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TV-income and football performance: A study of how broadcasting revenues affect domestic and international sporting success for Europe's elite leagues.

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Table of contents

List of tables

Abstract

Europe's elite football leagues are often defined by the collective term “the Big Five”, and consist of clubs originating from England, Spain, Italy, Germany and France. By dominating both the UEFA Club Coefficient Ranking and Deloitte's “Football Money League”, the teams from these European leagues win the vast majority of international tournaments as well as being the most profitable in terms of revenue generation. While previous research explores the relationship between total revenue generation and sporting achievements, our paper aims to isolate the effect of broadcasting revenues, and examine how the income from TV-deals influences both domestic and international sporting success. By handpicking information from “the Big Five” leagues across a timespan of seven years (2010-2017), we built a robust dataset containing thousands of observations. After running our data through a set of correlation tests and multiple regression models, we were able to establish positive significant relationships between both broadcasting revenues and domestic sporting success, and broadcasting revenues and international sporting success. In fact, as our findings imply broadcasting revenues to be a weaker success predictor for English teams than for non-English, the results may indicate that the usage of different broadcasting revenue distribution models influence sporting achievements. We believe that the uniform allocation model practiced in England enhances the internal league competition, making it tougher for one or two teams to dominate the rest. On the other hand, looking at how the broadcasting revenues are distributed in non-English leagues, we observe that the skewed allocation fuels a few superior clubs, enabling them to retain both domestic and international sporting success.

1. Introduction

"With the growing importance of broadcasting rights in the football industry, media revenues are considered a key factor for interpreting the disparity in wealth between clubs across the major European Leagues" – KPMG, 2017.

Since the current English broadcasting cycle started in 2016/17, the Premier League has continued to power ahead of the other four dominant European leagues (Spanish, German, Italian and French) in terms of total revenue generation. As a result of the new three-year television contract, the Premier League is expected to bank a total of $ 5.7 billion in total revenue in 2017/18. This is almost twice as much income as the German and Spanish leagues are projected to generate over the same period (Deloitte, 2017). In addition to this, the English league is often applauded for its equal broadcasting revenue distribution model when compared to their European counterparts, illustrated with a first-to-last ratio of slightly above 1.6:1 in 2016/17 (Appendix 1).

While the relationship between financial performance and sporting results has been vastly researched over the years, the impact of TV-income on sporting success remains an unexplored territory. Our study will try to examine how differences in broadcasting revenue generation and allocation influences both domestic and international achievements for Europe's elite teams. As the English league is differentiated from the other "big four" leagues in terms of both broadcasting revenue generation and distribution, our paper tests the above-mentioned relationships for English and non-English teams separately. By first looking at how the English distribution model compares to the ones applied in Spain, Italy, Germany and France, we will secondly investigate how the differences in allocation structure influence the internal league competition and domestic achievements. Conclusively we observe whether there are any trends indicating a relationship between distribution practices and international sporting success.

To address the above-discussed topics, we have decided on the following main research question: ***"Will broadcasting revenues affect sporting success in Europe's "Big Five" leagues"?***

Furthermore, by separating between the English and non-English broadcasting revenue distribution models and taking these different allocation practices into account, our two sub-research questions are the following:

- ***"Will the different distribution models influence internal league competition and domestic sporting success in Europe's "Big Five" leagues"?***

- ***"Will the different distribution models make English clubs a more dominant force in European club competitions"?***

2. Literature review

2.1 General part

We have divided our literature review into two sections, one general part and one context part. In this general part we present previous research performed on topics similar to the relationships and correlations that we intend to investigate.

2.1.1 Relationship between financial performance and sporting success

Theoretical and empirical research explaining the relationship between a club's financial performance and sporting success has emerged in the last twenty years. In 1997, researchers Szymanski & Smith developed an empirical model that measured the financial performance of English League clubs from 1974 to 1989. The researchers illustrate that there exist a linear relationship between profit margins and league position, and that revenue is a function of league performance measured as odds ratio of league position.

In a paper from 1999, Szymanski & Kuypers extended this empirical model. By using a selection of English football league clubs they developed a regression analysis to show how league position is a driver for revenues.

Dobson and Goddard (1998) on the other hand, applied causality and cointegration tests in their research of 77 Football League clubs. Unlike Szymanski & Smith (1997) and Szymanski & Kuypers (1999), the researchers found more evidence that causality goes from lagged revenues to performance, rather than from performance to revenues.

In their paper from 2016, researchers Rohde & Breuer investigated the relationship between financial growth and sporting success. Analyzing the revenues of the top 30 European football clubs over ten consecutive seasons from 2004-2013 they found that financial success is propelled by sporting success, as well as brand value. Through their regression models they found that sporting success was driven by team investments, and that team investments tend to be driven by (foreign) private majority investors.

Another important premise for both financial and sporting success is brand investments. In his research from 2004, Grundy illustrates this by highlighting the success-story of Manchester United. Working persistently together with first class partners, the English club develops new products and services that have a global appeal to their worldwide fan base. By converting more fans into customers, Manchester United were able to enhance their financial performance and ultimately increase their sporting success.

In addition to this, utilization of the stadium capacity remains a key ingredient for a club's financial success. In order to examine the relationship between a club's reputation and stadium attendance, Czarnitzki & Stadtman (2002) analyzed the teams in the German national league (Bundesliga). Through a Tobit Model they found that the reputation of the Bundesliga-clubs correlates with the stadium attendance.

The aforementioned articles illustrate that sports economists tend to agree that financial success is the primary driver for sporting success. The literature describes how a club's financial performance is reflected through both domestic and international sporting success. Strong brand name and a healthy reputation are also factors that are found to have a positive effect on revenues and ultimately sporting success.

2.1.2 Relationship between salaries and sporting performance

Through the years there have been a variety of studies illustrating how sporting performances are related to wage-costs.

After years of financial distress in the English top tier, Szymanski and Smith (1997) examined financial performance of clubs from the English league in the years 1974-89. By developing an empirical model and including a set variables like wage bill, league position, turnover and net transfer spend, they discovered a high correlation between performance-level and wage-costs. This indicates a close relationship between inputs and outputs.

An article by Ferri, et al. from 2017 investigated the relationship between results from sporting performances and financial performances in the Italian football league, Serie A. By performing an analysis with panel data from between 2007-2014 for the 29 clubs that played in the league during this period, the results showed a positive correlation between salaries and sporting performances. On the other hand, the transfer fees paid when buying new players were strongly negatively correlated with sporting results.

These findings are comparable with a similar study performed by Dimitropoulos and Limperopoulos (2014), who observed how the investment of player contracts in the Greek football league were related to performances by the football clubs. They argue that when football clubs invest heavily in player-contracts they automatically increase their success rate. Even though this indicates that salaries positively affects sporting performances, the same study concludes that such an investment in the players is unprofitable for the clubs, and thus implying that choices related to sporting success are considered more important than economic stability.

Another research performed by Fort and Quirk (1995) examine the major sport leagues (baseball and American football) in the US, and try to work out which salary-measures that would generate a stable economy and how performances in sports are affected by these salary-schemes. They argue that salary cap is the only cross-subsidization scheme that can secure financial vitality for teams located in weak-drawing markets, while at the same time improving competitive balance. But their study also shows that even though salary and performance are linked together, they are not necessarily positively correlated.

Hall, Szymanski, and Zimbalist (2002) came to the same conclusion when they found evidences of causality between performance and salary in American baseball from 1995-2000. Like Fort and Quirk they also found results of salary having both positive and negative effects on performance. In addition, Hall et al. also compared their results to a correlation between salary and performance in English football. They concluded that salary will have more positive effects on

football, as baseball has restrictive policies when it comes to player spending, roster size and trading rights, which are absent in football. In other words, the possibility of buying success is higher in football.

A fresh study by Madsen et al. (2018) examines how salary costs impact sporting performance in the Norwegian and Swedish league. When choosing wage expenditures as the independent variable and league standing as the dependent, their results show that 32.6% of the variation in league standing in Norwegian football is explained by the variation in wage expenditure. The equivalent explanatory power for Swedish clubs is 60.4%. The researchers also observed a stronger correlation between the two variables over time, than over the course of one single season.

2.2 Context part

In order to get a clear understanding of the different frameworks related to our paper, we have included a context part. This section aims to illustrate the structure of the English Premier League, and how the broadcasting money is earned, distributed and invested. We also look at the broadcasting revenues generated by the other “big four” European leagues, and how their revenues and investments compare with the English league. As a large part of our paper is related to international sporting success we have also described the structure and economic frames of the two European club competitions, UEFA Champions League and UEFA Europa League.

2.2.1 Format and history of the English Premier League

The Premier League is the top tier of England's football pyramid, with 20 clubs fighting for the honor of being crowned English champions. Home to some of the most famous players, managers, clubs and stadiums in world football, the Premier League has grown to be the most watched league on the planet, with 900 million homes watching the action across 190 countries (Premier League, 2017). So how did it all start?

In May 1992 the English First Division changed its structure and the Premier League was formed, with the first campaign starting on 15.august the same year. In the opening season of 1992/93, 22 teams participated in the competition, with Manchester United being the first Premier League winner, finishing 10 points ahead of Aston Villa. The league has since been reduced to 20 teams, with each club facing their opponents twice a season, one match home and the other one away, equaling 38 matches during the course of the competition.

Three points are awarded for a win, while one and zero points are handed out for draws and losses, respectively. The team wrapping up the most points by the end of the season wins the league, while the teams that finish in the bottom three of the table are relegated and replaced by three teams promoted from the Championship, the second tier of English football.

If any teams were to finish with the same amount of points, their position in the Premier League table is determined by goal difference (the difference between goals scored and goals conceded), and then by the number of goals scored. If the teams still cannot be separated, they will be awarded the same position in the table (Premier League, 2017).

From the 2001/02 season, the teams that finish in the top three of the Premier League automatically qualify for the next season's UEFA Champions League group stages, while the fourth-placed team enters into the UEFA Champions League qualifying round. A fifth-place Premier League finish awards the team a place in the UEFA Europa League group stages.

The winners of the domestic FA-cup and League Cup will also enter the UEFA Europa League qualification rounds. If the winners and runner-ups of these domestic cups are already qualified for Champions League or Europa League through their league position (finishing the Premier League in first to fifth place), the places will go to the sixth and seventh placed teams in the Premier League.

A total of 49 clubs have participated since the Premier League format originated, with only Manchester United, Manchester City, Chelsea, Arsenal, Blackburn

Rovers and Leicester City being able to win the coveted title. Manchester United have enjoyed most success, picking up 13 Premier League trophies in 25 seasons so far.

The same team holds the record for biggest winning margin, when they finished 18 points ahead of second-placed Arsenal in the 1999/00-season. The narrowest winning margin of a +8 goal difference came in 2011/12. Manchester City snatched the title from Manchester United, scoring deep into stoppage-time to secure the title on the final day of the season (Premier League, 2017).

Arsenal is the only club to have played an entire Premier League campaign without losing a single match. The record was set in the 2003/04-season and the team was fittingly dubbed "The Invincibles" for their accomplishment (Premier League, 2017).

The most unlikely Premier League champion were crowned in 2015/16, with Leicester City capping off an incredible sporting story by winning the sought-after trophy. The incredible title triumph came just one season after the club miraculously avoided relegation by only six points. The 2017/18-season symbols the 26th edition of the competition; with Chelsea as the defending champions having recorded a Premier League-record 30 wins (out of a possible 38) on their way to title success in 2016/17.

2.2.2 Premier League and broadcasting revenues

The 2016/17-season marked the first season under the new three-year record-breaking television deal that made Premier League the most lucrative domestic football league in the world. Broadcasters Sky Sports and BT Sports currently share the TV-rights for Premier League in the United Kingdom after a staggering $ 6.6 billion deal was agreed (previous broadcasting cycle from 2013-16 was $ 5.1 billion) during the 2015/16-season (Statista, 2017). The Premier League also signed massive overseas TV-deals, which takes the total broadcasting income to approximately $ 11 billion over the course of the next three years ($ 3.6 billion per season). So how is the TV-money distributed between the 20 clubs in the Premier League?

While the overseas money is divided equally between all 20 teams, the domestic portion of the money is divided amongst the clubs according to the following model:

- 50% divided equally between all 20 clubs
- 25% is merit based, meaning that it is distributed according to final league position.
- 25% is distributed as a facility fee to all clubs depending on how many times they are shown on TV. Each club is guaranteed a minimum of around $ 17.6 mill, with an additional $ 1.2 mill per televised match (The Mirror, 2017).

2.2.3 Broadcasting money and financial revenue

With the new broadcasting deal taking effect from the 2016/17-season, the Premier League continues to power ahead of the other four dominant European Leagues in terms of total revenue generation. The new three-year television-contract has resulted in an average increase of 45% in broadcasting revenues compared to 2015/16, with the Premier League expected to bank a total of approximately $ 6.5 billion in total revenues in 2017/18 (Deloitte, 2017). The collective selling of broadcasting rights, and the associated relative equality in distribution, has been an essential strength of the Premier League over the past 25 seasons. The league's broadcasting revenue distribution mechanism (described above) - the most uniform of the European "Big Five" leagues enables an intense competitiveness in the league, exemplified by the shock of Leicester City's Premier League win in 2015/16 (Deloitte, 2017):

"In no other major footballing nation could a club with a similar profile to Leicester City be able to obtain approximately 90 million pounds in broadcast revenue alone, to help give such an "outsider" a shot at glory, without reckless overspending".

2.2.4 Broadcasting money, transfers and wages

Whilst the Premier League clubs have remained ahead of their European counterparts in terms of revenue generation off the pitch, the 2015/16-season also confirmed their attempts to enhance their on-pitch position. Boosted by the

knowledge of significant guaranteed revenue increases in the 2016/17-season due to the record-breaking TV-deal, English clubs remained by far the largest actor in the transfer market. Premier League clubs spent a record $ 1.75 billion on transfers during the 2015/16-season, surpassing the previous record of $ 1.4 billion by more than 20%. Twelve clubs spent more than $ 66 million (up from seven clubs in the 2014/15-season), with Manchester City breaking the record for a Premier League club in a single season when they splashed out $ 230 million for their new player acquisitions (Deloitte, 2017).

As the Premier Leagues transfer spending has continued, so has the growth of wage-costs. The 20 clubs reported a total wage bill of $ 3 billion in the 2015/16-season, more than double the total spent by the clubs in any of the other "Big Five" leagues. The Premier Leagues wage costs increased by 12% compared to the previous season, as the English clubs spent money in anticipation of the enhanced broadcasting revenue obtained in 2016/17 (Deloitte, 2017).

2.2.5 The European "big four" leagues and broadcasting revenues

New European broadcasting deals taking effect in recent years continue to have a profound effect on the financial landscape of the Europe's "Big Five" leagues. Having already discussed the impact of the TV-deals in the Premier League, this paragraph will shed a light on similar broadcasting arrangements in the other "big four" European leagues, and see how these affect their revenues.

Bundesliga – the top tier in Germany

A new four-year domestic and international broadcasting deal is expected to generate combined revenues of approximately $ 3.45 billion in 2017/18. The total annual value of broadcasting rights in Germany for the two top divisions combined, is likely to rise to beyond $ 1.6 billion over the duration of the new broadcasting cycle. This is an increase of 75%, compared to 2015/16 levels (Deloitte, 2017). The distribution model related to domestic broadcasting revenues in German football is built up as follows:

- 65% divided according to ranking, but with an equal base amount.

- 35% divided on the basis of historic league position and participation in UEFA competitions over the past 5 years.
- First-to-last ratio of 3:1 (Appendix 1).

La Liga – the top tier in Spain

After a transitional year in 2015/16, the Spanish clubs fully adopted to a new collective television rights selling mechanism in 2016/17, collecting a total of $ 1.38 billion in broadcasting revenues. According to Deloitte (2017), the new arrangement is expected to take the total La Liga revenues beyond $ 3.2 billion, which will see them briefly eclipse the Bundesliga as Europe's second highest revenue generating league in 2016/17. Combined with improved financial transparency and responsibility, the clubs should be able to sustain their improvements in profitability over the coming seasons. As a result of the new and improved broadcasting deal, the distribution model is also believed to be changing in direction of the uniform distribution system used in the Premier League. In order to change this system they have come up with the following model:

- 50% equally shared among the clubs in the league.
- 25% allocated according to results over the previous 5 seasons.
- 25% allocated on the basis of metrics, with number of television. subscribers from each clubs' fan base and number of season-ticket holders as the main drivers.

Up to this point however, all Spanish clubs have contracts traded individually, which has created skewed and unequal distributions over the years and resulting in a first-to-last ratio of 3.1:1 (Appendix 1).

Serie A – the top tier in Italy

The Italian clubs revenues are unlikely to grow significantly over the next few seasons with Serie A's existing broadcasting rights tied down to a cycle ending in 2020/21. The current deal with Infront Sports & Media is worth $ 1.14 billion per season, and any further growth in revenue will be dependent on the clubs improving their commercial deals and/or increasing their match day attendances (Deloitte, 2017). As a result of this, the Italian clubs will face a difficult challenge

competing, in financial terms, with their European colleagues to attract the best playing talent over the coming seasons. Up and till this point, Serie A's distribution model connected to broadcasting deals has been as described below:

- 40% divided equally between the clubs.
- 25% divided in relation to number of supporters of the clubs.
- 5% allocated on the basis of number of citizens where the club is resident.
- 5% based on results last season.
- 15% based on results over the last five years.
- 10% based on results from 1946/47 and up to the point where they measure results over the last five years.
- First-to-last ratio of 2.8:1 (Appendix 1).

In the future, the administrators of the league have decided to implement a new model, with the purpose of providing a more equal distribution. The equal share will therefore be increased from 40% to 50%, while adjustments will also be made on the remaining factors.

Ligue 1 – the top tier in France

Deloitte (2017) expects the French league to remain the lowest revenue-generating of Europe's "Big Five" leagues throughout the 2016/17- and 2017/18 seasons. This is despite the entrance of new domestic broadcasting deals in 2016/17 worth around $ 149 million more than the previous broadcasting cycle of $ 735 million. Regarding their distribution model, the French league currently hands out broadcasting revenues the following way:

- 50% equally shared among the clubs in the league.
- 23% allocated based on the number of broadcasting audience each clubs has.
- 27% is merit based and mostly dependent on last seasons' standings, but is also taking into account results that go as far back as five years.
- First-to-last ratio of 2.5:1 (Appendix 1).

2.2.6 Other revenues

As described above, the financial performance of the "Big Five" European leagues in 2015/16 was heavily influenced by growth in broadcasting revenues. In Appendix 2 we see that the other primary elements contributing to the leagues revenues are: revenues from match-day (attendance), sponsorship/commercial- and other commercial activities.

We observe that the German clubs continue their traditionally strong commercial performance, generating total sponsorship- and other commercial revenue of approximately $ 1.43 billion. This equals 47% of total revenue, and second only to the English Premier League clubs that generated slightly below $ 1.65 billion (Deloitte, 2017). Furthermore, we notice that match-day revenues are relatively similar in Germany ($ 583 mill) and Spain ($ 553 mill). Collecting more than $ 550 mill each, the leagues receive remarkably more from their attendances than the Italian ($ 225 mill) and French ($ 181 mill) leagues, but notably less than the English ($ 919 mill).

2.2.7 How are revenues invested to achieve sporting success?

A huge bulk of the revenues is used to acquire footballs premium talents. In a record-breaking 2015/16 transfer window, almost $ 3.3 billion were spent on new player acquisitions across Europe's top five leagues (Sky Sports, 2015). This is a staggering 31% growth compared to the previous summer's figures, which was the previous record-holding year.

"We keep talking about the record highs and we've seen a record high in all top leagues" former Barcelona Marketing Executive in Barcelona Football Club, Esteve Caldaza states (Sky Sports, 2015). He further proclaims, "There *is a clear dominance from the Premier League, which is getting fantastic TV-rights income, that flows into the game".*

As Appendix 3 illustrates, the Premier League clubs' net spend (player acquisitions minus player sales) were in fact more than five times bigger than the La Liga and Serie A club's expenditures, with experts predicting the trend to persist in the future (Sky Sports, 2015).

Another huge financial item is the clubs' wage-costs. Appendix 4 from Deloitte shows the "Big Five" European league clubs' revenues and wage costs for the 2014/15 and the 2015/16-seasons. While the Premier League clubs wage bill increased to $ 3.3 billion, more than double of any of the other "Big Five" European leagues, the clubs in La Liga overtook those in Serie A to become the second highest wage spenders in the 2015/16 season. The Spanish sides boosted their wages by almost $ 222 mill, as more clubs were able to increase their wage level in line with the above-mentioned upswing in La Liga's broadcasting rights.

Bundesliga clubs experienced a wage increase of $ 105 mill in 2015/16, matching the wage level of the Serie A, and becoming the joint third-highest wage spenders in Europe. However, the German clubs recorded a significantly lower wages/revenue-ratio (49%) than their Italian competitors (70%). This is only the third time in the last decade that one of Europe's "Big Five" leagues has recorded a wages/revenue-ratio lower than 50%. In fact, the Bundesliga achieved the feat on the two previous occasions as well (Deloitte 2017).

The Italian clubs experienced the lowest growth in wages with an increase of only 3% in the 2015/16-season. This modest growth, combined with an increase of 7% in total revenue, saw the wage/revenue-ratio decrease from 72% to 70%. Nevertheless, this was still the highest ratio of the "Big Five" European leagues (Deloitte, 2017).

The French Ligue 1 wage-costs surpassed the $ 1.1 billion mark for the first time, as the clubs experienced a 7% increase in the 2015/16-season. The wage/revenue ratio grew by 2% as the wage-cost growth outpaced the increase in revenues. Paris Saint-Germain's wage bill increased by 15% to $ 322 mill, representing roughly 30% of the French league`s wage expenditure (Deloitte, 2017).

2.2.8 International club competitions

A good indicator of European clubs sporting success is their performances in the UEFA Champions League and UEFA Europa League. While the previous paragraphs touches upon the revenue-effects of domestic broadcasting deals, the

economic rewards of success in international club competitions have surpassed the prize-money from domestic competitions. Szymanski emphasizes this by stating that: “There is no doubt that the big clubs view success in the Champions League as their primary objective” (Rohde & Breuer, 2016, page 7).

2.2.9 UEFA Champions League

The UEFA Champions league is the most prestigious international competition for European football clubs, with the winning team to be reckoned as the best team in Europe the current year. It started as the European cup in 1955/56 with 16 participating teams, but was renamed the Champions league in 1992. The competition has also expanded and become a tournament including at most 79 teams in the qualifying rounds (UEFA, 2017). These rounds consist of three elimination matches before a final play-off match decides whether a team is able to qualify for the group stages.

In the group stages the thirty-two qualified teams are drawn together in eight groups of four based on their European ranking (previous international merits) (Thoughtco, 2017). The four teams play against each other twice, both home and away. A victory gives three points, a draw gives one, while a loss gives zero. The two teams with most points from each group after six matches moves through to the eliminating knockout rounds. The team with the third highest number of points in the group is immediately moved into the first round of the knockout stages in the Europa League. The rounds start of with a round of 16, then quarterfinals, before the four remaining teams are drawn into two semi-finals. The two winners from the semi-finals meet in a final, which crowns the winner of the tournament.

UEFA has enabled a coefficient system in order to decide how many clubs from each country qualify for the tournament. This system is designed as a ranking of the countries, where previous results by the teams from these countries in international tournaments are calculated through a specific point system, over the previous five years. These points are divided by the number of teams represented by each country in order to estimate the coefficient.

Appendix 5 describes how teams qualify for the Champions League, through the coefficient system.

2.2.10 UEFA Champions League finances

The total revenues from the UEFA Champions League distributed to participating clubs are approximately $ 1.49 billion (UEFA, 2017). By competing in the tournament a club can earn up to $ 65.8 mill through both guaranteed fixed payments and variable payments based on results. In the qualification rounds each club is receiving a participation-revenue if they are eliminated before the group stages, as well as a solidarity payment of $ 299 500. The participation revenues are based on which round they are potentially eliminated from, with $ 253 400 from the first round, $ 368 600 from the second, and $ 483 800 from the third. If a club is eliminated from the play-offs it receives the sum of the participation revenues equal to the two first rounds, in addition to the solidarity payment.

Clubs qualified for the group stages of the tournament receive a guaranteed fixed payment of $ 14.6 mill during this phase. They also have the possibility of additional result-based payments of $ 1,7 mill per win, or $ 576 000 per draw. By progressing to the round of 16, the guaranteed fixed payment increase by additional $ 6.9 mill, quarter finalists receive $ 7.4 mill and by competing in the semi-finals the clubs receive $ 8.6 mill each (UEFA, 2017). The finalists in the UEFA Champions League share $ 30.5 mill, with $ 17.85 mill for the winner, and $ 12.65 mill for the runner up, respectively.

In addition to what a club can make in fixed and variable revenues by progressing in the UEFA Champions League, UEFA also distribute $ 584 mill in market pool payments. These payments are regulated by size and value of the television markets in each country participating. When the value is defined, all clubs from the particular country share this market pool based on a set of conditions including the number of competing clubs from this country, how the clubs performed domestically the previous year, and their performance in the upcoming tournament (UEFA, 2017).

2.2.11 UEFA Europa League

UEFA Europa League is the second most prestigious tournament in Europe every year, with 190 teams from over 50 countries participating. The tournament was established in 1971, and was named the UEFA Cup. From the season 2009/2010 it was renamed Europa League after UEFA agreed on a rebranding of the competition (UEFA, 2008).

Europa League has the same structure as the Champions League, with three qualification rounds and a play-off match in order to qualify for the group stages of the competition. This tournament is on the other hand slightly larger than the Champions League and 48 teams are participating in the group stages, divided into twelve groups of four teams. After both home and away matches against all teams in the group, the two best teams progress into the eliminating knockout stages. In this stage, the 24 progressing clubs are joined by the 8 teams finishing third in their respective Champions League groups, giving a knockout-phase of 32 clubs. Here two and two clubs are drawn together and play home and away matches in order to eliminate each other. This structure continues through both the round of 16, quarterfinals and semi-finals, until two teams meet each other in one final match, which determines the winner of the tournament (Wikipedia, 2017).

In order to define which teams are allowed to participate in the Europa League, UEFA use the same coefficient ranking as in Champions League. The number of teams participating from each country through the coefficient system can be found in Appendix 6.

2.2.12 UEFA Europa League finances

The total revenues from the UEFA Europa League distributed to participating clubs are approximately $ 460 mill. These revenues will be allocated the same way as UEFA did in the Champions League with $ 276 mill in fixed payments, while $ 184 mill are distributed in market pool payments.

During the qualification rounds, the participating clubs hold the right to a respective payment for each round. In the first round the payment is $ 247 000, $ 259 000 in the second, $ 270 000 in the third, while it is $ 282 000 in the play-

offs. Unlike the Champions League qualification, there are no additional solidarity payments during this stage, and if a club wins its respective play-off match, it is not entitled to the payment from this qualification match either. In the group stage of the competition the clubs receive a guaranteed fixed payment of $ 3 mill, and a variable performance payment of $ 414 000 per win and $ 138 000 per draw. Additionally, group winners receive a bonus of $ 691 000, while $ 345 000 are handed to the second placed team in the group. When the clubs enter the knockout stages, they each receive $ 576 000 for the round of 32, $ 864 000 in the round of 16, and $ 1.1 mill in the quarterfinals. The four clubs that reach the semi-finals are entitled to $ 1,84 mill for this. The Europa League finalists are sharing $ 11.5 mill, $ 7.5 mill for the winner and $ 4 mill for the runner-up. The winning team is also collecting almost $ 15 mill, as it is automatically qualified for the group stage of next years Champions League.

Adding all participation and bonus revenues above, a club could potentially earn $ 17.5 mill through the competition, before the market pool is divided. The market pool in Europa League has the same structure as in the Champions League, described earlier in this paper. As mentioned, the enormous payouts and result-oriented bonuses from UEFA competitions enable clubs to generate direct revenues through participation and success in the competition. In addition to this, the opportunity to acquire new international sponsors and fans could create a growth in indirect revenues (Rohde & Breuer, 2016).

3. Method

3.1 Research design

Our main research question *"Will broadcasting revenues affect sporting success in Europe's "Big Five" leagues?"* can be categorized as an explanatory research question. The purpose of such a question is to try and clarify a certain connection, which in our case is if broadcasting revenues are correlated with sporting success. To explain such a phenomenon and thus answer our research question, we decided to apply a quantitative research method. There are several reasons why we feel that this approach is the best fit.

Firstly, as our research question defines, our goal is to determine the relationship between broadcasting revenues and sporting success. In order to establish significant results, our study requires multiple observations over a given time period. A large sample will yield more accurate results, and by running our data through several multiple regression models, we aim to discover patterns that have not previously been considered or noticed. Due to the size and complexity of such a big dataset, our focus is on the overall picture, rather than on the details and specifics of each club. By choosing this design, we presume that our analysis and findings will be easier to generalize and apply to other leagues not included in the sample (Saunders, 2016).

Secondly, when performing our regressions we want to test how our sporting success variables (league position and UEFA coefficient) are affected by predictor-variables such as broadcasting revenues, number of employees and attendance. According to the quantitative approach, the best way to test these relationships is by establishing several hypotheses and to see if the correlations between the dependent and independent variables are significant. In our case the null hypothesis will describe an expectation of no correlation between our dependent variables (league position/UEFA coefficient) and our independent variables, while the alternative hypothesis will state the opposite.

3.2 Data and collection of variables in our regression models

We started the collection of data through a phase of exploratory research in order to expand our insight, and get familiar with the topic. To provide the needed information we gathered data from several types of secondary data sources such as databases, local newspapers, journals, football associations and their official websites, and previous research papers on similar subjects. We also collected statistics about results and performances in both domestic competitions and international tournaments, to get an idea of how the different teams develop during the period of our research. Eventually we were able to see a pattern in the data pool, and were thus able to organize the data in a set of variables, which we believed to be important for further testing. Conclusively we decided to use the complete dataset in a causal research design in order to test certain hypotheses regarding relationships in our data.

The design of the data set can be characterized as a cross-sectional time-series data study, also known as panel data study. Panel data sets involve at least two dimensions, as it contains both data over time, as well as data of more than one subject. Therefore it may provide us with advantages over cross-sectional data due to the fact that it usually contains more degrees of freedom and less multicollinearity. By pooling data instead of using only data on the individual in question, it also generates more accurate predictions for individual outcomes (Hsiao, 2014).

Based on the UEFA ranking for club competition over the past 15 years, we have decided to include clubs from the five biggest European leagues (England, Spain, Italy, Germany and France). In addition to being the highest ranked leagues with regards to domestic clubs competing in the largest European tournaments, we also consider these five leagues closely related in terms of size and structure, price money, as well as number of supporters in Europe. We believe that having a large number of leagues in our sample provides us with enough observations to consider our findings reliable. Furthermore we can afford to drop possible outliers and potential missing observations, without having to fear for a reliability-decline in the observed values. Overall we include 8244 observations from 160 different

clubs, playing in one of these five leagues during the seven seasons from 2010-2017.

3.2.1 Broadcasting revenues and cycles

The reason for deciding on a period between 2010-2017 is related to the English broadcasting cycles. During this seven-year period we are able to include three distinct broadcasting deals (2010-2013, 2013-2016 and 2016-2017) and thus examine the impact that each deal have on sporting success. We have applied the identical cycle split for non-English teams in order to measure observations within the same specific timeframes, and accordingly yield the most comparable results. The broadcasting revenue figures were mostly retrieved from each league's official web site, and supplemented by information from domestic newspapers. As the majority of the data and economic sizes that we use in this study are stated in US dollars and disclosed at 30th of June each year, we decided to transform all values into this currency using appropriate exchange rates retrieved on the 30th of June each year (X-rates, 2018). The broadcasting revenue numbers for the English clubs are converted from British pounds to US dollars, while the figures for the other European clubs are exchanged from euros.

3.2.2 Number of employees

A vast majority of previous studies explore and discover significant positive relationships and correlations between sporting success and wage expenditures. As it would be logical to assume that an organization's payroll is closely linked with its total workforce, and thus size, we argue that a natural measurement for organizational dimension and magnitude would be its number of employees. Based on these assumptions we want to examine the link between number of employees and sporting success further, and to see if our research yields similar results as the comparable studies that use total wages as a predictor. The numbers for all clubs in all five leagues were collected from the Orbis database. When retrieving the data we experienced some difficulties, as the information about the German teams was somewhat inadequate (see paragraph about missing values below).

3.2.3 Attendance

Average attendance for each club, each season is used as a popularity-proxy and the numbers were collected through Worldfootball (2018). When dealing with attendance numbers we face some uncertainties. An article by Madsen et al. (2018) presents two possible obstacles when reporting number of spectators. The first challenge is that different sources report different information. This may be due to the fact that many clubs are building or expanding their stadiums, and the actual capacity therefore is unknown (Madsen et al., 2018). The other problem relates to the existence of season ticket holders. Essentially there are two ways to count spectators, and it is well known that this practice varies. Some clubs base their numbers solely on the sum of tickets sold combined with the sum of season tickets, while other clubs keep track of how many that actually show up to attend a particular match (Madsen et al. 2018). Regardless of how the attendance is counted, we use the officially reported numbers, similar to the Madsen et al. study.

3.2.4 Domestic and international results and sporting success

National and international performance data (domestic league position and UEFA-ranking coefficient) have been collected from Wikipedia and UEFA, respectively.

3.3 Variables collected but not included in our regression models

In addition to the above-mentioned variables we also collected some data that we for different reasons choose not to include in our regression models.

3.3.1 Operating revenues

Operating revenues were collected through the Orbis database, but the variable is excluded from our regression models as its multicollinearity with broadcasting revenues is above the preferred levels. As with some of the other variables, we ran into some difficulties when retrieving the data. We lack observations for certain clubs in certain years, and these could possibly affect the results. The missing value problem is further discussed in a separate paragraph below.

3.3.2 Total cost of employees

As mentioned above, the parallel between a football club's wage bill and its sporting success has been thoroughly researched over the past decades. However, the portion of the salary expenditures that are directly linked to the players within each club is difficult to identify and obtain. As the Madsen et al.-study (2018, p. 7) points out: "player wage expenditures are not disclosed separately in the income statement of the clubs' financial reports". Consequently our wage-variable is based on the clubs' total payroll.

Another argument for using total cost of employees is that it can be seen as an expression of organizational capacity and size, as well as their sporting strength (Madsen et al. 2018). Previous research underlines possible challenges when reporting the total wage bill. As the total salary expenditure includes costs and benefits paid to the support and administrative staff, and not just to the players, it may carry some systematic measurement errors that ultimately could affect the results (Madsen et al. 2018). However, it would be reasonable to assume that the variation in salary and benefits across clubs exist as a result of the higher degree of variation in wages paid to the player-group than the variation in wages paid to other employees (Madsen et al. 2018). We have chosen to exclude this variable from our regression model for a couple of reasons. Firstly, its multicollinearity with the "number of employees" variable is above preferred levels, leading to unstable coefficients and results. Secondly, a lot of previous studies have already established a significant correlation between total cost of employees and sporting success. In this study we will see if "number of employees" could be used as a predictor variable on sporting success in the same way.

3.4 Missing data

While collecting the data, we ran into a few cases of missing value- or abnormal value-issues. These issues were mainly related to the following variables:

- "Number of employees" - Some football clubs had abnormally high or low number of employees compared to their salary cost. These numbers again impacted the regression model in the analysis as outliers in the dataset. We therefore chose to remove these in order to attenuate these effects.

- "Operating revenues" - There were a few incidents where a club either lacked accounting numbers in the first or last years of our period. The reasons for this could either be that there was still time to submit accounts for the current year, or the fact that the clubs were not a part of the database yet.
- "Total cost of employees" - Like operating revenue there were cases of missing accounting numbers in particular years. We also experienced that clubs especially from Germany included all but the total cost of employees in their accounts.

Most of the data related to the variables above were collected through the Orbis-database. In cases of missing accounting variables, we used alternative sources such as Deloitte or local newspapers. Usually the missing values occurred in only one of the season in the research period. When none of the sources we used could provide us with data, we estimated an average based on the previous and the following observed years. An illustrating example of this is the approximation of Rayo Vallecano's operating revenues in year four of our research period. Orbis provided us with revenues for both the previous ($ 26.2 mill) and the following ($ 34.2 mill) year, and we were accordingly able to compute a value for the 2013/2014 season ($ 30.2 mill). In the few incidents where a club lacked observations for more than one year, we constructed a value based on data from similar clubs in terms of league position and size. This is exemplified by Athletic Bilbao's total cost of employees in the first year of our research period. In this case we included the wage bill of the three clubs above, and three clubs below in the league standings the particular missing year and calculated an average of these observations (see Appendix 7). In extreme cases, such as when a small club only played one season in the league before it was relegated, we decided to keep the values as missing (Gujarati, 2009).

In addition to the missing accounting numbers for particular clubs, we also experienced a potential difference in each country's accounting regulations and practice, as clubs from Germany had a higher number of missing accounting values than clubs from the other countries in the dataset.

3.5 Evaluation of the data

In order to evaluate the data we have collected, we assess it in the context of reliability and validity. Most of the data we use in our research are provided by Orbis, one of the world's largest databases for companies in the private sector. Orbis characterizes themselves as a reliable source of information, and say they provide information from around 160 different sources to make sure that their data are both comprehensive and detailed (Orbis, 2018). We argue that Orbis' systematic and precise collection of information provides us with accurate estimates for our variables, and that our variables correspondingly are a good fit when demonstrating the causal relationships in our research (Saunders, 2016). In addition to the abovementioned internal validity, we believe that the data accuracy makes our findings easier to generalize to other relevant samples, which accordingly increases the external validity of our research as well (Saunders, 2016).

All standings and results from domestic leagues and international tournaments are collected from various Wikipedia-pages (2018). The reason why we have chosen Wikipedia is because their tables provide a very good overview. Despite being reckoned as a somewhat unreliable source, the information we collect is pure statistics and is easy to collect from other separate sources. We therefore consider this information to be reliable, as it is easy to confirm elsewhere.

Broadcasting revenues are collected from sporting newspapers from the countries we included in the dataset. These data are harder to assure in regards to reliability and validity, as the sources from which the journalists collect them are not necessarily stated. On the other hand, the data are facts and numbers, and not a subjective opinion written in an article. Therefore we consider the reliability and validity to be satisfying.

Considering the missing values, we have in some cases been forced to estimate our own data (as described in the previous paragraph). We are aware that such estimations may reduce the reliability and validity of our dataset, but we believe that the estimated values mirror the reality in an adequate way.

3.6 Measures

The measures we use are presented in Table 1. The allocation and distribution of TV-money is reflected through the variable Broadcasting Revenues (BCREV). The natural log is used to dampen the effect of the right-skewed distribution of the variable (BCREV_log). We have also generated a moderator-variable (m_dum_league), which enables us to see how broadcasting revenues impact the sporting success of English teams compared to how it affects the sporting success of the teams in the other leagues. This variable is the product of a dummy that takes a value of 1 if the observation is an English club, and zero otherwise, and the "BCREV_log"-variable.

To separate between the different broadcasting deals we created three distinct dummy variables that each reflects one cycle (dumBCREV_10_11 for the first period 2010-2013, dumBCREV_13_14 for the second period 2013-2016, and dumBCREV_16_17 for the third period 2016-2017). Domestic sporting success is mirrored through the variables League Position Current Year (LPOS_1), and League Position Following Year (LPOSF_1). Both variables are multiplied by -1, in order to illustrate that a lower number indicates a better league position and thus a stronger performance in the competition.

International sporting success is measured through the UEFA ranking coefficient the current year (UEFARC) and UEFA ranking coefficient the following year (UEFARCF). To produce consistent estimates, clubs not competing in European competitions are assigned with a missing value rather than a coefficient of zero. Both variables are log-transformed (UEFARC_log & UEFARCF_log) for the same reason as mentioned above.

Number of employees (NOEMP) is used as a measurement of the size of the club (log-transformed; NOEMP_log), while average attendance (ATT_log) is included as a popularity and reputation indicator.

The above-mentioned variables are the ones that we use to establish our two main regression models. In addition to these, our dataset contains other variables that

may be interesting to look at when investigating and establishing other correlations and relationships between financial performance and sporting success.

Financial performance is measured as operating revenues (OPREV). Again the natural logarithm is used to account for right-skewness (OPREV_log).
Total cost of employees (TCEMP) is a measurement of total wage expenditure of the different clubs (log-transformed; TCEMP_log).

Table 1 Variables and descriptions

Variable	*Description*	*Scale*
BCREV_log	Broadcasting revenues ($ m)	Metric
m_dum_league	Product of league dummy and broadcasting revenue	Moderator/Dummy
dumBCREV_10_11	Broadcasting revenues (1= if Season < 4, 0= if not)	Dummy
dumBCREV_13_14	Broadcasting revenues (1= if Season > 3 & Season < 7, 0= if not)	Dummy
dumBCREV_16_17	Broadcasting revenues (1= if Season > 6, 0= if not)	Dummy
LPOS_1	League position in domestic league current year	Metric
LPOSF_1	League position in domestic league following year	Metric
UEFARC_log	UEFA ranking coefficient current year	Metric
UEFARCF_log	UEFA ranking coefficient following year	Metric
NOEMP_log	Number of employees	Metric
ATT_log	Average attendance	Metric
OPREV_log	Operating revenues ($ m)	Metric
CLC_1	Final position in Champions League current year	Metric
CLF_1	Final position in Champions League following year	Metric
ELC_1	Final position in Europa League current year	Metric
ELF_1	Final position in Europa League following year	Metric
TCEMP_log	Total cost of employees ($ m)	Metric

4. Data Analysis

4.1 Introduction

Our data analysis is split into three separate parts. Firstly, we present descriptive statistics of key variables used in our paper. This first part is divided into one section containing variables solely provided in our research, and one section including variables similar to others used in previous research. Secondly, we perform a set of correlation tests and regressions to compare our findings to prior studies. These tests are executed in order review and confirm already established relationships. By doing so we are able to justify the validity of our data, and thus increase the reliability of our own research. Finally, we introduce multiple regression models, which intend to adequately explain and answer our research questions.

4.2 Descriptive statistics

The central variables in our study are broadcasting revenues (measured in mill $), number of employees, and attendance. In addition to these we have chosen to include operating revenues (measured in mill $), and total cost of employees (measured in mill $). Table 2 provides descriptive statistics for all these variables, divided between clubs from the English league and clubs from the remaining four leagues, respectively.

Table 2 Descriptive statistics all periods

Absolute sizes

Variable	*Variable name*	*Number of obs.*	*Mean*	*St. deviation*	*Min*	*10 %*	*50 %*	*90 %*	*Max*
English League:									
Broadcasting revenues	BCREV	140	106.9002	34.28857	60.3766	60.996	101.3083	189.93	196.04
Number of employees	NOEMP	113	354.0531	198.5106	93	105	274	865	869
Attendance	ATT	140	35839.55	14570.36	11182	15780	33781.5	75335	75530
Operating revenues	OPREV	138	238.9362	164.338	81.5	84.5	165.7	695.1	754.3
Total cost of employees	TCEMP	135	141.4585	80.8355	40.6	53.6	109.5	341.9	365.9
Not English League:									
Broadcasting revenues	BCREV	546	42.08363	29.23657	11.39180	14.74	34.60665	189.56	200.34
Number of employees	NOEMP	509	184.0039	148.7522	40	44	145	805	831
Attendance	ATT	546	28208.97	17033.80	3719	4780	22867	80520	81178
Operating revenues	OPREV	463	129.3089	143.2654	9.499	21.110	80.9	722	730.9
Total cost of employees	TCEMP	464	67.79935	68.94531	6.399	12.200	45.3	368.2	380.8

4.2.1 Broadcasting revenues, number of employees and attendance

In the period between 2010 and 2017, English Premier League teams generated broadcasting revenues of averagely $ 106.9 million. In contrast, non-English teams only pocketed $ 42 million on average during the same period. The variable-span regarding English clubs is between $ 60.37 million and $ 196.04 million yielding a range of $ 135.67 million. For the non-English teams, the spread goes from $ 11.39 million to $ 200.34 million, indicating a larger variation of distribution, with a range of $ 188.95 million. English clubs averaged 354 employees during the period, stretching from 95 to 869. Teams from the other leagues averaged 184 employees, with a span from 40 to 831. On average English clubs in our sample had an attendance of 35839 with a span from 11182 to 75530, while the same variable for non-English teams amounted to 28208, spreading from 3719 to 81178.

4.2.2 Operating revenue and total cost of employees

During our observed seven-year period, the operating revenue variable for the English Premier League teams spanned from $ 81.5 million to $ 754.3 million, with a mean of $ 238.9 million. For the non-English clubs, the range stretched from $ 9.5 million to $ 730.9 million, with a club average of $ 129.3 million. As for wages, English clubs averaged a total of $ 141.45 million in salary-related expenditures during our chosen timeframe. The lowest observed value was $ 40.6 million, while the highest number amounted to $ 754.3 million. Non-English teams reported an average cost of employees equaling $ 67.8, with a minimum and maximum of $ 6.4 million and $ 380.8 million, respectively.

As our study also aims to examine the impact of different broadcasting deals on both domestic and international sporting success, we have provided cycle-descriptive statistics for the same variables (Appendices 8-10). By the use of three distinct dummy variables (dumBCREV_10_11, dumBCREV_13_14 and dumBCREV_16_17) we are able to see how our predictors vary over time. The content of these tables can be interpreted in the same way as Table 2.

4.3 Our dataset vs. previous research

Previous studies have already established some significant relationships and correlations in our field of research. To get a clearer overview of these existing phenomenon, and at the same time test the strength of our data, we have decided to compare our findings to results from our antecedents. The majority of former studies anticipate a positive linkage between either operating revenues and sporting success, or between wage expenditures and sporting success. In the two paragraphs below we present a short summary of a selection of studies examining these relations, and conclusively compare them to our own findings.

4.3.1 Operating revenues and domestic/international sporting success

In 1997, researchers Szymanski & Smith developed an empirical model that measured the financial performance of English League clubs from 1974 to 1989. By mimicking profit margin as a financial success indicator, and using league position as a measurement for sporting performance, they were able to induce a broadly positive, linear relation between economic power and sporting dominance. Similar to Szymanski & Smith we have applied league position (LPOS_1) and league position following year (LPOSF_1) as markers for domestic sporting success, while operating revenue (OPREV_log) is used to reflect each clubs' financial performance. When correlating these variables for all observations retrieved, our data provides us with significant ($p<0.01$) positive relationships (Table 3).

Table 3 Correlation league position current, league position following and operating revenues

Variable	1	2	3
LPOS_1	-		
LPOSF_1	0.6389***	-	
OPREV_log	0.6271***	0.5750***	-

*p < .1; **p < .05; ***p < .01

LPOS_1 = League position current year

LPOS_1 = League position following year

OPREV_log = Log-transformed operating revenue

The two UEFA ranking coefficient variables in our dataset, "UEFARC_log" (ranking coefficient current year) and "UEFARCF_log" (ranking coefficient following year), echoes international sporting achievements. When testing the relationship between these variables and operating revenues (OPREV_log), we obtained positive significant ($p<0.01$) correlations yet again (Table 4).

Table 4 Correlation UEFA ranking coefficient current, UEFA ranking coefficient following and operating revenues

Variable	1	2	3
UEFARC_log	-		
UEFARCF_log	0.6152***	-	
OPREV_log	0.6390***	0.5869***	-

*p < .1; **p < .05; ***p < .01

UEFARC_log = Log-transformed UEFA ranking coefficient current year

UEFARCF_log = Log-transformed UEFA ranking coefficient following year

OPREV_log = Log-transformed operating revenue

In a paper from 1999, Szymanski & Kuypers investigate the link between sporting and economic performance. By applying regression analysis on a selection of English Football clubs, the researchers were able to show how league position drives club income (R-squared = 0.89). By respectively choosing operating revenue (OPREV_log) and league position (LPOS_1) as our dependent and independent variables, and thus establish a similar simple linear regression model as Szymanski & Kuypers, we obtained significant ($p<0.01$) results indicating the same tendency, although with a lower explanatory power (Table 5).

Table 5 Simple regression of league position in operating revenue

Simple regression of league position on operating revenue		
	Coefficient	P-value
LPOS_1	0.0925***	0.000
_cons	5.6183***	0.000
F-value	388.16***	0.000
Number of obs. (n)	601	
Adj R-squared	0.3922	
R-squared	0.3932	

*p < .1; **p < .05; ***p < .01

LPOS_1 = League position current year

Correspondingly, when using UEFA ranking coefficient (UEFARC_log) as the predictor variable, we find that economic success is significantly ($p<0.01$) propelled by international achievements (Table 6).

Table 6 Simple regression of UEFA ranking coefficient on operating revenues

Simple regression of UEFA ranking on operating revenue		
	Coefficient	**P-value**
UEFARC_log	0.5381***	0.000
_cons	3.9081***	0.000
F-value	245.01***	0.000
Number of obs. (n)	357	
Adj R-squared	0.4067	
R-squared	0.4083	

*p < .1; **p < .05; ***p < .01

UEFARC_log = Log-transformed UEFA ranking coefficient current year

Researchers Marc Rohde and Christoph Breuer (2016) argue that financial success is driven by national and international sporting success. Through a multiple regression model they demonstrate that domestic league success (0.0993**, $p<0.01$) and international success (0.0092***, $p<0.001$) both have a highly significant and positive influence on revenues. The fit of their model (R-squared = 0.84) indicates high explanatory power. When replicating a similar regression model, we set operating revenue (OPREV_log) as our outcome variable, while league position (LPOS_1) and UEFA ranking coefficient (UEFARC) act as regressors. Table 7 illustrates that our results are significant ($p<0.01$) and in accordance with their results.

Table 7 Multiple regression of league position and UEFA ranking on operating revenues

Multiple regression of league position and UEFA ranking on operating revenue		
	Coefficient	**P-value**
LPOS_1	0.0573***	0.000
UEFARC_log	0.3714***	0.000
_cons	4.6990***	0.000
F-value	178.18***	0.000
Number of obs. (n)	357	
Adj R-squared	0.4988	
R-squared	0.5017	

*p < .1; **p < .05; ***p < .01

LPOS_1 = League position current year

UEFARC_log = Log-transformed UEFA ranking coefficient current year

Another interesting phenomenon is how sporting success and spectator attendance correlates. In their study from 2018, Madsen et al. find that the clubs' league standing play a central role in whether fans choose to attend matches or not. Based on observations from Norwegian and Swedish clubs between 2010-2013, their results show a correlation of 0.642 ($p<0.01$) and 0.529 ($p<0.01$) for Norwegian and Swedish teams, respectively. Similar testing with our observed variables (LPOS_1 and ATT_log) yields comparable results (0.5363, $p < 0.01$) (Appendix 11).

In order to examine the proportion of variation in league standing that explains the variation in spectator attendance, the researchers included a simple linear regression model in their study. By selecting spectator attendance as their response variable and choosing league standing as an indicator, they found that their model had an explanatory power of 24.9% ($p<0.05$) for clubs in Norway, while the equivalent explanatory power for Swedish teams were 33.7% ($p<0.01$). Duplicating this model with our data and comparable variables (ATT_log = dependent, LPOS_1 = independent), provides us with similar results (Table 8).

Table 8 Simple regression of league position on attendance

Simple regression of league position on attendance		
	Coefficient	**P-value**
LPOS_1	0.0546***	0.000
_cons	10.7049***	0.000
F-value	276.20***	0.000
Number of obs. (n)	686	
Adj R-squared	0.2866	
R-squared	0.2876	

*p < .1; **p < .05; ***p < .01

LPOS_1 = League position current year

4.3.2 Wages and sporting success

There have been a comprehensive numbers of previous studies illustrating how wage expenditures affect sporting success. In his research from 2014, Szymanski examines how English football clubs' wage spending between 2003 and 2012, are correlated with their league position obtained in the same period. The results indicate a highly correlated relationship, with an explanatory power right below 91%.

Madsen et al. (2018) performed similar research on Norwegian and Swedish football clubs between 2010-2013. Based on their data they found significant correlations between wage expenditure and final league position in both Norway (0.571, $p<0.01$) and Sweden (0.777, $p<0.1$). While the explained variation of wage bill on league standings were 60.4% for Swedish teams, the corresponding proportion for Norwegian clubs were somewhat lower, explaining only 32.6%. These findings differ slightly from older tests done by Gammelsæter and Ohr (2002), where as much as 77% of the variation in Norwegian league standings were explained by wage.

To execute comparable tests with our data, we use total cost of employees (TCEMP_log) as a wage expenditure measure, and choose league position (LPOS_1) as an indicator for performance. Firstly, we run separate correlation tests for each league to see if the relationship between the variables deviates

between countries in our observed period. The test results reveal a significant positive relationship between wage expenditures and sporting success in all leagues, with the English (0.7229, $p < 0.01$), Spanish (0.7892, $p < 0.01$), Italian (0.7433, $p < 0.01$), and French 0.7498 ($p < 0.01$) all reaching a correlation coefficient above 0.7. The only league below 0.7 was the German, which reported a slightly lower correlation value of 0.6567, ($p < 0.01$).

Compared to the abovementioned results that Madsen et al. (2018) discovered for the Norwegian and Swedish leagues, we see that the statistical relationships generated by our data are similar in terms of both strength and significance. These findings are further supported by Dimitropoulos' examination (2014) of the Greek league between 1993-2006, and later Ferris' study (2017) of Italian teams from 2007-2014. Both researchers discovered a strong positive correlation between wages paid and sporting success.

Secondly, to determine the variation in league standing explained by variation in wage expenditures, we establish a simple linear regression model choosing current league position (LPOS_1) as our dependent variable and total cost of employees (TCEMP_log) as our independent variable. When running this model it gives us a statistically significant R-squared of 0.38, which indicates that the variation in wage expenditures explains 38% of the variation in league position. These results fit well with the findings Madsen et.al (2018) present for Norwegian clubs (0.326) in their study. However, when separating the leagues, our model's significance levels is still kept below satisfactory limits of 1%, but the R-squared increases for each league. The Spanish league has an R-squared of 0.6228, with a regression coefficient of 4.985 ($p < 0.01$). The R-squared are 0.5623 and 0.4312 in the French and German leagues respectively, with regression coefficients of 6.77 ($p < 0.01$) and 5.04 ($p < 0.01$). In the Italian league our model provides us with an R-squared of 0.5525 and a coefficient of 6.37 ($p < 0.01$), while the English league's R-squared is 0.5226 with a coefficient of 8.169 ($p < 0.01$). These numbers are closer to the explanatory power for Swedish teams (0.604) reported by Madsen et.al (2018), and in accordance with Ferris' findings from 2017.

Our reported explanatory power for the English league (0.5226) is noticeably lower than the one stated by Szymanski (0.91). We believe there are several reasons that could explain this deviation. Firstly, as our dataset includes more recent data, both the English league and the clubs have evolved in terms of size and attractiveness. In previous decades, huge player salaries were only offered by the top elite teams in the league. The best teams accordingly attracted the best players, and finished above the rest of the teams in the table. However, in these days almost all Premier League clubs are able to compete in terms of contract offers and salary fees. Although the best teams in most cases still appeal to the best players, smaller teams are increasingly able to economically compete with the bigger clubs, and thus acquire world-class talents. This new premise increases the competition and ultimately makes the variable a weaker explanatory predictor than in previous studies. Secondly, our independent variable, "total cost of employees", might differs from similar predictors included in prior research. As our model reports total wage expenditures for both players, staff and management, the regressor may yield different results and explanatory power than past studies merely focusing on player salaries.

4.4 Our own study and results

After confirming the existing relationships above, these next sections will present our own research, results and contributions to the field of study.

4.4.1 The relationship between domestic sporting success and broadcasting revenues

In this part, we want to examine how domestic sporting success can be predicted through a numerous of explanatory variables. As our study centers around the relationship between sporting success and broadcasting revenues, we start with correlation tests between these two variables.

When doing all of our correlation tests we choose "league position following year" as a measure for domestic sporting success. As broadcasting revenues are distributed at the end of each season, we argue that next year's league position reflects the influence of TV-money on domestic sporting performance in an

adequate way. In order to separate and compare our findings between the English and non-English clubs, we run two individual tests, one that establishes the correlation for English clubs, and one that determine the relationship for the rest of the teams.

After running the tests we found a significant positive correlation between league position next year and broadcasting revenues for all observations. The effect is somewhat weaker for the English teams (0.3079, $p < 0.01$) than for the non-English clubs (0.5233, $p < 0.01$). This may indicate that a uniform distribution of broadcasting money lead to a more competitive league.

The relationship between domestic sporting success and number of employees
Another central variable in our research is number of employees. As discussed in our method section, we believe that this regressor is an appropriate "club size"-variable, and thus a suitable predictor for next year's league position and domestic success. When testing this relationship for all observations in our dataset, we found significant positive correlations for both English (0.6342, $p < 0.01$) and non-English clubs (0.5228, $p < 0.01$).

The relationship between domestic sporting success and attendance
As explained by previous research (e.g. Madsen et al. 2018, p. 5): "spectator attendance is perhaps the best way to measure the popularity of a given sport, league or club". The clubs that perform well attract fans, generate interest and ultimately match-day revenues. In our study we include average spectator attendance as a popularity measure, and examine how present-day numbers affect next year's domestic success. As with the previous variables, we split our dataset into English and non-English observations, and investigate the relationships separately.
Our results mirrors significant positive correlations for both English (0.5953, $p < 0.01$) and non-English teams (0.5568, $p < 0.01$), indicating a clear association between present average attendance numbers and future success.

The relationship between domestic sporting success next year and domestic sporting success this year

The last predictor in our regression model is present league position. By including this variable we are able to examine how domestic sporting success this year can predict domestic success next year. When correlating the two variables, we obtain a positive significant relationship for both the English (0.6183, $p < 0.01$) and non-English leagues (0.7169, $p < 0.01$). The results indicate that there is a strong positive linkage between the league position that clubs obtain this year, and the success they experience next season.

The relationship between domestic sporting success and multiple explanatory variables

After establishing basic associations and correlations in our previous paragraph, this next section will reflect our multiple regression models and corresponding results. Our first main model is constructed with "league position following" acting as our regressand, while current "league position", "broadcasting revenues", "number of employees" and "average attendance" operate as regressors. In addition to this we have included a moderator, which enables us to separate the effect that broadcasting revenues have on the English and non-English teams' domestic success.

Table 9 First main multiple regression, all cycles

Multiple regression of league position, broadcasting revenues, number of employees and attendance on league position following year, all cycles

	Coefficient	P-value
LPOS_1	0.4980***	0.000
BCREV_log	1.2122***	0.009
m_dum_league	(-) 0.5349***	0.000
NOEMP_log	1.2954***	0.004
ATT_log	1.2028**	0.014
_cons	(-) 28.2656***	0.000
F-value	93.08***	0.000
Number of obs. (n)	530	
Adj R-squared	0.4653	
R-squared	0.4704	

*p < .1; **p < .05; ***p < .01

LPOS_1 = League position current year

BCREV_log = Log-transformed broadcasting revenues

m_dum_league = Moderator on broadcasting revenues, seperating English/non-English teams

NOEMP_log = Log-transformed number of employees

ATT_log = Log transformed club average attendance

Our regression model (Table 9) provides us with 530 observations from the period 2010-2017. The p-value for our F-test is 0.000. The null hypothesis of the F-test is that all regression coefficients are equal to zero at the same time. Contrary, the alternative hypothesis is that at least one of the regression coefficients is different from zero. As our F-test provides us with a p-value of 0.000, it indicates that there is a 0% probability that all of our regression coefficients are equal to zero at the same time. As a result of this we observe that there is a 100% probability that at least one of our regression coefficients is different from zero. Our reported R-squared is 0.4704, telling us that 47.04% of the variation in our dependent variable, is explained by our independent variables.

The interpretation of our regressors and their corresponding coefficients can be done in a similar way. The null hypothesis of a t-test on the regression coefficient indicates that the coefficient of one particular independent variable equals zero, stipulating no relationship with the dependent variable. The alternative hypothesis states a coefficient not equal to zero. In our case, the p-values for all of our independent variables (except average attendance, p=0.014, significant at a 5% level) are statistically significant at a 1% significance level. By being able to reject each variable's null hypothesis we conclude that they all have a significant positive effect on the dependent variable.
Our moderator variable indicates that the influence of broadcasting revenues on domestic sporting success in England is weaker than the impact it has on clubs in non-English leagues.

The relationship between domestic sporting success and multiple explanatory variables for different broadcasting cycles

We have seen a massive growth in clubs' broadcasting revenues during the course of our observed seven-year period. As the TV-deals vary in both size and distribution, this section separate each cycle, and provide accompanying findings related to each period. Our regression model is identical to the one provided above, but in order to properly distinguish between the cycles, we have included time specific dummy variables.

Broadcasting cycle 2010-2013

Our dummy variable (dumBCREV_10_11) helps us to isolate the first cycle. By assigning observations from the first three seasons with a value of 1 (observations for the rest of the seasons =0), our regression model yield following results for the 2010-2013 period:

Table 10 First main multiple regression, cycle 2010-2013

Multiple regression of league position, broadcasting revenues, number of employees and attendance on league position following year (2010-2013)

	Coefficient	P-value
LPOS_1	0.3554***	0.000
BCREV_log	1.9918***	0.004
m_dum_league	(-) 0.6025***	0.007
NOEMP_log	0.9800	0.195
ATT_log	2.2616***	0.005
_cons	(-) 41.2531***	0.000
F-value	35.63***	0.000
Number of obs. (n)	231	
Adj R-squared	0.4295	
R-squared	0.4419	

*p < .1; **p < .05; ***p < .01

LPOS_1 = League position current year

BCREV_log = Log-transformed broadcasting revenues

m_dum_league = Moderator on broadcasting revenues, seperating English/non-English teams

NOEMP_log = Log-transformed number of employees

ATT_log = Log transformed club average attendance

The numbers of observations are naturally reduced, as observations after 2013 are excluded. The p-value for the F-test is still 0.0000, indicating that our coefficient of determination is not equal to zero, stipulating that our regression model is statistically significant and has explanatory power. 44.19% of the variation in our predicted variable is explained by our predictors. The p-values for all of our regressors (except number of employees, p=0.195, not significant at any level), are statistically significant at a 1% significance level, and thus have a significant positive effect on the dependent variable.

The moderator once again indicates that the influence of broadcasting revenues on domestic sporting success in England is weaker than the impact on clubs in non-English leagues.

Broadcasting cycle 2013-2016

Our second cycle stretches from 2013-2016. Similar to above, a dummy variable (dumBCREV_13_14) is included to give us an isolated effect, and we retrieve the following results for observations belonging to this time span:

Table 11 First main multiple regression, cycle 2013-2016

Multiple regression of league position, broadcasting revenues, number of employees and attendance on league position following year (2013-2016)

	Coefficient	P-value
LPOS_1	0.5349***	0.000
BCREV_log	1.1123	0.181
m_dum_league	(-) 0.5385**	0.019
NOEMP_log	1.7463***	0.008
ATT_log	0.3974	0.575
_cons	(-) 21.8418***	0.000
F-value	44.66***	0.000
Number of obs. (n)	225	
Adj R-squared	0.4935	
R-squared	0.5048	

*p < .1; **p < .05; ***p < .01

LPOS_1 = League position current year

BCREV_log = Log-transformed broadcasting revenues

m_dum_league = Moderator on broadcasting revenues, seperating English/non-English teams

NOEMP_log = Log-transformed number of employees

ATT_log = Log transformed club average attendance

As with the previous cycle, the numbers of observations are reduced due to eliminations done by the dummy. The p-value for F-test is still 0.0000, and indicates that there is a 100% probability that at least one of our regression coefficients is different from zero. Additionally, over 50% of the variation in domestic sporting success is explained by our independent variables. However, broadcasting revenues and average attendance are not longer statistically significant at any level.

Broadcasting cycle 2016-2017

As the current broadcasting cycle originally spans from 2016-2019, the sample related to this period is somewhat amputated in our research. When collecting data

and writing this study, the last obtainable observations dates to 2017. Observations from 2018 and 2019 are consequently not included. Correspondingly to previous cycles, a dummy (dumBCREV_16_17) is included to target the preferred period. When running the regression our model provides us with the following output:

Table 12 First main multiple regression, cycle 2016-2017

Multiple regression of league position, broadcasting revenues, number of employees and attendance on league position following year (2016-2017)

	Coefficient	P-value
LPOS_1	0.6456***	0.000
BCREV_log	1.30340	0.398
m_dum_league	(-) 0.6300	0.105
NOEMP_log	1.52045	0.227
ATT_log	0.0407	0.977
_cons	(-) 17.1533	0.134
F-value	16.17***	0.000
Number of obs. (n)	74	
Adj R-squared	0.5095	
R-squared	0.5431	

*p < .1; **p < .05; ***p < .01

LPOS_1 = League position current year

BCREV_log = Log-transformed broadcasting revenues

m_dum_league = Moderator on broadcasting revenues, seperating English/non-English teams

NOEMP_log = Log-transformed number of employees

ATT_log = Log transformed club average attendance

Due to lack of available data, the number of observations for the last cycle is limited to 74. As with the previous models, the p-value for F-test is still 0.0000, and once again, over 50% of the variation in our regressand is explained by our regressors. However, only current league position is statistically significant, leaving the other independent variables without any predicative influence.

4.4.2 Relationship between broadcasting revenues and international sporting success

Our second subordinate research question centers around how the domestic distribution of broadcasting money in Europe's top five leagues affects the clubs' performance in international tournaments.

Each year the Union of European Football Association (UEFA) ranks the clubs that have participated in the current year's international tournaments, the UEFA Champions League and Europa League. This ranking is known as a UEFA Coefficient and is based on each club's final position, usually a number between 1 and 40. They also add the rankings obtained over a previous five-year period, and sum them up in a total coefficient, which either increase or decrease equally with each year's coefficient. We find this coefficient to be the best measure of international sporting success, as it directly mirrors any given club's international performance, as well as provides us with an estimate of success and development over time.

Similar to above, as our main target is to establish and examine the relationship between broadcasting revenues current year (BCREV_log) and international sporting success next year (UEFARCF_log), we start off by performing correlation analysis including these variables. Our tests are divided between English and non-English clubs for the same reasons as previously explained, and the correlations we found between broadcasting revenues and international sporting success is significantly positive for both English (0.3240, $p < 0.01$) and non- English teams (0.4816, $p < 0.01$). We observe that the relationship is stronger for teams not from the English league, indicating that the impact of broadcasting money on international success is stronger for these clubs than for the English.

Relationship between international sporting success and number of employees
In this paragraph, we look closer at the linkage between our international success-variable "UEFARCF_log" and our "club size"-measurement "NOEMP_log". The relationship is tested in order to examine to what extent club size affects results in European competitions.

Our obtained correlations are both significantly positive and very similar in terms of coefficient value (English teams; 0.5378, $p < 0.01$, non-English teams; 0.5159, $p < 0.01$). They argue that club size positively impacts international sporting success, no matter which league you represent.

Relationship between international sporting success and spectator attendances

In this part we study how present day popularity (average attendance number) affects international on-field performances next year. Although we are measuring international sporting success, we use "average domestic league" spectator-numbers, and not "average European match" attendance. We argue that there will only be small deviations between the two averages, and consequently that our measure is adequate. As usual we separate the English league and non-English leagues, as we want observe if there are any differences in terms of correlation. Looking at the results, we see that there is a strong positive relationship between present popularity and future performances in international tournaments for both English (0.5221, $p < 0.01$) and non-English clubs (0.4862, $p < 0.01$).

Relationship UEFA ranking coefficient current and following

The last relationship that we want to assess in this section is between international sporting success this year (UEFARC) and international sporting success next year (UEFARCF). As with domestic performances we split our data between English and non-English observations. These significant correlations indicate that the international success achieved in one given season is positively associated with international performance next year. The tendency is slightly stronger for non-English clubs (0.6309, $p < 0.01$), than for the English (0.5443, $p < 0.01$).

The relationship between international sporting success and multiple explanatory variables

After establishing the above-mentioned correlations, we want to examine how all our present day regressors together influence future international sporting success. This is done by constructing our second main multiple regression model, setting "UEFARCF_log" as our dependent variable, and selecting "BCREV_log", "NOEMP_log" and "ATT_log" as our predictors. All variables are log-transformed in order to dampen variable-skewness. As with our first multiple regression model, a moderator is included to help us distinguish between the effect that broadcasting revenues have on future international sporting success for English and non-English clubs, respectively.

Table 13 Second main multiple regression, all cycles

Multiple regression of UEFA ranking, broadcasting revenues, number of employees and attendance on UEFA ranking following year, all cycles

	Coefficient	P-value
UEFARC_log	0.3533***	0.000
BCREV_log	0.3053***	0.004
m_dum_league	(-) 0.1019***	0.000
NOEMP_log	0.2282**	0.032
ATT_log	0.3868***	0.001
_cons	(-) 5.0562***	0.000
F-value	50.24***	0.000
Number of obs. (n)	297	
Adj R-squared	0.4541	
R-squared	0.4633	

*p < .1; **p < .05; ***p < .01

UEFARC_log = Log-transformed UEFA ranking coefficient current year

BCREV_log = Log-transformed broadcasting revenues

m_dum_league = Moderator on broadcasting revenues, seperating English/non-English teams

NOEMP_log = Log-transformed number of employees

ATT_log = Log transformed club average attendance

The seven-year observation period provides our regression model with 297 observations. The p-value of our F-test is 0.000, which indicate that there is a 100% probability that at least one of our regression coefficients is different from zero. The R-squared is 0.4633 which indicates that 46.33% of variation in "UEFARCF_log" is explained by the variables included. By conducting a set of t-tests, we observe that three of our regressors (UEFARC_log, BCREV_log, and ATT_log) are all statistically significant at a 1% level. Our fourth variable, "NOEMP_log", is also significant, but on a 5% level. Consequently, we see that all of our predictors positively impact future international sporting success. Looking at the impact of broadcasting revenues on international achievements, we notice that our predictor indicates that present day TV-income is a positive influencer on future international success for all teams, but that the effect is stronger for non-English clubs. These findings are supported by several correlation tests performed in our research (Appendices 12 and 13).

The relationship between international sporting success and multiple explanatory variables for different broadcasting cycles

In the next sections we take a closer look at how the influence of our independent variables, on international sporting success, varies over time. To do so, we split our seven-year period up in three different series, each sequence indicating one separate broadcasting cycle. One dummy is created for each period, and then successively included into our regression model.

Broadcasting deal 2010-2013

The multiple regression model mirrors the same dependent and independent variables as in the superior model, but our first dummy containing observations from the first broadcasting cycle (2010-2013) is included.

Table 14 Second main multiple regression, cycle 2010-2013

Multiple regression of UEFA ranking, broadcasting revenues, number of employees and attendance on UEFA ranking following year (2010-2013)

	Coefficient	P-value
UEFARC_log	0.3419***	0.000
BCREV_log	0.2821**	0.040
m_dum_league	(-) 0.1024**	0.014
NOEMP_log	0.3571**	0.026
ATT_log	0.4047**	0.023
_cons	(-) 5.8188***	0.000
F-value	28.13***	0.000
Number of obs. (n)	136	
Adj R-squared	0.5010	
R-squared	0.5195	

*p < .1; **p < .05; ***p < .01

UEFARC_log = Log-transformed UEFA ranking coefficient current year

BCREV_log = Log-transformed broadcasting revenues

m_dum_league = Moderator on broadcasting revenues, seperating English/non-English teams

NOEMP_log = Log-transformed number of employees

ATT_log = Log transformed club average attendance

When including our dummy variable the number of observations is naturally reduced to 136, as observations after 2013 have been removed. Our reported R-squared is 0.5195 which is an increase compared to the main model. Through a set of t-tests we observe a change in statistical significance for most of our predictors, as all but "UEFARC_log" went from being significant at a 1% to a 5% level. The reason for this may be due to the reduction in sample size. Anyhow, as the dataset

is smaller we argue that a statistical significance of 5% is a satisfactory level, which leads us to conclude that all of our regressors have a positive impact on future international sporting success.

While the moderator-coefficient is almost the same as in the superior model, we see a slight decrease in the coefficient for "BCREV_log". This indicates that the TV-money obtained by clubs in the first broadcasting-cycle has a somewhat lesser impact on international sporting success than the overall influence of broadcasting revenues expressed in the main model. We still observe that the effect of broadcasting revenues on international achievements is stronger for the non-English clubs.

Broadcasting deal 2013-2016

In this section we include a dummy variable containing observations for the second broadcasting cycle. Similar to previous sections, our regression model and accompanying variables are kept the same.

Table 15 Second main multiple regression, cycle 2013-2016

Multiple regression of UEFA ranking, broadcasting revenues, number of employees and attendance on UEFA ranking following year (2013-2016)

	Coefficient	P-value
UEFARC_log	0.3854***	0.000
BCREV_log	0.2602	0.193
m_dum_league	(-) 0.1165**	0.022
NOEMP_log	0.1347	0.393
ATT_log	0.3931**	0.033
_cons	(-) 4.4932***	0.002
F-value	19.59***	
Number of obs. (n)	137	
Adj R-squared	0.4060	
R-squared	0.4279	

*p < .1; **p < .05; ***p < .01

UEFARC_log = Log-transformed UEFA ranking coefficient current year

BCREV_log = Log-transformed broadcasting revenues

m_dum_league = Moderator on broadcasting revenues, seperating English/non-English teams

NOEMP_log = Log-transformed number of employees

ATT_log = Log transformed club average attendance

Even though our dummy reduced this set of observations to 137, the model has kept its significance, and thus explanatory power. There is a slight decrease in adjusted R-squared and the model now explains 40.60% of the variation in future international sporting success. We observe that both broadcasting revenues and number of employees have lost their statistical significance at all levels.

Broadcasting deal 2016-2017

As problematized earlier, our last broadcasting cycle only includes accounting information and results through 2017. Consequently, our last dummy contains league observations from the 2016/2017 season, and numbers from 2018 and 2019 are not obtained.

Table 16 Second main multiple regression, cycle 2016-2017

Multiple regression of UEFA ranking, broadcasting revenues, number of employees and attendance on UEFA ranking following year (2016-2017)

	Coefficient	P-value
UEFARC_log	0.1628	0.347
BCREV_log	1.4854**	0.013
m_dum_league	(-) 0.1595	0.154
NOEMP_log	(-) 0.4061	0.398
ATT_log	0.3036	0.476
_cons	(-) 5.1624	0.124
F-value	3.75**	0.0168
Number of obs. (n)	24	
Adj R-squared	0.3739	
R-squared	0.5100	

*p < .1; **p < .05; ***p < .01

UEFARC_log = Log-transformed UEFA ranking coefficient current year

BCREV_log = Log-transformed broadcasting revenues

m_dum_league = Moderator on broadcasting revenues, seperating English/non-English teams

NOEMP_log = Log-transformed number of employees

ATT_log = Log transformed club average attendance

The number of observations for the last cycle is limited to 24. As we see from the F-test, the model is no longer statistically significant at any level, and most of our regressors have also lost their significance. We thus argue that this regression model is inadequate for predicting the outcome of our dependent variable.

5. Discussions

5.1 Broadcasting revenues and domestic sporting success

Looking at our results, we discover some differences between English and non-English clubs regarding the relationship between present broadcasting revenues and future domestic success. While the correlation between the variables for the English teams is 0.3079, the observed relationship for the non-English is somewhat stronger (0.5233). One possible explanation for this is how the broadcasting revenues are distributed. While the distribution in England is rather uniform, with a spread between $ 60 mill and $ 196 mill, the allocation in the other European leagues is more unbalanced (range from $ 11 mill to $ 200 mill).

As a result of the homogenous distribution in England, the dissimilarity in broadcasting revenues obtained by English clubs is less than the differences observed in the other leagues. In Spain, Italy, Germany and France the bigger clubs typically receive the biggest chucks of the broadcasting revenue cake, leaving the smaller teams with the crumbs. This asymmetry enables the powerhouses to invest in the best players, coaches, managers, and staff, which ultimately make them even more dominant and successful. Contrary to this, the allocation of TV-money in England facilitates competition. The broadcasting revenues are evenly distributed between all clubs, making it a lesser factor for domestic success. These findings are supported by KPMG (2017) who argues that "…the way broadcasting money is distributed appears to be highly influential in determining a league's competitive balance", and further backed by our first main multiple regression model (Table 9), where our moderator variable indicates that the influence of present broadcasting revenues on future domestic sporting success is weaker for English than for non-English clubs.

However, when we split the broadcasting revenues into the three subordinate cycles we discover varying results. The first broadcasting cycle from 2010-2013 reflects the main model, and displays significant results on a 1% level. The two final cycles on the other hand both present results of a different kind. The cycle between 2013-2016 is not significant at any level, while the final cycle from

2016-17 is neither significant on any level, nor has what we believe to be a sufficient number of observations.

5.1.1 Other variables and domestic sporting success

Number of employees and domestic sporting success

The relationship between current number of employees and future domestic success is significantly strong and positive for both clubs in England (0.6342) and for our other observed teams (0.5228). These results indicate that club-size is a sound predictor for domestic success no matter which league you compete in. Our findings are further supported by our first main multiple regression model, where our club-size predictor (NOEMP_log) is a positive influencer on a 1% significance level (Table 9).

Average spectator attendance and domestic sporting success

Our popularity measure, average spectator attendance, yields almost similar correlation coefficients for both English (0.5953) and non-English clubs (0.5568), when paired up with league position the following year. The results stipulate a significant association between a clubs' current popularity and its future domestic sporting success. As with the correlation above, this relationship is strong and positive for all observed clubs. This tendency is also reflected by the first main multiple regression model, as our popularity measure (ATT_log) is significantly positive at a 5% level.

Current domestic sporting success and future domestic sporting success

The observed correlation between current domestic success (league position) and future domestic success (league position following year), is stronger for non-English clubs (0.7169), than for English (0.6183). These findings echo our reflections in note 5.1, and support the idea of a more competitive English league. As discussed above, the uneven distribution of TV-money in non-English leagues gifts the best teams with the majority of broadcasting revenues, equipping them for domestic success. The ultimate consequence of this is a huge gap between clubs, allowing the powerful ones to cement their dominance. This assumption is

confirmed by the extremely high correlation between current and future domestic success for non-English teams.

The same tendency is observed for the English clubs, but to a lesser extent. A possible explanation for the somewhat damped correlation, is that the homogenous allocation of TV-money in England enables more teams to compete for success. When more clubs are able to compete for domestic glory, we notice that current success loses some of its influence on future achievements. However, the correlation for English clubs is still relatively high, possibly indicating that other factors than broadcasting revenues affect current and future domestic success.

5.2 Broadcasting revenues and international sporting success

Examining the relationship between TV-income and international sporting success, we discover a similar trend as in the domestic case above. Correlation tests between our international success indicator, UEFA ranking coefficient, and broadcasting revenues, yield a lower coefficient for English clubs (0.3240, $p < 0.01$) than for non-English (0.4816, $p < 0.01$). These tests are further supported by our second main multiple regression model (Table 13). By running the data for the entire seven-year observation period through our model, the moderator variable clearly indicates that broadcasting revenues have a significantly lower positive impact on international sporting success for English clubs, than for non-English.

We believe that this tendency may be explained as a continuation of the issues regarding the nature of the different broadcasting revenue distribution models, and how the allocation of money varies between English and non-English leagues. As discussed under note 6.1, the English league applies a more homogenous and uniform distribution model compared to their European counterparts. By doing so, hosts of clubs are able to compete for domestic glory and qualification for European club tournaments. In addition to this, the equal sharing enables more clubs to attract world-class players, coaches, managers and administrative staff. The resulting effect is a more competitive league, with six to eight powerhouses being almost equally attractive to both elite players and managers. Consequently,

the equal attractiveness yields a more “random” distribution of top players and managers within the English league, making it harder for just one or two clubs to attain superior status and sporting advantages.

Contrary to their English counterpart, the other European leagues employ skewed distribution models. By fueling their powerhouses with the majority of broadcasting revenues, the gap between the powerful and the less resourceful clubs increases. As a result of this, the distribution of world-class players and managers in these leagues are more concentrated, as only a few clubs are able to attract premium talent. This ultimately leads to the emergence of just one or two superior teams in each league that develop on the expense of the rest.

To summarize our above-mentioned reflections, we argue that broadcasting revenues are a weaker influencer on international sporting success for English teams, than for non-English. The reason for our assertion is mainly down to contrasting distribution models. As the distribution models in the non-English leagues favors the biggest clubs, the allocation of broadcasting money reflects the clubs power and domestic success in an adequate way. Over time, this asymmetric distribution has contributed to the emergence of a minority of superior clubs that obtain success within each league. Their domestic dominance enables them to participate and stabilize themselves in European competitions, ultimately yielding stable international success over time (higher UEFA ranking coefficient).

Contrary to this, the English distribution model facilitates internal competition. As the differences in allocated broadcasting money are marginal compared to the other leagues, more teams have a fear shot of qualifying for European competitions, and it is not necessarily the English teams that pocket most TV-money that performs best in Champions League or Europa League. Due to the fierce internal competition, it is more difficult for English clubs to sustain domestic success, and ultimately keep a high UEFA ranking coefficient.

We believe that the two aforementioned paragraphs could explain why our model predicts the influence of broadcasting revenues on international sporting success to be stronger for non-English clubs than English (Table 13). These assumptions

are also mirrored by the results of our correlation tests between the two variables (Appendices 12 and 13).

However, when divided into separate cycles, we experience the same issues regarding the explanatory power of the independent variable. The results of the first broadcasting cycle running from 2010-2013 are significant at a 5% level. The second cycle between 2013-2016, is not significant at any level, while the third cycle from 2016-2017, is significant at a 5% level, but has a non-significant moderator and very few observations in the pool.

5.2.1 Other variables and international sporting success

Number of employees and international sporting success

The correlation coefficient between these two variables is almost identical for all clubs (English clubs: 0.5378; non-English: 0.5159), and also similar to the relationships obtained with our domestic correlations above (English clubs: 0.6342; non-English: 0.5228). Yet again our results illustrate that current club-size is an adequate predictor for future international sporting success for all observations in our sample. These findings are also mirrored by our second main model (Table 13), where the coefficient for club-size (NOEMP_log) is positive and significant at a 5% level.

Average spectator attendance and international sporting success

Comparing correlation coefficients for the English clubs (0.5221) and non-English clubs (0.4862) with regards to average attendance and UEFA ranking coefficients, the results are very much alike between the two. One can also see similarities, yet slightly lower correlations when compared to the domestic case above. This demonstrates that the size of a supporter-base one year, can be drawn into the forecast of how a club will perform in international tournaments the following year. This assumption is also reflected through our main regression model for international sporting success (Table 13), which states that attendance (ATT_log) as an independent variable has a positive coefficient and a significance level of 1%.

Current international sporting success and future international success

Looking at the correlations between present and future international success, we observe a somewhat higher coefficient for the non-English clubs (0.6309), than for the English (0.5443). We believe this tendency could be partly explained by our reflections under note 5.2. As the non-English leagues yield weak domestic competition, the leagues best teams will always qualify for international competitions, and their results will remain solid and stable over time. The non-English teams current international success is thus a logical predictor for future European glory. The same tendency is spotted for the English clubs, but to a lesser extent. We argue that the English league is more competitive than its European counterparts, and that the fierce nature of the league dampens the observed relationship. Ultimately the enhanced rivalry makes it harder for the same English clubs to qualify for European competitions year after year, which accordingly reduces the correlation coefficient.

5.3 Implications

In this paragraph we want to examine the contributions that our study yields, as the research provides us with certain takeaways of practical, theoretical and methodological nature.

5.3.1 Practical implications

When examining the different TV-arrangements, we observe that they vary in terms of structure and distribution. While the English league reaps praise for its equal and fair allocation, the other European league practices more uneven distribution models. The English Premier League sells its TV-rights to both domestic and international TV-broadcasters, and the distribution of the revenues generated by these deals are described in note 2.2.2. Contrary, the clubs in the other European leagues experience a more skewed distribution. The structure and allocation of TV-money in these leagues are explained in note 2.2.5. After studying the details of the different practices from 2010-2017, our main practical learning point is that the English league fosters internal competition through a homogenous distribution, while the dissimilar allocation in the other leagues fuels a few superior clubs, making them even more dominant.

5.3.2 Theoretical implications

As briefly discussed under note 4.3, former studies have already established some significant correlations in our field of research. However, the recent emergences of increasingly lucrative TV-deals and their corresponding influence on sporting success have not been investigated that extensively. As the majority of our antecedents anticipate a positive linkage between operating revenues and sporting success, their research does not examine the effect of broadcasting revenues on both domestic and international sporting success. By building a dataset containing observations from 2010 to 2017, and running our input through a set of correlation tests and regression models, we were able to confirm already established correlations as well as prove new significant relationships. Conclusively, we argue that our paper is consistent with previous studies, and that our examination of how broadcasting revenues influence domestic and international sporting success contributes to new insight in our field of research.

5.3.3 Methodological implications

When implementing the data into our two main regression models we were able to get adequate and significant results. However, when separating into cycles our independent variables lost their explanatory power in most cases. We believe that this tendency occurs as a result of small sample sizes, as briefly problematized under note 5.1 and 5.2. Accordingly, our key takeaway from a methodological point of view is that in order to properly investigate the relationship between broadcasting revenues and sporting success, we need a sufficient amount of observations over a reasonable number of years.

6. Concluding remarks

6.1 Conclusion

This paper sheds a light on the different broadcasting revenue distribution models practiced in Europe's "Big Five" Leagues, and how the leagues' contrasting allocation influences both internal domestic competition and international success. By applying our observations to appropriate correlation tests and running the data through several regression models, we were able to obtain significant results and relationships and thus answer our derived research questions.

Firstly, with respect to our first sub-question *"Will the different distribution models influence internal league competition and domestic sporting success in Europe's "Big Five" leagues?"* we found significant evidence indicating that the equal nature of the English broadcasting revenue distribution model fosters internal competition, making the league more competitive compared to its counterparts. Contrastingly, our findings show that the uneven allocation practices in the non-English leagues fuels a few superior teams, making them even more powerful.

Concerning the second sub-question *"Will the different distribution models make English clubs a more dominant force in European club competitions?"* our results indicate that a uniform distribution and correspondingly an increased internal competition may hamper English clubs' international sporting success. As Appendix 14 illustrates, the Champions League finalists the last seven years are mainly clubs from non-English leagues. These results imply that the non-English teams dominant position in their respective domestic leagues, increases their chances of success in Europe.

Conclusively, to answer the main research question *"Will broadcasting revenues affect sporting success in Europe's "Big Five" leagues?"* our results suggest that the usage of a uniform model increases the internal competition, but negatively affects international performance. Skewed distribution models on the other hand,

reduces the leagues' domestic competitiveness, but enables a few leading powerhouses to retain persistent international success.

6.2 Contributions

How financial performance affects sporting achievements has been vastly examined throughout the years. Former researchers have examined the relationship by using independent variables such as revenues, wages, transfer fees and bonus schemes as predictors for success. The influence of broadcasting revenues on sporting results on the other hand is an unexplored territory, with only a few or even no previous studies reported. By providing a broad study on how distribution and allocation of broadcasting revenues in Europe's elite leagues affect the clubs' domestic and international sporting success, our paper presents new and groundbreaking insight to our field of research. The paper includes observations for Europe's "Big Five" leagues over a span of seven years (2010-2017), and the sufficient amount of data enabled us to adequately establish two main multiple regression models that each accurately illustrates the influence of broadcasting revenues on sporting success. We believe that the main strength in our research lies in the size of the dataset, and that our thorough collection has contributed to a high degree of both validity and reliability.

6.3 Limitations

This study is among the first to investigate and examine the relationship between broadcasting revenues and sporting success for Europe's elite leagues. However, the research is subject to some limitations, and our findings consequently require caution when interpreted. Some of our variables lacked the necessary data for certain periods of the observed seven-year period. As problematized under note 3.4, our missing data issues were dealt with in different ways. If the missing values only occurred for clubs in one or very few seasons, we imputed them a value by looking at appropriate and comparable averages and growth percentages. In cases where our missing values belonged to small clubs that were typically relegated, and accordingly excluded from our dataset, we decided to completely omit them.

Secondly, when splitting the observation span into cycles, our subordinate regression models provided us with inadequate results. The reduction in sample size increased the uncertainty of our data, and ultimately limited the significance of our independent variables.

Furthermore, our study involves leagues that conduct business in different currencies. As the majority of the economic figures that we retrieved were stated in US dollars and disclosed at 30th of June each year, we transformed all obtained values into this currency using appropriate exchange rates. There are certain key issues related to conversion of currency, and some of our values might have been subject to exchange rate fluctuations.

6.4 Recommendation for future studies

After considering the above-mentioned limitations, we believe that our paper provides opportunities for future research. As a lot of the upcoming non-English TV-deals mimic the distribution structure of the English model, the differences in allocations of broadcasting revenues between clubs will decrease, and thus increase the internal competitiveness of the leagues. Future studies might investigate how the enhanced internal competition affects non-English teams' domestic and international sporting success, and whether a more uniform distribution by the other leagues will influence English clubs' international achievements.

7. Reference list

AS. (2014). Reparto televisivo 2013-14 en las principales ligas Europeas. *AS.* Obtained from https://bitterandblue.sbnation.com/2015/2/20/8063543/television-revenue-and-distribution-in-the-top-european-leagues

AS. (2016). LaLiga ingresó 1.237 millones de euros por la tele en la 2015-16: consulta lo que ganó tu equipo. *AS.* Obtained from https://as.com/futbol/2016/06/03/primera/1464911293_252040.html

AS. (2016). LaLiga se sanea con el dinero de la televisión: consulta aquí lo que cobra tu equipo. *AS.* Obtained from https://as.com/futbol/2016/03/31/primera/1459386002_989415.html

Bleacher Report. (2015). Premier League Prize Money 2014-15: Full Table, Financial Breakdown and Analysis. *Bleacher report.* Obtained from https://bleacherreport.com/articles/2484599-premier-league-prize-money-2014-15-full-table-financial-breakdown-and-analysis

BundesligaFanatic (2013). The Bundesliga TV Rights and their Place in Europe. *BundesligaFanatic.* Obtained from http://bundesligafanatic.com/20130322/the- bundesliga-tv-rights-and-their-place-in-europe/

Calciofinanza. (2015). Diritti Tv Serie A, l'impatto sui conti dei club utillizzando le regole della della Premier League. *Calciofinanza.* Obtained from http://www.calcioefinanza.it/2015/10/15/diritti-tv-serie-a-ripartizione-2014-2015-metodo-premier-league/

Calciofinanza. (2016). Ripartizione diritti tv, nel 2015/16 la Premier League più equadi sempre. *Calciofinanza.* Obtained from http://www.calcioefinanza.it/2016/05/24/ripartizione-diritti-tv-premier-league-2015-2016/

Czarnitzki, D. & Stadtmann, G. (2002). Uncertainty of outcome versus reputation: *Empirical evidence for the first German football division. https://link.springer.com/article/10.1007/s181-002-8361-7*

Deloitte. (2017). Ahead of the curve*: Annual Review of Football Finance*. *Deloitte*. Obtained from *https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/sports-business-group/deloitte-uk-annual-review-of-football-finance-2017.pdf*

Dimitropoulos, P. E., & Limperopoulos, V. (2014). Player contracts, athletic and financial performance of the Greek football clubs. Global Business and Economics Review, 16(2), 123-141.

Dobson, S.M. & Goddard, J.A. (1998). Performance and revenue in professional league football: *Evidence from Granger causality tests. http://www.tandfonline.com/doi/abs/10.1080/000368498324715*

Ferri, L., Macchioni, R., Maffei, M., & Zampella, A. (2017) Financial versus sports performance: The missing link. International Journal of Business and Management, 12(3).

https://www.researchgate.net/publication/314011230_Financial_Versus_Sports_Performance_The_Missing_Link

Foot and Ball. (2012). Ingresos por television en Premier y Liga. *Foot and Ball.* Obtained from https://www.footandball.net/the-deloitte-football-money-league-inequality/

Footyrate. (2016). Broacasting rights in UEFA Big-5: distribution criteria and values. *Footyrate.* Obtained from http://www.footyrate.com/2016/04/25/broacasting-rights-in-uefa-big-5-distribution-criteria-and-values/3/

Fort, R., & Quirk, J. (1995). Cross-subsidization, incentives, and outcomes in professional team sports leagues Journal of Economic Literature, 33(3), 1265-1299. https://www.jstor.org/stable/2729122

Fussball-geld. (2015) Verteilung Der Fernsehgelder 1.Bundesliga 2015/2016. *Fussball-geld.* Obtained from https://fussball-geld.de/verteilung-der-fernsehgelder-1-bundesliga-20152016/

Fussball-geld. (2016) Einnahmen Fernsehgelder 1.Bundesliga 2016/2017. *Fussball-geld.* Obtained from https://bomfutebol.pt/direitos-televisivos-centralizacao-foi-a-resposta/fusball-geld/

Gammelsæter, H., & Ohr, F. (2002). Kampen uten ball. Oslo: Abstrakt forlag

Garcia-del-Barrio, P., & Szymanski, S. (2009). Goal! Profit maximization versus win maximization in soccer. Review of Industrial Organization, 34(1), 45-68. https://link.springer.com/content/pdf/10.1007%2Fs11151-009-9203-6.pdf

Gazzetta Dello Sport (2011). La Torta Dei Ricavi Televisivi Squadra per Squadra. *Gazzetta Dello Sport.* Obtained from http://www.blackwhiteskin.com/2011/11/news-ac-cesena-08-11-11.html

Grundy, T. (2004). Strategy and financial management in the football industry. *http://onlinelibrary.wiley.com/doi/10.1002/jsc.696/epdf*

Gujarati, D., Porter, Dawn. (2009) *Basic Econometrics* (5th ed.). New York: McGraw-Hill Companies, Inc.

Hall, S., Szymanski, S., & Zimbalist, A. S. (2002). Testing causality between team performance and payroll the cases of major league baseball and english soccer. Journal of Sports Economics, 3(2), 149-168. http://journals.sagepub.com/doi/pdf/10.1177/152700250200300204

Hsiao, C. (2014). Analysis of panel data (3rd ed.) Cambridge: Cambridge University Press.

Interwetten (2016). Die Bundesliga Umsatz-Tabelle. *Interwetten.* Obtained from https://www.interwetten.com/de/sportwetten/news/top-news/die-bundesliga-umsatz-tabelle

Kassiesa. (2017). UEFA team ranking 2017. *Kassiesa*. Obtained from https://kassiesa.home.xs4all.nl/bert/uefa/data/method4/trank2017.html

Kicker. (2015). TV-Einnahmen: Sogar Englands Letzter vor den Bayern. *Kicker.* Obtained from http://www.kicker.de/news/fussball/bundesliga/startseite/628833/artikel_tv-einnahmen_sogar-englands-letzter-vor-den-bayern.html

KPMG. (2017). Broadcasting revenue distribution: Fine-tuning the balance. *KPMG.* Obtained from https://www.footballbenchmark.com/broadcasting_revenue_distribution

Ldcfoot. (2015). Tableau de synthese provisoire de la repartition Ligue 1.

Ldcfoot. Obtained from https://lcdfoot.wordpress.com/2015/05/20/champion-les-dotations-des-5-grands-championnats-europeen/

Lfp (2012). Rapport D'Activité De La Ligue De Football Professionnel. Saison 2011/2012.. *Lfp.* Obtained from https://www.lfp.fr/dncg/rapport_annuel_2011_2012/1112_rapport_lfp_all.pdf

Lfp (2017). Rapport Financier Du Football Professionnel Francais. Saison 2015/2016.. *Lfp.* Obtained from https://www.lfp.fr/dncg/rapport_annuel_2015_2016/1516_rapport_dncg_all.pdf

Madsen, DØ., Stenheim, T., Boas Hansen, S., Zagheri, A. & Grønseth, BO. (2018). Wage expenditures and sporting success: An analysis of Norwegian and Swedish football 2010–2013. Cogent social sciences 2018 (4). https://www.tandfonline.com/doi/full/10.1080/23311886.2018.1457423

Maxifoot. (2017). Les droits TV foot en France, comment ça marche? *Maxifoot.* Obtained from http://www.maxifoot.fr/football/article-33029.htm

Orbis. (2018). Company information across the globe. *Orbis.* Obtained from https://orbis-bvdinfo-com.ezproxy.library.bi.no/Search.QuickSearch.serv?_CID=1&context=32K5F3BFYDX8XYD

Premier League. (2016). Premier League's payment to clubs in 2015/16. *Premier League.* Obtained from https://www.premierleague.com/news/60138

Premier League. (2017). Discover the origins and history of the top tier of English Football. *Premier League*. Obtained from https://www.premierleague.com/history

Premier League. (2017). Premier League value of central payments to Clubs 2016/17. *Premier League.* Obtained from https://www.premierleague.com/news/405400

Premier League. (2017). UEFA Champions League explained. *Premier League.* Obtained from https://www.premierleague.com/news/58908

Rohde, M. & Breuer, C. (2016). Europe`s Elite Football: *Financial Growth, Sporting Success, Transfer Investment, and Private Majority Investors.* Obtained from *https://pdfs.semanticscholar.org/4560/80037f6a829703c92bca2568bab7d4bd081f.pdf*

Saunders, M., Lewis, P., Thornhill, A. (2016) *Research methods for business students* (7th ed.). Harlow: Pearson Education Limited.

Sky Sports. (2015). Premier League tops La Liga, Bundesliga, Serie A and Ligue 1 in transfer window spending. *Sky Sports*. Obtained from http://www.skysports.com/football/news/11095/9976458/premier-league-tops-la-liga-bundesliga-serie-a-and-ligue-1-in-transfer-window-spending

Sport. (2018). El Barcelona supera al Madrid en ingresos por televisión. *Sport.* Obtained from https://www.sport.es/es/noticias/laliga/barcelona-tambien-gana-madrid-los-ingresos-television-6529211?_ga=2.230050076.1644895380.1514854479-143097142.1483437212

Sportbuzzbusiness. (2011). Droits audiovisuels 2010/2011. Tableau de synthese de la repartition Ligue 1. *Sportbuzzbusiness.* Obtained from https://sportbuzzbusiness.fr/wp-content/uploads/2011/06/droits-tv.jpg

Sportbuzzbusiness. (2015). Droits audiovisuels 2014/2015. Tableau de synthese de la repartition Ligue 1. *Sportbuzzbusiness.* Obtained from http://www.sportbuzzbusiness.fr/repartition-des-droits-tv-ligue-1-20142015-4679me-partages-dont-455me-pour-le-psg.html

Sportintelligence. (2012). Where the money went: Premier League prize and tv payments 2011/12 *Sportintelligence.* http://www.sportingintelligence.com/2012/05/14/where-the-money-went-premier-league-prize-and-tv-payments-for-2011-12-150501/

Sportintelligence. (2013). Where the money went: Premier League prize and tv payments 2012/13 *Sportintelligence.* http://www.sportingintelligence.com/2013/05/21/where-the-money-went-premier-league-prize-and-tv-payments-for-2012-13-210501/

Sportintelligence. (2014). Where the money went: Liverpool top Premier League prize

cash in 2013-14. *Sportintelligence.* http://www.sportingintelligence.com/2014/05/14/where-the-money-went-liverpool-top-premier-league-prize-cash-in-2013-14-140501/

Stade de reims (2014). Droits audiovisuels 2013/2014. Tableau de synthese provisoire de la repartition Ligue 1. *Stade de reims.* Obtained from http://stade-de-reims-paolo92.skyrock.com/tags/dYQO8n41eUE-Droits-Tv.html

Statista. (2017). Premier League TV broadcasting rights revenue from 1992 to 2019 (in millions GBP). *Statista*. Obtained from https://www.statista.com/statistics/385002/premier-league-tv-rights-revenue/

Statista (2018). Einnahmestruktur der Vereine in der 1. Fußball-Bundesliga in der Saison 2016/2017 (in Millionen Euro). *Statista.* Obtained from https://de.statista.com/statistik/daten/studie/192749/umfrage/umsatz-deutscher-bundesligavereine/

Szymanski, S. & Kuypers, T. (1999). Winners & Losers: *The Business Stategy of Football.* Publisher: Penguin.

Szymanski, S. & Smith, R. (1997). The English Football Industry: *Profit, performance and industrial structure.* Obtained from *https://www.researchgate.net/publication/227351647_The_English_Football_Industry_Profit_Performance_and_Industrial_Structure*

The Guardian (2013). Premier League finances: the full club-by-club breakdown and verdict. *The Guardian.* Obtained from https://www.theguardian.com/football/2013/apr/18/premier-league-finances-club-by-club

The Guardian (2016). Premier League finances: the full club-by-club breakdown and verdict. *The Guardian.* Obtained from https://www.theguardian.com/football/2016/may/25/premier-league-finances-club-by-club-breakdown-david-conn

The Guardian (2016). Premier League finances: turnover, wages, debt and Performance. *The Guardian.* Obtained from https://www.theguardian.com/news/datablog/2014/may/01/premier-league-club-accounts-debt-wages

The Guardian (2017). Premier League finances: the full club-by-club breakdown and verdict. *The Guardian.* Obtained from https://www.theguardian.com/football/2017/jun/01/premier-league-finances-club-by-club

The Mirror. (2017). Premier League prize money table – how much your team made this season and how far from Chelsea to Sunderland. Obtained from http://www.mirror.co.uk/sport/football/news/premier-league-prize-money-table-10472843

Thoughtco. (2017). How teams qualify for the Champions League. *Thoughtco.* Obtained from https://www.thoughtco.com/how-teams-qualify-for-champions-league-3557316

Tifoso Bilanciato (2013). Diritti TV in Europa: ecco come i campionati "Big-5" si Dividono 3.6 miliardi di Euro. *Tifosobilanciato.* Obtained from https://www.tifosobilanciato.it/2013/06/18/diritti-tv-in-europa-ecco-come-i-campionati-big-5-si-dividono-36-miliardi-di-euro/

Tifoso Bilanciato. (2013). Diritti tv 2012/2013: finito il campionato ecco le cifre definitive. *Tifoso Bilanciato.* Obtained from https://www.tifosobilanciato.it/2013/05/29/diritti-tv-20122013-finito-il-campionato-ecco-le-cifre-definitive/

Tifoso Bilanciato. (2014). La simulazione della ripartiozione dei diritti tv in Serie A per la stagione 2013/14. *Tifoso Bilanciato.* Obtained from https://www.tifosobilanciato.it/2014/05/26/la-simulazione-della-ripartizione-dei-diritti-tv-in-serie-a-per-la-stagione-201314/

Totalsportek. (2018). Premier League Prize Money 2018 (Complete breakdown of entire tv money fund). *Totalsportek.* Obtained from https://www.totalsportek.com/money/premier-league-prize-money/

UEFA. (2017). 2017/18 UEFA Champions League revenue distribution. *UEFA*. Obtained from https://www.uefa.com/uefachampionsleague/news/newsid=2493261.html#/

UEFA. (2017). UEFA ranking for club competitions. *UEFA*. Obtained from

https://www.uefa.com/memberassociations/uefarankings/country/index.html

UEFA. (2017). 2017/18 UEFA Europa League revenue distribution. *UEFA*. Obtained from https://www.uefa.com/uefaeuropaleague/news/newsid=2493323.html#/

UEFA. (2008). UEFA Cup to become UEFA Europa League. *UEFA*. Obtained from https://web.archive.org/web/20081219124516/http://www.uefa.com/uefa/keytopics/kind%3D64/newsid%3D754085.html

Un Calcio All'economia. (2017). Serie A: la ripartizione dei diritti tv post classifica 2016/17. *Un Calcio All'economia.* Obtained from https://uncalcioalleconomia.wordpress.com/2017/09/30/serie-a-la-ripartizione-dei-diritti-tv-post-classifica-201617/

Wikipedia. (2017). 2017-18 UEFA Europa League. *Wikipedia.* Obtained from https://en.wikipedia.org/wiki/2017%E2%80%9318_UEFA_Europa_League

Wikipedia. (2018). Deloitte Football Money League. *Wikipedia.* Obtained from https://en.wikipedia.org/wiki/Deloitte_Football_Money_League#2015%E2%80%9316

Wikipedia. (2018). UEFA Champions League. *Wikipedia.* Obtained from https://en.wikipedia.org/wiki/UEFA_Champions_League

Worldfootball. (2018). Premier League attendance. *Worldfootball.* Obtained from https://www.worldfootball.net/attendance/eng-premier-league-2016-2017/1/

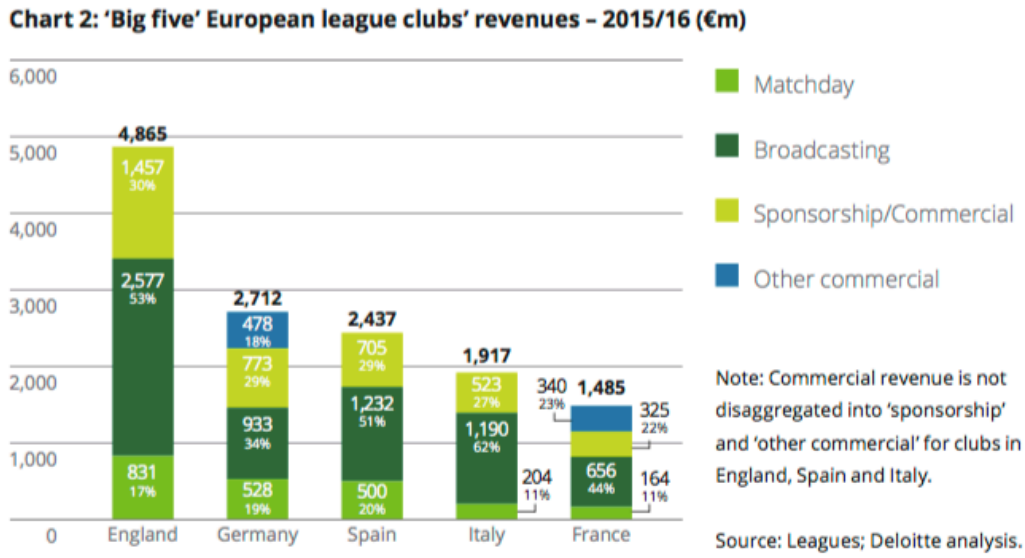
X-rates (2018). Currency rates. *X-rates.* Obtained from https://www.x-rates.com/average/?from=GBP&to=USD&amount=1&year=2018

8. Appendices

Appendix 1

BROADCASTING REVENUES 2016/17					
League position	Premier League	La Liga	Serie A	Bundesliga	Ligue 1
1	196,0	161,4	93,3	85,5	48,3
2	189,2	168,4	78,0	26,6	66,6
3	191,0	114,3	77,9	71,5	39,1
4	189,9	75,9	50,0	40,4	54,4
5	181,5	70,2	64,4	33,1	54,1
6	183,4	61,6	76,7	37,8	40,8
7	166,1	81,8	77,5	31,4	29,3
8	159,3	56,3	65,2	39,2	42,7
9	153,7	45,3	54,7	51,5	34,8
10	148,2	48,0	52,3	66,6	25,0
11	151,6	64,1	42,7	39,6	38,1
12	150,5	77,6	38,6	66,0	22,5
13	139,2	59,2	43,2	41,2	24,7
14	142,6	50,7	42,2	34,8	21,0
15	134,2	56,7	44,6	43,0	26,4
16	131,6	50,7	47,1	50,8	19,9
17	133,5	45,3	30,4	29,8	20,9
18	126,6	48,0	33,9	28,2	20,9
19	128,4	49,5	40,2		17,4
20	121,6	51,4	33,3		19,2
Ratio	1,6	3,1	2,8	3,0	2,5
Avrg. last 7 years	1,5	6,8	3,7	2,1	3,1

Appendix 2

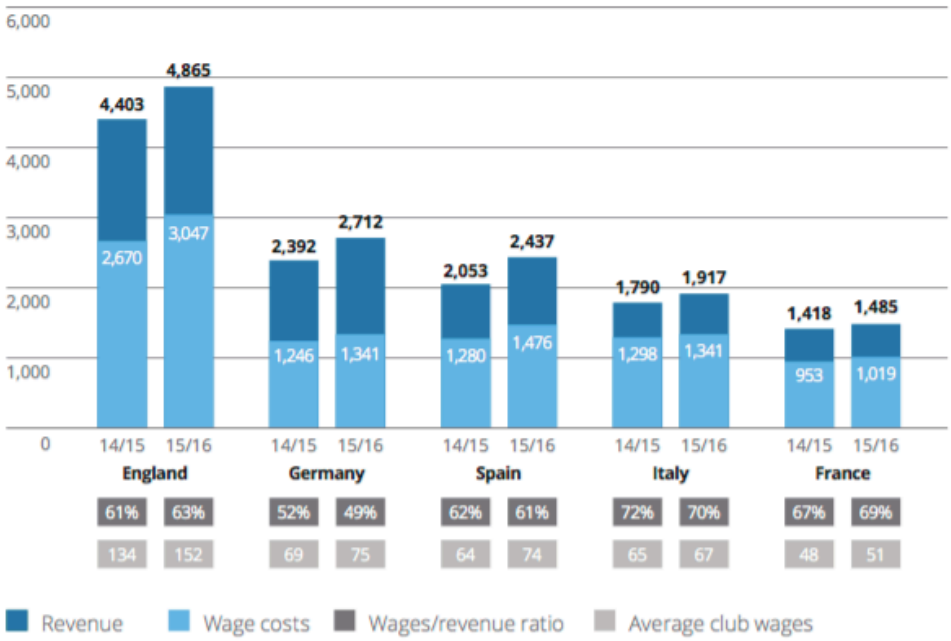


* The numbers reported in our paper are in American dollars and are accordingly adjusted with the exchange rate of dollars collected from June 30. 2016.

Appendix 3

Appendix 4

Chart 4: 'Big five' European league clubs' revenues and wage costs – 2014/15 and 2015/16 (€m)



Source: Leagues; Deloitte analysis.

Appendix 5

Champions League Qualification System

Coefficient ranking	Automatic entry	Qualifying rounds	Total number of teams included in CL
1-3	3	1	4 = 12
4-6	2	1	3 = 9
7-12	1	1	2 = 12
13-15		2	2 = 6
16-55		1	1 = 39
Total			78
Qualified by winning EL			1
Total			79

Appendix 6

Europa League Qualification System

Coefficient ranking	Qualified teams	From Champions League	Total number of teams included in EL
1-31	3		93
33-55	3		57
52-54	2		6
32 and 55	1		2
From CL third round qual.		15	15
From CL play-off rounds		10	10
From CL group stage (3rd place)		8	8
Team from country with last year's winner	-1		-1
Total			190

Appendix 7

Club and League	Season	LPOS	TCEMP	NOEMP
Valencia	1	3	88.00	247
Villareal	1	4	70.10	124
Sevilla	1	5	82.90	209
Athletic Bilbao	1	6	***67.60***	190
Atletico Madrid	1	7	92.60	163
Espanyol	1	8	44.80	155
Sporting Gijon	1	10	26.90	242

* Osasuna finished in 9th place, but are excluded from the whole dataset due to missing values in all periods

Appendix 8

Absolute sizes	***TV-cycle 2010-13***								
Variable	***Variable name***	***Number of obs.***	***Mean***	***St. deviation***	***Min***	***10 %***	***50 %***	***90 %***	***Max***
English League:									
Broadcasting revenues	BCREV	60	75.41827	10.33578	60.3766	60.996	72.7888	94.068	97.6064
Number of employees	NOEMP	49	324.7347	176.0703	93	105	263	629	743
Attendance	ATT	60	35265.13	14461.23	15780	17295	33638.5	75109	75530
Operating revenues	OPREV	60	189.2517	134.4179	81.5	84.5	123.4	514.9	571.9
Total cost of employees	TCEMP	60	130.1217	79.41366	40.6	57	95.3	303.4	354.6
Not English League:									
Broadcasting revenues	BCREV	234	39.1199	31.07508	15.375	15.9576	28.779	183.12	200.34
Number of employees	NOEMP	222	167.1667	133.1102	40	44	137	769	821
Attendance	ATT	234	28199.97	16951.31	6338	6764	23021	79219	80521
Operating revenues	OPREV	199	120.9095	128.2713	23.099	25.399	79.6	651.3	672.9
Total cost of employees	TCEMP	195	66.42103	62.73547	14.499	14.699	44.8	311.1	347.8

Appendix 9

Absolute sizes	***TV-cycle 2013-16***								
Variable	***Variable name***	***Number of obs.***	***Mean***	***St. deviation***	***Min***	***10 %***	***50 %***	***90 %***	***Max***
English League:									
Broadcasting revenues	BCREV	60	106.9002	20.29634	87.6456	93.1728	120.979	160.7228	166.53
Number of employees	NOEMP	47	368.4255	208.929	121	159	288	799	869
Attendance	ATT	60	36419.87	14201.21	11189	19131	34534	75207	75335
Operating revenues	OPREV	60	264.8717	172.8903	115.8	127.4	175.1	695.1	749.8
Total cost of employees	TCEMP	57	149.9018	82.85452	46.2	77.9	116.6	324.7	365.9
Not English League:									
Broadcasting revenues	BCREV	234	41.9572	27.56077	11.39180	14.74	35.4334	154.84	189.56
Number of employees	NOEMP	217	192.8848	156.3269	44	46	150	795	831
Attendance	ATT	234	28378.88	17253.74	3719	4780	22856	80297	81178
Operating revenues	OPREV	210	125.8667	147.1	9.499	24.399	78.75	695.9	722
Total cost of employees	TCEMP	205	67.81024	72.7891	6.399	13.899	45	363.9	380.8

Appendix 10

Absolute sizes	***TV-cycle 2016-17***								
Variable	***Variable name***	***Number of obs.***	***Mean***	***St. deviation***	***Min***	***10 %***	***50 %***	***90 %***	***Max***
English League:									
Broadcasting revenues	BCREV	20	155.9025	24.66291	121.55	128.44	151.06	189.93	196.04
Number of employees	NOEMP	17	398.8235	227.9836	175	214	338	735	865
Attendance	ATT	20	35821.85	16593.85	11182	20571	31287.5	56972	75290
Operating revenues	OPREV	18	318.1	182.9633	151.8	160.9	229.05	544.3	754.3
Total cost of employees	TCEMP	18	152.5111	78.633354	79.5	85.8	126.35	266.4	341.9
Not English League:									
Broadcasting revenues	BCREV	78	51.35409	26.75191	17.3952	19.9296	46.1952	114.2784	168.4224
Number of employees	NOEMP	70	209.8714	166.7831	45	50	160	756	794
Attendance	ATT	78	27726.19	16823.38	5357	9483	22391	75000	79653
Operating revenues	OPREV	54	173.6481	172.639	30.699	33.9	121.05	663.4	730.9
Total cost of employees	TCEMP	64	71.96406	75.06534	15.199	19.299	48.1	333.2	363.9

Appendix 11

Variable	1	2
LPOS_1	-	
ATT_log	0.5363***	-

*p < .1; **p < .05; ***p < .01

LPOS_1 = League position current year

ATT_log = Log transformed club average attendance

Appendix 12

Correlations for English clubs			
Variable	1	2	3
UEFARC_log	-		
UEFARCF_log	0.5443***	-	
BCREV_log	0.1882*	0.3240***	-

*p < .1; **p < .05; ***p < .01

UEFARC_log = Log-transformed UEFA ranking coefficient current year

UEFARCF_log = Log-transformed UEFA ranking coefficient following year

BCREV_log = Log-transformed broadcasting revenue

Appendix 13

Correlations for non-English clubs			
Variable	1	2	3
UEFARC_log	-		
UEFARCF_log	0.6309***	-	
BCREV_log	0.5043***	0.4816***	-

*p < .1; **p < .05; ***p < .01

UEFARC_log = Log-transformed UEFA ranking coefficient current year

UEFARCF_log = Log-transformed UEFA ranking coefficient following year

BCREV_log = Log-transformed broadcasting revenue

Appendix 14

CHAMPIONS LEAGUE WINNERS 2010/11-2016/17				
Season	**Winner**	**League**	**Runner-up**	**League**
2010/11	**Barcelona**	La Liga	Manchester United	Premier League
2011/12	**Chelsea**	Premier League	Bayern Munich	Bundesliga
2012/13	**Bayern Munich**	Bundesliga	Borussia Dortmund	Bundesliga
2013/14	**Real Madrid**	La Liga	Atletico Madrid	La Liga
2014/15	**Barcelona**	La Liga	Juventus	Serie A
2015/16	**Real Madrid**	La Liga	Atletico Madrid	La Liga
2016/17	**Real Madrid**	La Liga	Juventus	Serie A

Winner or runner up from England= 2, Winner or runner up from Spain= 7
Winner or runner up from Italy= 2, Winner or runner up from Germany= 3