

Broadcasting Revenues and Sporting Success in European Football: Evidence from the Big Five Leagues

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This paper examines the association between broadcasting revenues and sporting success in Europe's Big Five football leagues (England, Italy, Spain, Germany, and France), and in particular how the distribution and allocation of broadcasting revenues in Europe's elite leagues are associated with the clubs' domestic and international sporting success. The study makes use of a large hand-collected dataset comprising 8244 observations from 160 different clubs playing in one of these five leagues during the seven seasons from 2010 to 2017. The results indicate that the use of a uniform broadcasting revenue distribution model, which gives all clubs a relatively similar share of the pie, may increase domestic league competition, which in turn makes it tougher for one or two teams to dominate the rest. At the same time, there are some indications that a uniform broadcasting model is negatively associated with the clubs' international sporting success. The use of a more top-heavy revenue distribution model, which leaves a smaller share for the worst-performing clubs, seems to enable the top clubs to retain both domestic and international sporting success.

INTRODUCTION

Background

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 clubs from these European leagues win the vast majority of international tournaments and are the most profitable in terms of revenue generation. In recent years, there has been tremendous growth in revenues in international football (Giulianotti, 2012), in particular broadcasting revenues from sales of TV rights in different media markets around the world (Barnard, Ross, Savage, & Winn, 2017; KPMG, 2017; Statista, 2017). However, the Big Five leagues differ in terms of how broadcasting revenues are distributed among the clubs playing in the respective national leagues. For example, the English Premier League employs a relatively uniform and equal distribution model. In contrast, others use a more top-heavy distribution model, which leaves less for the worst-performing clubs.

There is reason to believe that the distribution of broadcasting revenues are associated with the clubs' sporting success. For instance, an emerging body of literature suggests that financial variables such as revenues and player wage expenditures are associated with sporting success in sports such as football (e.g., Dimitropoulos & Limperopoulos, 2014; Dobson & Goddard, 1998; Ferri, Macchioni, Maffei, & Zampella, 2017; Grundy, 2004; Kringstad & Olsen, 2016; Madsen, Stenheim, Boas Hansen, Zagheri, & Grønseth, 2018; Rohde & Breuer, 2016; Szymanski & Kuypers, 1999; Szymanski & Smith, 1997). The possibility of buying success is high in football since the European leagues tend to lack the restrictive policies seen in, for instance, Major League Baseball, where there are much tighter restrictions on player spending, roster size, and trading rights (Hall, Szymanski, & Zimbalist, 2002).

Reports also suggest that European football clubs flex their financial muscles, and considerable financial resources are used to attract football's most talented players. In the 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). Thus, the distribution of broadcasting revenues is likely associated with sporting success. While previous research has explored the relationship between total revenue generation and sporting success, our paper aims to isolate the role of broadcasting revenues and examine how revenues from broadcasting agreements are associated with both domestic and international sporting success.

Research questions

In this paper, we address the following research questions:

Are broadcasting revenues associated with sporting success in Europe's Big Five leagues?

By distinguishing between the English and non-English broadcasting revenue distribution models and taking account of different allocation practices, we formulate two subordinate research questions:

Are different broadcasting revenue distribution models associated with domestic sporting success in Europe's Big Five leagues?

Are different broadcasting revenue distribution models associated with international sporting success in Europe's Big Five leagues?

We argue that this paper makes several contributions to the literature on the business and economics of football. First, the association between broadcasting revenues and sporting success is relatively unexplored in the existing literature. Our study, which draws on a large cross-national sample, provides new insight into how different distribution models are associated with domestic and international sporting success. The results indicate that the use of a uniform broadcasting revenue distribution model, which gives all clubs a relatively similar share of the pie, may increase domestic league competition, which in turn makes it tougher for one or two teams to dominate the rest. At the same time, there are some indications that a uniform broadcasting model is negatively associated with the clubs' international sporting success. These results may have practical policy implications when designing broadcasting revenue distribution models in football.

Structure

The rest of the paper is structured as follows. Section 2 provides an overview of the empirical setting, which is broadcasting revenue distribution models used in the Big Five leagues. Section 3 describes the methods and data used in the empirical part of the study. Then in Section 4, the results are presented. In Section 5 the findings are discussed in light of the literature. Section 6 concludes the paper by highlighting the main findings and contributions, as well as identifying limitations and areas for future research.

BROADCASTING REVENUE DISTRIBUTION MODELS IN THE BIG FIVE FOOTBALL LEAGUES

Broadcasting revenues in the Big Five leagues

In this section, we discuss the distribution of broadcasting revenues in the Big Five leagues. The new European broadcasting deals, which have taken effect in recent years, have had and continue to have a profound effect on the financial landscape of Europe's Big Five leagues. Table 1 provides an overview of broadcasting revenues in 2016/2017 for each of the Big Five leagues. As can be seen from the table, the broadcasting revenues are much higher in the English Premier League than in the other four leagues. The broadcasting revenues are also much more uniformly distributed with a first-to-last ratio of only 1.6 in the English Premier League, while the other leagues have ratios between 2.5 and 3.1.

Broadcasting revenues 2016/2017					
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	4,08	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	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
Average seven years	1,5	6,8	3,7	2,1	3,1

Table 1: Broadcasting revenues 2016/2017 (All figures are expressed in millions of US dollars)

English Premier League

The 2016/17-season marked the first season under the new three-year record-breaking television deal, which 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 upon during the 2015/16-season (previous broadcasting cycle from 2013-16 was \$5.1 billion) (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). 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 (Gadd, 2017).

Bundesliga (Germany)

In German football, 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 more than \$1.6 billion over the duration of the new broadcasting cycle. This is an increase of 75% compared to 2015/16 levels (Barnard et al., 2017). The distribution model related to domestic broadcasting revenues in German football is structured as follows:

- 65% divided according to ranking, but with an equal base amount.
- 35% divided based on historic league position and participation in UEFA competitions over the past 5 years.
- First-to-last ratio of 3:1

La Liga (Spain)

After a transitional year in 2015/16, the Spanish clubs fully adopted a new collective television rights selling mechanism in 2016/17, collecting a total of \$1.38 billion in broadcasting revenues. According to Barnard et al. (2017), the new arrangement is expected to take the total La Liga revenues to more than \$3.2 billion, briefly eclipsing 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. Because of the new and improved broadcasting deal, the distribution model is also believed to be changing in the 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% is equally shared among the clubs in the league.
- 25% is allocated according to results over the previous 5 seasons.
- 25% is allocated on the basis of metrics, with the number of television subscribers from each clubs' fan base and the number of season-ticket holders as the main drivers.

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

Serie A (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 revenues will be dependent on the extent to which the clubs are able to improve their commercial deals and/or increasing their match day attendances (Barnard et al., 2017). As a result, the Italian clubs will over the coming seasons find it challenging to compete, in a financial sense, with their European counterparts in terms of attracting the most talented players. Until this point, Serie A's broadcasting revenue distribution model has been structured as follows:

- 40% is divided equally between the clubs.
- 25% is divided in relation to number of supporters of the clubs.
- 5% is allocated on the basis of the number of citizens where the club is resident.
- 5% is based on results last season.

- 15% is based on results over the last five years.
- 10% is 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

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 (France)

Barnard et al. (2017) expect 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 broadcasting audience of each club.
- 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

Broadcasting revenues versus other revenues

The financial performance of the "Big Five" European leagues in 2015/16 was heavily influenced by growth in broadcasting revenues. The other primary elements contributing to the leagues' revenues are revenues from match-day (attendance), sponsorships, and other commercial activities. We observe that the German clubs continue their traditionally strong commercial performance, generating total sponsorship and other commercial revenues of approximately \$1.43 billion. This equals 47% of total revenues and is second only to the English Premier League clubs, who generated slightly below \$1.65 billion (Barnard et al., 2017). With respect to match-day revenues, the English league generated the most (\$919 mill), followed by Germany (\$583 mill), Spain (\$553 mill), Italy (\$225 mill), and France (\$181 mill).

The use of revenues to achieve sporting success

A huge bulk of the revenues is used to acquire football's 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. Former Barcelona Marketing Executive in Barcelona Football Club, Esteve Calzada states, "[w]e keep talking about the record highs and we've seen a record high in all top leagues" (Sky Sports, 2015). Furthermore, he proclaims that "[t]here is a clear dominance from the Premier League, which is getting fantastic TV-rights income that flows into the game" (Sky Sports, 2015).

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 large financial item is the clubs' wage costs. 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 clubs boosted their wages by almost \$222 mill, as more clubs were able to increase their wage level in line with the upswing mentioned above 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 counterparts (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 (Barnard et al., 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 revenues, saw the wage/revenue-ratio decrease from 72% to 70%. Nevertheless, this was still the highest ratio of the "Big Five" European leagues (Barnard et al., 2017). The French Ligue 1 wage costs surpassed the \$1.1 billion mark for the first time, due to 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. For example, Paris Saint-Germain's wage bill increased by 15% to \$322 mill, representing roughly 30% of the French league's total wage expenditures (Barnard et al., 2017).

METHODS AND DATA

Research design and data collection

Our main research question "*Are broadcasting revenues associated with 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 to clarify a certain connection, which in our case, is if broadcasting revenues are associated with sporting success. To explain such a phenomenon and thus answer our research question, we decided to apply quantitative research methods. We collected data from several types of secondary data sources, such as databases, local newspapers, journals, websites of football associations, and previous research studies. We also collected statistics about results and performances in both domestic competitions and international tournaments to get an idea of how the different clubs develop during the study period.

The dataset can be characterized as a panel data set. 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 Big Five European leagues (England, Spain, Italy, Germany, and France). In addition to being the highest-ranked leagues with regards to the number of domestic clubs competing in the largest European tournaments, we also consider these five leagues closely related in terms of size and structure, prize money, as well as the number of supporters in Europe. Overall, we include 8244 observations from 160 different clubs playing in one of these five leagues during the seven seasons from 2010 to 2017.

Broadcasting revenues and cycles

The reason for deciding on the period 2010 to 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 has on sporting success. We have applied the identical cycle split for non-English clubs in order to measure observations within the same specific periods, and accordingly yield the most comparable results. The broadcasting revenue figures were mostly retrieved from each league's official website and supplemented by information from domestic newspapers. As the majority of the financial data we use in this study are in US dollars, we decided to transform these into this currency (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 converted from euros.

Number of employees

A vast majority of previous studies have found positive associations 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 indicator of organizational dimension

and size would be its number of employees. The numbers for all clubs were collected from the Orbis database. When retrieving the data, we experienced some difficulties, as the data for the German clubs were somewhat inadequate, resulting in some missing observations.

Attendance

Average attendance for each club, each season is used as a popularity proxy, and the numbers were collected from Worldfootball.com (2018). When dealing with attendance numbers, we face some uncertainties. The study by Madsen et al. (2018) discusses two possible obstacles when reporting the number of spectators. The first challenge is that different sources report different information. This may be due to the fact that many clubs are in the process of 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 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.

Domestic and international sporting success

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

Variables

The allocation and distribution of TV money is measured by the variable broadcasting revenues (BROAD_REV_t). We have also generated an interaction variable (interaction term to be included in regressions), which enables us to investigate the association between broadcasting revenues and sporting success of English clubs compared to clubs in the other leagues. This variable is the product of the BROAD_REV-variable and a dummy variable taking the value 1 if the observation is from an English club and 0 otherwise (D_ENG).

Domestic sporting success is indicated by the variables league position current year (POSITION_t) and league position following year (POSITION_{t+1}). Both variables are multiplied with -1, which means that a lower value of the variable will mean a better league position and, thus, a higher sporting success. International sporting success is indicated by the UEFA ranking coefficient the current year (UEFA_t) and UEFA ranking coefficient the following year (UEFA_{t+1}). Clubs not competing in European competitions are treated as missing observations.

The number of employees (EMPLOY_t) is used as a measure of the size of the club, while average attendance (ATTEND_t) is included as a popularity and reputation indicator. In addition to these, our dataset also contains other variables that may be interesting to look at, such as operating revenues (OPREV) and total cost of employees (WAGES). Several of the variables above are heavily left-skewed and are therefore log-transformed when used in correlation and regression analyses.

DATA ANALYSIS

This section is structured in two parts. First, we present descriptive statistics of key variables used in the study. Second, we run multivariate regressions, which intend to adequately explain and answer our research questions.

Descriptive statistics

The central variables in our study are broadcasting revenues (measured in mill \$), number of employees, and attendance. In addition to these variables, we have included operating revenues (measured in mill \$), and the total cost of employees (measured in mill \$). Table 2 provides

descriptive statistics for all these variables, divided in clubs from the English league and clubs from the remaining four leagues.

<i>Variable</i>	<i>Variable name</i>	<i>Number of obs.</i>	<i>Mean</i>	<i>St. deviation</i>	<i>Min</i>	<i>10 %</i>	<i>50 %</i>	<i>90 %</i>	<i>Max</i>
<i>English League</i>									
Broadcasting revenues	BROAD_REV	140	106.9002	34.29	60.38	61,00	101.31	189.93	196.04
Number of employees	EMPLOY	113	354.0531	198.51	93	105	274	865	869
Attendance	ATTEND	140	35839.55	14570.36	11182	15780	33781.50	75335	75530
Operating revenues	OPREV	138	238.94	164.34	81.50	84.50	165.70	695.10	754.30
Total cost of employees	WAGES	135	141.46	80.84	40.60	53.6	109.50	341.90	365.90
<i>Non-English League</i>									
Broadcasting revenues	BROAD_REV	546	42.08	29.24	11.39	14.74	34.61	189.56	200.34
Number of employees	EMPLOY	509	184.00	148.75	40	44	145	805	831
Attendance	ATTEND	546	28208.97	17033.80	3719	4780	22867	80520	81178
Operating revenues	OPREV	463	129.31	143.27	9.50	21.11	80.90	722	730.90
Total cost of employees	WAGES	464	67.80	68.95	6.40	12.20	45.30	368.20	380.80

Table 2: Descriptive statistics (all periods). None of the above variables is log-transformed.

Broadcasting revenues, number of employees and attendance

In the period from 2010 to 2017, English Premier League clubs generated broadcasting revenues of averagely \$106.9 million. In contrast, non-English clubs 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 clubs, 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 93 to 869. Clubs from the other leagues averaged 184 employees, with a span from 40 to 831. On average, the English clubs in our sample had an attendance of 35839 with a span from 11182 to 75530, while the same variable for non-English clubs amounted to 28208, spreading from 3719 to 81178.

Operating revenues and total cost of employees

During our observed seven-year period, the operating revenue variable for the English Premier League clubs 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 clubs reported an average cost of employees equaling \$67.8, with a minimum and maximum of \$6.4 million and \$380.8 million, respectively.

Domestic sporting success and broadcasting revenues

The overall research question of this study is to investigate the association between sporting success and broadcasting revenues. The first of two subordinate research questions deals with the association between domestic sporting success and different broadcasting revenue distribution models in Europe's Big Five leagues, and this section investigates this question in particular. The overall regression model used to test this association has league position the following year (LEAGUE_{t+1}) as the dependent variable and current league position (LEAGUE_t), broadcasting revenues (BROAD_REV_t), number of employees (EMPLOY_t) and average attendance (ATTEND_t) as independent variables. The model also includes an interaction term, which enables us to separate the association broadcasting revenues (BROAD_REV_t) have with the English and non-English clubs' domestic success.

League position (POSITION _{t+1})	All years (1) Coefficient	2010-2013 (2) Coefficient	2013-2016 (3) Coefficient	2016-2017 (4) Coefficient
POSTION _t	0.498***	0.355***	0.535***	0.646***
BROAD_REV _t	1.212***	1.992***	1.112	1.3034
BROAD_REV _t *D_ENG	-0.535***	-0.603***	-0.539**	-0.630
EMPLOY _t	1.295***	0.980	1.746***	1.5205
ATTEND _t	1.203**	2.262***	0.397	0.041
Constant	-28.266***	-41.253***	-21.842***	-17.153
Number of obs.	530	231	225	74
F-value	93.08***	35.63***	44.66***	16.17***
Adj R-squared	0.465	0.430	0.494	0.510

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

POSTION_{t+1} = League position following year t+1 multiplied by -1.
POSTION_t = League position current year t multiplied by -1.
BROAD_REV_t = Log-transformed broadcasting revenues current year t
BROAD_REV_t*D_ENG = Interaction term with BROAD_REV and D_ENG current year t
D_ENG = Variable taking the value 1 if English club and 0 otherwise
EMPLOY_t = Log-transformed number of employees current year t
ATTEND_t = Log transformed club average attendance current year t

Table 3: League position and broadcasting revenues

The results from the regression (all years) suggest that all the independent variables are significantly positively associated with the league position the following year (POSITION_{t+1}). A negative coefficient on the interaction term (BROAD_REV_t*D_ENG) suggests that the association between league position and broadcasting revenues is weaker for English clubs than for non-English clubs. The results are somewhat weaker when running the regression on observations from each cycle (subperiod). The positive coefficient on broadcasting revenues (BROAD_REV_t) turns insignificant for the broadcasting cycle 2013 to 2016 and 2016 and 2017. The same is the case for spectator attendance (ATTEND_t). The coefficient on the number of employees (EMPLOY_t) is insignificant for the broadcasting cycle 2013 to 2016 and 2016 and 2017. The somewhat weaker results for the last cycle could be the result of few observations.

International sporting success and broadcasting revenues

Our second subordinate research question deals with the association between different broadcasting revenue distribution models and international sporting success in Europe's Big Five leagues. This section investigates this question in particular. 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 increases or decreases equally with each year's coefficient. We find this coefficient to be the best indicator of international sporting success, as it reflects any given club's international performance, as well as provides us with an estimate of sporting success over time.

The overall regression used to test this association has the UEFA coefficient the following year as the dependent variable (UEFA_{t+1}) and the current UEFA coefficient (UEFA_t), broadcasting revenues (BROAD_REV_t), number of employees (EMPLOY) and spectator attendance (ATTEND_t) as independent variables. As with our first regression model, it includes an interaction term, which enables us to separate the association broadcasting revenues (BROAD_REV_t) have with the English and non-English clubs' international success.

UEFA ranking (UEFAt+1)	All years (1) Coefficient	2010-2013 (2) Coefficient	2013-2016 (3) Coefficient	2016-2017 (4) Coefficient
UEFAt	0.353***	0.342***	0.385***	0.163
BROAD_REVt	0.305***	0.282**	0.260	1.485**
BROAD_REVt*D_ENG	-0.102***	-0.102**	-0.117**	-0.160
EMPLOYt	0.228**	0.357**	0.135	-0.406
ATTENDt	0.387***	0.405**	0.393**	0.304
constant	-5.056***	-5.819***	-4.493***	-5.162
Number of obs.	297	136	137	24
F-value	50.24***	28.13***	19.59***	3.75**
Adj R-squared	0.454	0.501	0.406	0.374

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

UEFAt+1 = Log-transformed UEFA ranking coefficient following year t+1
UEFAt = Log-transformed UEFA ranking coefficient current year t
BROAD_REVt = Log-transformed broadcasting revenues current year t
BROAD_REVt*D_ENG = Interaction term with BROAD_REV and D_ENG current year t
D_ENG = Variable taking the value 1 if English club and 0 otherwise
EMPLOYt = Log-transformed number of employees current year t
ATTENDt = Log transformed club average attendance current year t

Table 4: UEFA ranking and broadcasting revenues

The results from the regression (all years) suggest that all the independent variables are significantly positively associated with the UEFA coefficient the following year (UEFAt+1). A negative coefficient on the interaction term (BROAD_REVt*D_ENG) suggests that the association between the UEFA coefficient and broadcasting revenues are weaker for English clubs than for non-English clubs. The results are basically the same when the regression is run for the first cycle (subperiod 2010 to 2013), somewhat weaker when run for the next cycle (subperiod 2013 to 2016) and still weaker for observations from the last cycle (subperiod 2016 to 2017). The coefficient on broadcasting revenues (BROAD_REVt) is significantly positive in the first and third cycle, but insignificant in the second cycle. Moreover, the coefficient on number of employees (EMPLOYt) is insignificant the second and the third cycle, whereas the coefficient on spectator attendance (ATTENDt) is insignificant the third cycle. The interaction term (BROAD_REVt*D_ENG) is also significantly negative in the first and second cycle, but insignificant in the third cycle. The rather weak results for the last cycle could be the result of few observations.

DISCUSSION

Broadcasting revenues and domestic sporting success

Our results reveal some interesting differences between English and non-English clubs. Bivariate correlation tests (untabulated) suggest that the association between broadcasting revenues and domestic sporting success is somewhat weaker in English clubs (0.3079) than in non-English clubs (0.5233). This could indicate that the broadcasting revenues play a minor role in explaining domestic sporting success in English clubs than in non-English clubs. These indicative findings are augmented by results from multivariate regressions with broadcasting revenues as one of several independent variables explaining domestic sporting success. Along with these independent variables, the regressions include an interaction term, which distinguishes the effect of being an English club from a non-English club on the association between broadcasting revenues and domestic sporting success.

The results for the interaction term suggest that this association is indeed weaker for English firms than for non-English firms.

One possible explanation can be the models used in the distribution and allocation of broadcasting revenues. While the distribution model used 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). Because of the homogenous distribution model used in England, there is less inequality between the clubs in terms of broadcasting revenues. In the other leagues, the larger clubs typically receive the biggest chunks of the broadcasting revenue cake, leaving the weaker clubs with the crumbs. This asymmetry will probably enable the powerhouse clubs to make investments in the most attractive players, coaches, managers, and staff, which, over time, makes them even more dominant and successful. Contrary to this, the allocation of broadcasting revenues in England facilitates more domestic competition. These revenues are fairly evenly distributed between all clubs in the Premier League, making it a lesser factor in explaining domestic success. These findings are supported by KPMG (2017) which argues that “...*the way broadcasting money is distributed appears to be highly influential in determining a league’s competitive balance*”.

When we split the broadcasting revenues into the three subordinate cycles, we discover weaker results. Running the regression on observations from the first broadcasting cycle (2010 to 2013) provides the same results as when running on observations from 2010 to 2017. The two later cycles, on the other hand, both present results of a different kind. The cycle between 2013 to 2016 provides results that are weakly significant, while the final cycle from 2016 to 2017 basically gives insignificant results.

Broadcasting revenues and international sporting success

Examining the relationship between broadcasting revenues and international sporting success, we discover a similar trend as in the domestic case above. Bivariate correlation tests (untabulated) between the international success indicator, UEFA ranking coefficient, and broadcasting revenues, yield a lower coefficient for English clubs (0.3240) than for non-English (0.4816). These indicative findings are augmented by results from multivariate regressions. Along with several independent variables, among these broadcasting revenues, the regressions include an interaction term, which distinguishes the effect of being an English club from a non-English club on the association between broadcasting revenues and international sporting success. The results for the interaction term suggest that this association is weaker for English firms than for non-English firms. This indicates that broadcasting revenues have a less positive impact on international sporting success for English clubs than for non-English clubs.

We believe that the results above 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 above, 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 counterparts, 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. Because 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 clubs in each league that develop at the expense of the rest.

To summarize, we argue that broadcasting revenues have weaker impact on international sporting success for English clubs, than for non-English. The reason for our assertion mainly comes down to contrasting distribution models. As the distribution models in the non-English leagues favor the largest clubs, the allocation of broadcasting revenues 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 continued success within each league. Their domestic dominance enables them to participate and stabilize themselves in European competitions, ultimately yielding stable international success over time (i.e., higher UEFA ranking coefficient).

Contrary to this, the English distribution model facilitates more internal competition. As the differences in allocated broadcasting money are marginal compared to the other leagues, more clubs have a fair shot of qualifying for European competitions. Moreover, it is not necessarily the English clubs that pocket the most TV money that perform 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.

CONCLUSION

Summary of main findings

This paper sheds light on the different broadcasting revenue distribution models practiced in Europe's Big Five Leagues, and how the leagues' contrasting allocation models are associated with both internal domestic competition and international sporting success.

First, with respect to our first sub-question, "*Are different broadcasting revenue distribution models associated with domestic sporting success in Europe's Big Five leagues?*", we found evidence indicating that the relatively equal nature of the English broadcasting revenue distribution model fosters internal competition, making the league more competitive compared to its European counterparts. In contrast, our findings indicate that the more uneven allocation practices in the non-English leagues fuel a few superior clubs, making them even more powerful.

Concerning the second sub-question, "*Are different broadcasting revenue distribution models associated with international sporting success in Europe's Big Five leagues?*", our results indicate that a uniform distribution and correspondingly increased internal competition may hamper English clubs' international sporting success compared to non-English clubs. The Champions League finalists in recent years have mainly been clubs from non-English leagues. This indicates that the non-English clubs' dominant position in their respective domestic leagues increases their chances of success in Europe. However, since English clubs have reached both the Champions League and Europa League finals in the current 2018/2019 season, these findings should be interpreted with some caution.

Conclusively, to answer the main research question, "*Are broadcasting revenues associated with sporting success in Europe's Big Five leagues?*", our results suggest that the use of a uniform model increases the internal competition, but negatively affects international performance. Skewed distribution models, on the other hand, reduce the leagues' domestic competitiveness, but enable a few leading powerhouse clubs to have more persistent international sporting success.

Contributions

The question of how different financial variables affect sporting success has been the subject of considerable research in recent years (e.g., Dimitropoulos & Limperopoulos, 2014; Dobson & Goddard, 1998; Ferri et al., 2017; Grundy, 2004; Kringstad & Olsen, 2016; Madsen et al., 2018; Rohde & Breuer, 2016; Szymanski & Kuypers, 1999; Szymanski & Smith, 1997). In previous studies, researchers have examined the relationship by using revenues, wages, transfer fees, and bonus schemes as explanatory variables for success. The influence of broadcasting revenues on sporting success, on the other hand, is mostly unexplored territory, with very few previously published studies.

Hence, this study is among the first to investigate the association between broadcasting revenues and sporting success for Europe's elite leagues. The current investigation draws on a broad-based study on how the distribution and allocation of broadcasting revenues in Europe's elite leagues are associated with the clubs' domestic and international sporting success. The current paper includes observations for Europe's Big Five leagues over a span of seven years (2010 to 2017), and the large dataset has enabled us to adequately run two sets of multivariate regressions that indicate the impact of broadcasting revenues on sporting success. In our view, the main strength in our research lies in the size of the dataset, and that our thorough data collection procedures have contributed to a high degree of both validity and reliability.

The study also makes practical contributions. For example, a question of concern to both national leagues and transnational football associations is the design of effective broadcasting revenue distribution models. For the domestic leagues, it is important to monitor the competitive balance of the league, in order to ensure that there is enough unpredictability and excitement to generate fan interest. At the same time, domestic competitive balance has to be set against ensuring that the top-performing domestic clubs are competitive at the international level.

Limitations and further research

As is the case with any research, there are several limitations which should be acknowledged and taken into account. Consequently, our findings should be interpreted with caution. First, it can be argued that it is difficult to isolate the effect of broadcasting revenues on sporting success. For example, for some clubs other types of revenues such as sponsorships may be of even greater importance than TV deals. Even though the English Premier League broadcasting revenues are distributed in a relatively uniform way, the large clubs still generate more revenues than the smaller clubs due to more lucrative sponsorship deals, greater ticket sales and so on.

Second, some of the variables in our study lacked the necessary data for certain periods of the observed seven-year period. Missing data were dealt with in different ways. If the missing observations 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 observations belonged to small clubs which were typically relegated, and accordingly excluded from our dataset, we decided to completely omit them.

Third, when splitting the observation span into cycles, our subordinate regressions provided us with somewhat inadequate results. The reduction in sample size increases the estimation uncertainty in our regressions, and ultimately limits the significance of the independent variables. The last cycle only contains observations from one season, which admittedly leads to a small sample size. If the last cycle were to be expanded to include more seasons, this could have affected the results, since the English clubs achieved great international success in the 2018-2019 season.

After considering the limitations mentioned above, it is still our view that the study provides several opportunities for future research. As several of the upcoming non-English TV deals mimic the distribution structure of the English model, the differences in allocations of broadcasting revenues between clubs can be expected to decrease in the future, which may help increase the internal competitiveness of the different leagues. Future studies may investigate how the enhanced internal competition affects non-English clubs' domestic and international sporting success, and whether the adoption of a more uniform distribution model by the other leagues will influence English clubs' international sporting success.

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