dobson, S. (2002). Managerial efficiency and human capital: An application to English association football. Managerial and Decision Economics, 23: 471-486.

Dawson, P., Dobson, S., & Gerrard, B. (2000). Estimating Coaching Efficiency in Professional Team Sports: Evidence from English Association Football. Scottish Journal of Political Economy, 47(4): 399-421.

Deloitte & Touche (2000). Annual review of football finance. A review of the 1998/1999 season. Deloitte & Touche, august.

Deloitte Annual Review of Football Finance 2017

Dimitropoulos, P. (2011). Corporate Governance and Earnings Management in the European Football Industry. European Sport Management Quarterly, 11(5): 495-523.

Dimitropoulos, P. & Tsagkanos, A. (2012). Financial Performance and Corporate Governance in the European Football Industry. International Journal of Sport Finance, 7: 280-308.

Dobson, S. & Goddard, J. (1998). Performance, revenue and cross subsidization in the English football league, 1927-94. Economic History Review, 51: 763-785.

Dobson, S. & Goddard, J. (2004). Revenue divergence and competitive balance in a divisional sports league. Scottish Journal of Political Economy, 51: 359-376.

Ecer, F., & Boyukaslan, A. (2014). Measuring Performances of Football Clubs Using Financial Ratios: The Gray Relational Analysis Approach. American Journal of Economics: 62-71.

Ferri L., Macchioni R., Maffei M., Zampella A., (2017). Financial Versus Sports Performance: The Missing Link, International Journal of Business and Management; 12(3): 36-48.

Gerrard, B. (2002). Going down, going down, going down: the economics of relegation. Comunicación al 10th EASM Congress. Jyväskylä, 4-7 September.

Gerrard, B. (2005). A resource-utilization model of organizational efficiency in professional sports teams. Journal of Sport Management, 19, pp. 143-169.

Goddard, J. (2005). Regression models for forecasting goals and match results in association football. International Journal of Forecasting, 21(2): 331-340.

Goossens, K. (2006). Competitive balance in European football: comparison by adapting measures: national measure of seasonal imbalance and top 3. Riv. Dir. Ec. Sport, 2(2)

Haas, D. (2003). Productive Efficiency of English Football Teams: A Data Envelopment Analysis Approach. Managerial and Decision Economics 24: 403–410.

Heij, R., Vermeulen, P. & Teunter, L. (2006). Strategic actions in European soccer: do they matter?. The Service Industries Journal, 26: 615-632.

Hoffmann, R., Lee, C, & Ramasamy, B. (2002). The socio-economic determinants of international soccer performance. Journal of Applied Economics, 2: 253-272.

Hsiao, C. & Pesaran, M. (2004), Random Coefficient Panel Data Models, Center for Economic Studies & Ifo Institute for Economic Research (CSEifo), Working Paper No. 1233.

Késenne, S. (2009). The financial situation of the Belgian 'Jupiler League': Are players overpaid in a win-maximization league? Paper presented at Comunicación al Football and Finance Congress, Paderborn.

Koning, R. H. (2003). An econometric evaluation of the effect of firing a coach on team performance. Applied Economics, 35: 555–564.

Koning, R. H., Ridder, G., Koolhaas, M., & Renes, G. (2001). Simulation Model for Soccer Championships, University of Groningen, SOM Research Reports 01A66.

Lago, U., Baroncelli, A., & Szymanski, S. (2004). Il business del calcio. Milano, Italy: Egea.

Majundar, Sumit K. (1997). The impact of size and age on firm-level performance: Some Evidence from Indian Industry. Review of Industrial Organization. 12: 231-241.

Marques, A. (2002). Competitive balance in the Portuguese premier league of professional soccer. Working Papers in Economics.

Morrow, S. (1999). The New Business of Football: Accountability and Finance in Football. Houndmills: Palgrave Macmillan.

Mourão, P. (2010). Regional Determinants of Competitiveness: The Case of European Soccer Teams. International Journal of Sport Finance, 5: 222-234.

Mourão, P. (2012). The indebtedness of Portuguese soccer teams looking for determinants. Journal of Sports Sciences, 30(10): 1025-1035.

Murphy, P. (1999 a). Banking on Success: examining the links between performance and the increasing concentration of wealth in English elite football. Singer & Friedlander. Review 1998-99 Season.

Murphy, P. (1999 b). For richer, for poorer north of the border: examining the link between resources and performance in Scottish elite football. Singer & Friedlander. Review 1998-99 Season.

Nagy, Z. (2012). Modern Forms of Business in Professional Football. Law and Economics Review 2.

Noll, R. G. (2002). The economics of promotion and relegation in sports leagues: the cases of English football. Journal of Sport Economics, 3(2)

Ozawa, T., Cross, J. & Henderson, S. (2004). Market orientation and financial performance of English professional football clubs. Journal of Targeting, Measurement and Analysis for Marketing, 13: 78-90.

Palacios-Huerta, I. (2002). Structural Breaks During a Century of the World's Most Popular Sport, Working Paper, Brown University, March.

Peeters, T. (2011). Broadcast Rights and Competitive Balance in European Soccer. International Journal of Sport Finance, 6: 23-39.

Quirk, J. & El-Hodiri, M. (1974). The economic theory of professional sport league in: Government and Sport Business (Edited by R. Noll), The Brookings Institution, Washington D.C., pp. 33-80.

Samagaio, A., Couto, E. & Caiado, J. (2009). Sporting, financial and stock market performance in English football: an empirical analysis of structural relationships.

Sloane, P. (1971). The economics of professional football: the football club as a utility maximize. Scottish Journal of Economy, 17: 121-145.

Solberg, H. & Haugen, K. (2010). European club football: why enormous revenues are not enough? Sport in Society: Cultures, Commerce, Media, Politics;

Szymanski, S. (1998). Why is Manchester United so successful?. Business Strategy Review, 9: 47-54.

Szymanski, S. & Kuypers, T. Winners and Losers – The Business Strategy of Football. England, Penguin Group, 1999.

Szymanski, S. & Smith, R. (1997). The English Football Industry: profit, performance and industrial structure. International Review of Applied Economics, 11(1): 135-153.

Union of European Football Associations, (2013), Club Benchmarking Report: 2013/2014 season.

Vrooman, J. (1997). A unified theory of capital and labor markets in major league baseball. Southern Economic Journal, 63: 594-619.

Vrooman, J. (2000). The economics of American sport leagues. Scottish Journal of Political Economy, 47, pp. 364-398.