Junior Management Science 3(1) (2018) 16-37

Junior Management Science

journal homepage: www.jums.academy

Revenue Sharing in European Football: An Assessment of the Bundesliga's New Four-Pillar Model

Niklas T. Bretschneider

Otto Beisheim School of Management

Abstract

This thesis assesses the Bundesliga's recently introduced TV revenue sharing system. Despite the prominent literature discussing the relationship between revenue sharing in team sports and competitive balance, evaluations of specific distribution systems are limited. Hence, very little is known about the repercussions of different allocation keys on leagues and clubs. Contributing to the sports economics literature, this thesis examines the key decision factors that influence the effectiveness of revenue sharing systems, and analyses the feasibility of the Bundesliga's reformed system.

It starts with defining the new system, before introducing its background and a brief history of revenue sharing in the Bundesliga. Then this thesis sketches the most important concepts in sports economics, i.e. competitive balance and demand, before pointing out interdependencies between them. Afterwards, revenue sharing is introduced as a means to enhance competitive balance, including a brief description of alternative mechanisms. To compare the new model externally, revenue sharing models of other major sports leagues are presented. Finally, it evaluates the Bundesliga's current situation in order to comprehend the league's potential objectives. The thesis discusses possibilities on how revenue sharing can help the Bundesliga achieve those objectives, and ultimately assesses the new system's feasibility in doing so. After modelling the league's potential reaction to different revenue sharing models, its result is that the four-pillar model features several useful mechanisms, but does not give sufficient weight to them. The thesis' assessment consequently is that the reformed system can be generally seen as positive, with room for further enhancements. It concludes with some starting points for potential future improvements, namely (1) increasing the equally-distributed share, (2) scaling up the new pillars' relative importance and mitigating the danger of an overdominant team, and (3) implementing a top-to-bottom maximum payout cap.

Keywords: TV Revenue Sharing, Four-Pillar Model, Bundesliga, Football, Soccer, DFL

1. Introduction

1.1. Relevance of Topic

In 2016, the Bundesliga, Germany's prime football league, announced a reform of its existing revenue sharing system. Contrary to basing revenue allocation mainly on past performances, the new system also considers "softer" factors such as sustainability and work with young talents. The new system was introduced as a result of persistent discussions between the various stakeholders, and its introduction led to controversial opinions and emotions. This paper aims at assessing the quality of the new revenue sharing system, in order to be able to make a final judgement on whether it is an improvement to the incumbent mechanism. As TV revenue is one of football clubs' primary sources of income, a fair and rational sharing system is essential for positive development of the teams and the Bundesliga. Future international competitiveness of both clubs and the league is highly dependent on the economic development of the Bundesliga itself. Therefore, it is crucial for all stakeholders to assess whether the recently introduced model is a step in the right direction, or a threat for future growth.

1.2. Objective of the Thesis

The 0verall objective of this thesis is to answer whether the Bundesliga's new TV revenue sharing model is an improvement to the old system, and feasible for reaching the league's objectives. Furthermore, the thesis aims at discussing potential room for improvement of the mechanism, while suggesting clear starting points for enhancements. Finally, the assessment will determine the effect of the reform on the league's clubs, depending on their current competitive situation. In addition, this thesis gives overviews of the

DOI: http://dx.doi.org/10.5282/jums/v3i1pp16-37

most relevant concepts and topics in sports economics and revenue sharing in professional team sports.

This thesis is the first academic work that specifically deals with the implications and feasibility of the Bundesliga's new revenue sharing mechanism. Additionally, it refers to the Bundesliga's current situation and strategic aims, making it highly up to date and relevant for the Bundesliga's decision makers. Hence, it represents an innovative contribution to the sports economics literature, and supplements the leading theoretical works in this area by a practical application.

1.3. Outline and Method of the Thesis

After introducing the new revenue sharing model and its background, this thesis will discuss the key concepts used in sports economics, including relevant literature on these topics. Subsequently, the different forms of revenue sharing common in professional team sports are presented to reveal their workings and implications. Additionally, the prevalent revenue sharing systems in several international football and sports leagues are introduced to create opportunities for external benchmarking. This thesis then assesses the Bundesliga's new revenue sharing model by analysing the system's capabilities to contribute to the league's strategic development. For this, three strategic aims for the league are developed based on the Bundesliga's current situation. Furthermore, the thesis introduces a theoretical model which is used to describe movements in competitive balance based on different revenue sharing models. Finally, some starting points for possible future improvements of the system are discussed.

1.4. Limitations of the Thesis

One of the main limitations of this thesis is the lack of time between its creation and the introduction of the new revenue sharing system. This makes it difficult to find empirical evidence regarding the actual effectiveness of the reform. Therefore, the thesis focuses on potential qualitative implications of the new model rather than data-based findings of the reform.

Additionally, the literature on the specific topic of revenue sharing in the Bundesliga is limited. This could prove problematic as the studies and papers this thesis is based on are mostly not specifically related to the Bundesliga. As sports leagues usually differ in several aspects such as consumer preferences and league structures, uncertainty regarding the full transferability of findings from other leagues exists.

2. The Bundesliga's New Revenue Sharing Model

2.1. Chapter Overview

Following an introduction of the Bundesliga's new revenue sharing model, including the specific manner of functioning and information on the formation process, this Chapter highlights the historic development of revenue sharing in the Bundesliga. Furthermore, the interests of different key stakeholders of the new system are exposed, which will finally be used to assess the feasibility of potential reforms.

2.2. Definition

In November 2016, the Deutsche Fußball-Liga (DFL, German Football League) announced the redesign of the national revenue sharing model in the Bundesliga (DFL (2016)). Contrary to the previous model that only included two criteria, the new model covers four pillars (cf. Figure 1). The new model will become active with the start of the 2017/18 Bundesliga season, while the recently signed TV deal starts in that season as well. An overview of the TV revenue distribution (according to the existing model) for the 2016/17 season can be found in the Appendix (cf. Figure 2) for illustrating purposes. The redesigned system will be introduced in the following.

The major pillar with 70% of national revenues is Performance (pillar 1) (DFL (2016)). All 36 clubs in the 1. and 2. Bundesliga are evaluated based on their domestic competitive performance in the last 5 years. More recent years are weighted more heavily (ratio 5:4:3:2:1) and table placements are added up to a five-year ranking, separately for the 1. and the 2. Bundesliga. The leading team of the 1. Bundesliga ranking receives 5.8% of national revenues, while the last team receives 2.9%. Similarly for the 2. Bundesliga ranking, the first team receives 1.69%, while the last team gets 0.75%. This pillar aims at rewarding competitive success of the league's clubs.

Pillar 2, Competitive Sustainability, is one of the new criteria that is introduced with the start of the 2017/18 season. The performance of all 36 1. and 2. Bundesliga clubs over the last 20 years is consolidated with an equal weighting. 5% of national revenues are distributed based on this single ranking for both leagues. This criterion aims to value the long-term contribution of a club to the development of the Bundesliga.

The third criterion, distributing 2% of national revenues, is Young Talent (pillar 3). It will be introduced with the 2017/18 season as well. Revenues are allocated proportionally to the minutes that a club used players aged 23 and under in any Bundesliga game[1]. Only players, who were trained in Germany or joined a club in Germany before the age of 18, are considered for this pillar. Hence, this pillar aims to motivate clubs to focus on the development of youth players.

Another major pillar is the final criterion, Competition (pillar 4), with a share of 23% of national revenues. Similarly to pillar 1, the competitive performance of the clubs is evaluated based on the last 5 seasons. In comparison to pillar 1, all 36 clubs are consolidated to a single ranking. Furthermore, the exact revenue percentages of table positions differ, in order to boost attractiveness in different table regions. As an example, the first six clubs in this ranking receive the same share of national revenues. Pillar 4 rewards clubs who perform well, making its intention similar to the first pillar.

The model for the distribution of international revenues, meaning revenue based on demand from abroad for the Bundesliga and not revenues from participations in international competitions, is based on three pillars (DFL (2016)). Firstly,

[1] Excluding extra time and relegation games

one quarter of revenues is distributed equally to all 1. Bundesliga clubs, regardless of their participation in an international competition. Secondly, 50% are distributed according to a five-year ranking in which the achieved points proportionally determine the share of revenues. Contrary to the established UEFA five-year ranking[2], there are several modifications to the ranking such as the omission of bonus points for achievement of group phases. Finally, the remaining 25% of international revenues are distributed proportionally according to the participation of clubs in the Champions League and Europa League, with one participation being worth one point. Although 2. Bundesliga clubs normally do not participate in international competitions, an amount of € 5 million is allocated to this league starting with the 2017/18 season[3]. This displays a strong surge in the stake of the 2. Bundesliga, as the previous model only provided € 1.8 million per year to this league.

2.3. Background

The new revenue sharing model was introduced few months after the DFL signed the most valuable TV contract in the history of the Bundesliga. Consequently, the German professional clubs will receive € 4.6 billion over the next four seasons, starting with the 2017/18 season. Mr. Rauball, president of the DFL, stated that the new contract would generate significant additional revenues for all clubs (Sportschau (2016)). Additionally, he predicted that the new revenue sharing model would be in the interest of media partners and spectators in the stadiums and at home, as it promotes an attractive competition. Finally, Rauball said that, despite different interests of the clubs, the new model connects a merit principle with solidarity, including a long-term orientation through a focus on work with young talent and sustainability.

There were some controversial discussions in the creation process of the new model. While several clubs endorsed the existing performance-based revenue sharing model, a unity of 1. Bundesliga clubs called Team Marktwert ("Team Market Value") emerged before the DFL's decision regarding its new allocation system (Ashelm (2016)). This coalition of six clubs (Eintracht Frankfurt, Werder Bremen, Hertha BSC, Hamburger SV, 1. FC Köln, VfB Stuttgart) aimed to promote a sharing model that covers market value-based criteria[4], including "soft factors" such as TV viewing figures, fan bases and social media interaction rates. Team Marktwert argued that clubs with huge fan bases and long traditions drive the global popularity of the Bundesliga brand and interest in the league. They concluded that a redesign of the model towards a more market value-based one would make the distribution "more fair and modern" (Sportschau (2016)). As all members of the initiative are Traditionsvereine ("traditional clubs"), they would profit from such a redesign, while clubs with less tradition and smaller fan bases such as 1899 Hoffenheim or RB Leipzig would suffer financially.

While Team Marktwert was one of the main drivers for a more market value-based model, there were also several critical voices regarding their idea. Christian Heidel, back then manager of Mainz 05, argued that such a redesign could prevent smaller clubs from the 2. Bundesliga to establish itself in the 1. Bundesliga (Evelt (2016)). Other critics claimed that Team Marktwert only raised those demands as they mismanaged their clubs for several years and, as a result, needed more income to become top clubs again. Clubs like Borussia Dortmund and Borussia Mönchengladbach, that have large fan bases and long league belongings as well, manage to be successful without special financial aids. Therefore, critics say that the claims of Team Marktwert are mainly based on self-interest, and not on objective considerations.

Top clubs like Bayern Munich hold the opinion that revenues should be distributed with an even higher focus on competitive success. These clubs have the concern to lose their international competitiveness, as clubs from leagues like the English Premier League continue to have surging TV revenues (cf. Figure 3). Although the Bundesliga's new record TV contract yields about € 1.15 billion per season, the Premier League outshines this figure with a revenue of about £2.9 billion per season (Harris (2016)). As a consequence, Mr. Rummenigge, chairman of Bayern Munich, stated "we are happy to participate in any discussion regarding solidarity, as long as it does not endanger our international competitiveness" (DKB (2017)).

After continuous discussions regarding this matter, the DFL finally decided to not include any market value-based criteria in their new sharing model (DFL (2016)). The official reasoning was that the establishment of "criteria such as number of fans and TV viewing figures [...] would have caused difficulties regarding measurability and comparability". The decision can be seen as positive for top clubs and clubs with short league belongings, while traditional clubs, especially Team Marktwert, could not enforce their claims.

Overall, the majority of clubs, including members of Team Marktwert, reacted positively to the announcement of the new model (Mitteldeutsche Zeitung (2016)). Mr. Watzke, CEO of Borussia Dortmund, stated: "I think it is a good compromise. Sustainable performance is rewarded, as it should be. It is a good signal". Mr. Filbry, Chairman of the Board at Werder Bremen, said "The DFL's decision leads to a modern and fair allocation. [...] We can be satisfied". Hertha BSC Berlin's manager Mr. Preetz argued "It is a huge challenge to ensure a balanced distribution. [...] Overall, we are happy". Although most opinions on the reform were generally affirmative, some voices raised criticism regarding the exact workings of some of the model's pillars. As an example, Mr. Hellmann, board member of Eintracht Frankfurt, explained that "The criterion of Bundesliga belonging [pillar 2] is only backward-looking. Therefore, we are not optimally satisfied with the choice of criteria".

[2] The UEFA five-year ranking measures the success of a league's clubs in its competitions Europa League and Champions League, and allocates a league's starting places for both competitions accordingly

[3] Increasing by € 1 million every year thereafter

[4] It is important to note that market value in this context relates to demand for a team from spectators, and not to the market value of a club's players

2.4. Historic Development of TV Revenue Sharing in the Bundesliga

Before the DFL introduced the new four-pillar revenue sharing model, TV revenues of Bundesliga clubs were distributed according to a simple formula: 80% of revenues were allocated to the 18 clubs in the 1. Bundesliga, while the remaining 20% were allocated to the 2. Bundesliga clubs (DPA (2016)). Within the leagues, clubs received a fixed basic amount and a variable share that is based on competitive performance in the last five years, with the most recent year being the most important factor[5]. Through this system, clubs could only maximize their revenue share by increasing their table standings.

Prior to the 2001/2002 Bundesliga season, the TV revenue allocation was rather unsophisticated and all clubs, no matter how well they performed, received an approximately equal share of the sale of the TV rights (Quitzau (2015)). With the start of that season, the allocation was firstly based on performance, introducing a system in which well-performing clubs receive a larger revenue share and vice versa. This development was the result of increasing earnings through TV commercialisation (cf. Figure 4), as the larger clubs, that suffered from a growing implicit loss of revenue due to the collective sale of TV broadcasting rights (TV revenue sharing), became increasingly unsatisfied.

The Bundesliga was first broadcasted on TV, when the Sportschau started to show summaries of Bundesliga games, after paying a fee of DM 0.65 million in 1965 (Landwehr (2015)). After an increasing popularity of Sportschau Bundesliga broadcasts, leading to a TV deal of DM 10 million in 1988, the private TV Channel RTL acquired the rights for three years of Bundesliga broadcasting for DM 135 million. While this deal already meant a great financial enhancement for the Bundesliga, another private TV channel, SAT.1, improved the situation even further through paying a sum of DM 700 million for a five-year deal starting in 1992. The pay TV channel Premiere broadcasted the first conference broadcast in the 2000/2001 season, investing DM 355 million solely for that season. After economic difficulties of several broadcasters in the following years, the Sportschau rose again as a relevant Bundesliga show and Sky, formerly Premiere, continued to grow. This development ended with the record TV deals of the last years, primarily driven by ARD (Sportschau) and Sky.

3. Key Concepts in Sports Economics

3.1. Chapter Overview

In order to be able to assess whether the new TV revenue sharing model in the Bundesliga is feasible, it is necessary to understand the concepts through which the system can be evaluated. In the following, several relevant academic works regarding these ideas are introduced, to highlight peculiarities of the sports business and interdependencies between our key concepts. This Chapter will finally be used to determine potential effects of the new revenue sharing system on competitive balance and demand within the Bundesliga.

3.2. Competitive Balance

3.2.1. Introduction

Competitive balance is one of the main concepts in sports economics. It describes the balance of playing strengths as well as game outcomes in professional sports competitions. The higher the uncertainty of outcome of a match or season, the higher the competitive balance. It is often argued that competitive balance is one of the main drivers of demand for a match, as spectators generally perceive tense matches with high outcome uncertainty as more attractive than clear "David vs. Goliath" matchups. Zimbalist (2002) described the issue with competitive balance in the following way: "Competitive balance is like wealth. Everyone agrees it is a good thing to have, but no one knows how much one needs". Sports leagues are businesses who sell competition on the playing field (Fort and Quirk (1995)), so it makes sense that competitive balance is one of the main drivers of fan interest and financial success. Sanderson and Siegfried (2003) stated that, at the time of their paper's release, competitive balance was the issue that received most attention, out of all controversies in baseball. This confirms the large importance of the topic in sports economics.

Research in the area of competitive balance is mainly focussed along two areas: Analysis of Competitive Balance (ACB) and Uncertainty of Outcome Hypothesis (UOH) (Fort and Maxcy (2003)). ACB aims at explaining "what has happened to competitive balance over time or as a result of changes" in the organization of professional sports leagues. On the contrary, UOH research tries to explain the effect of (changes in) competitive balance on fans and demand. Simply put, UOH measures fan welfare, while ACB tracks competitive balance itself. These two areas of research are "(weak) complements": A change in competitive balance found by ACB studies might imply an important movement for UOH research. At the same time, a change in spectator behaviour measured by UOH studies does not necessarily require a change in the actual competitive balance, measured by ACB research. According to Fort and Macxy, it is essential to pursue both ACB and UOH research, as this is the only way to understand the relationship between competitive balance and the business approach of sports leagues, as well as the effect of competitive balance on fans and spectators.

The theoretical developments regarding competitive balance are mainly based on few key sources. After Rottenberg (1956) and El-Hodiri and Quirk (1971) built a basis for further research, Fort and Quirk (1995) reviewed these early works, and Fort and Maxcy (2003) gave an introduction to existing works in the field of competitive balance.

Rottenberg's 1956 article in the Journal of Political Ecomomy (Rottenberg (1956)), the starting point for most of sports economics literature, found that, while a sports league is definitely an industry with uncommon features, it generally can be treated as a normal economic industry. He found

[5] Weighting 5:4:3:2:1, with 5 being the most recent season

that the competitors, in essence sport clubs, have to be of approximately equal size and strength in order to be successful, which is "a unique attribute of professional competitive sports". Rottenberg discusses competitive balance as he states that "Teams [...] usually prefer winning to losing. [...] They [...] prefer winning by close margins. If their market behaviour is consistent with this objective [...] playing talent will be [...] equally distributed among teams". This observation shows that a team does not necessarily wants to maximize its own strength in order to maximize its own utility, as an overdominant team would be rather unappealing to a spectator who cares about tense competition (Louis-Schmelling Paradox, Neale (1964), see Chapter 3.5). In other words, competitive balance matters in the design of sports contests. Although free markets are extremely unlikely to produce a league with equal playing strengths, Rottenberg argues that free markets are likely to produce the same results as other market forms, while maximizing total welfare. Therefore, Rottenberg recommends a free market as optimal design for a professional sports league. He implies that, regardless of whether the league's owner decides to intervene using competitive balance measures, the same talent allocation results. This finding is one of the major discussion points in sports economics and referred to as Rottenberg's Invariance Principle (IP).

Several works discuss the practical validity of the IP, such as Fort et al. (2016). Fort et al. found ambiguous results after analysing empirical datasets of different leagues and regions: In some cases, the IP holds, while in other cases, the IP can be rejected. These results depend on the observed league and the respective measures used to enhance competitive balance. As no clear answer to this issue was found yet, there is room for more research in the field of Rottenberg's Invariance Principle. Rottenberg's considerations were challenged by several works in the past, such as Sloane's 2006 paper "Rottenberg and the Economics of Sport after 50 years" (Sloane (2006)). Sloane points out that, although Rottenberg's thoughts contributed significantly to the development of sports economics, some assumptions do not hold (anymore) in today's sports world, meaning that a reassessment is required. Examples are an overestimation of the importance of gate revenue, the questionable assumption that competitors are of equal size, and the practicability of two league models. Therefore, Rottenberg's initial article should be critically challenged when using it to model today's world.

El-Hodiri and Quirk (1971) found that, based on their approach to an economic model of a professional sports league, sports leagues do not seem to converge towards an equalization of playing strengths. In their opinion, such an equalization would be possible in the case of generally equal revenue potential of all clubs – a condition that is not fulfilled in the majority of sports leagues, as clubs are based in territories with different populations. They suggest implementing rules that let a league converge to equal playing strengths, e.g. a prohibition of player sales. However, El-Hodiri & Quirk also acknowledge that previous attempts in this area did not show significant signs of success in the equalization of playing strengths and, therefore, the enhancement of competitive balance. Another important finding of their paper is that "equalization of playing strengths is generally not consistent with profit maximization by teams". Consequently, clubs and leagues must find the right trade-off between optimizing profit and optimizing competitive balance, as those measures are mutually exclusive.

In their article "Cross-subsidization, Incentives and Outcomes in Professional Sports Leagues", Fort and Quirk (1995) discuss issues when thinking about competitive balance. Their findings are based on the fact that different clubs in the same league normally have strongly varying revenue potentials, leading to a convergence to unequal playing strengths and a decreasing competitive balance. Fort and Quirk discuss different opportunities of cross-subsidization, e.g. salary caps, the rookie draft, gate and TV revenue sharing, and their feasibility in increasing competitive balance while not harming the profit of any club. Their findings show that the majority of measures to improve competitive balance, such as substituting the reserve-option clause with free agency in Baseball, do not affect competitive balance. These measures usually also affect the distribution of profits within the involved league, which is problematic, as it is difficult to find a consensus in such a situation with profit-maximizing clubs. Although they highlight salary caps as mean to increase competitive balance while offering benefits to all involved teams, Fort & Quirk state that this measure is "inconsistent with league wide revenue maximisation", leading to an enforcement problem of the respective league. They conclude that an enforceable salary cap is the only feasible cross-subsidization mean that is currently in use.

3.2.2. Differences between American and European Sports Leagues

As discussed in Fort & Quirk's article, finding the right measures to increase competitive balance, while not financially disadvantaging teams and staying consistent with league wide profit optimization, is difficult. Which measures are feasible in the respective situation is highly dependent on the general league structure. Leagues can be generally clustered in two main types: American (closed) and European (open) professional team sports leagues (Andreff (2011)). They differ in the fact that closed leagues do not allow promotion and relegation and therefore have a market entry barrier, while open leagues are theoretically accessible by every team in inferior leagues through promotion. American leagues have several "institutional and legal peculiarities" (Dietl et al. (2012)), such as collective bargaining, cooperative-like league forms and a high degree of league autonomy. Additionally, if we compare the example of US-American and European sports leagues, another important difference between them are competing leagues. US-American leagues normally have a monopoly: There is one relevant league (e.g. NFL, NBA) that covers a large geographic area (USA, 325 million inhabitants (US Census Bureau (2017))), while there is no other league globally with a similar scope. In comparison, European sports leagues (e.g.

Bundesliga, Premier League) usually cover a single European country (e.g. Germany, 83 million inhabitants (Destatis (2017))) and have competing leagues in their direct geographic neighbourhood. Leagues in the European systems often are in direct competition as they try to sign players from each other, compete in continent-wide competitions (e.g. UEFA Champions League) and generate (broadcasting) demand from each other's countries. More detailed information on the differences between the two league types can be found in Andreff (2011) "Some comparative economics of the organization of sports". Overall, academics see the differences between these league systems as "interesting economic question as to which system achieves better results" (Rosen and Sanderson (2001)) – a question, that has not been fully answered yet.

The difference between those systems has a direct and significant impact on the feasibility of measures aiming to enhance competitive balance. While American leagues can implement measures such as salary caps, competitive balance tax and player drafts relatively easily, European leagues "suffer" from the fact that they are governed by a national soccer federation (e.g. DFL), but compete internationally. If the Bundesliga would decide to implement salary caps as mean to equalise team strengths nationally, it would voluntarily impose a new constraint, in this case a maximum salary, on clubs. If a German club now negotiates with an international top player, as it is likely that a profit-maximizing player will move to a club in a league without the constraint, as this club would still be in the position to pay a salary above the German cap. It is therefore hard for European leagues to implement most of the conventional competitive balance measures, as these measures automatically reduce international competitiveness of the league. Meanwhile, league authorities of American leagues can implement mechanisms like salary caps more easily through their monopolistic standing. Clubs do not suffer from the problem that a top player would move to a different league to earn more money, as there are normally no other economically relevant leagues in their sport. Consequently, the already hard task of finding means to increase competitive balance in a league is even harder for leagues that follow a European, open league structure. An overview of the most common measures to enhance competitive balance can be found in Chapter 4.

3.2.3. Measuring Competitive Balance

There are several approaches to measure the actual degree of competitive balance in a professional sports league. The most prominent and widely regarded as the most useful measure is the standard deviation of team winning percentages within a season, used in works such as Fishman (2003) and Besanko and Simon (1985). However, this measure is constrained by some downsides, as elaborated in Owen (2010) paper "Limitations of the relative standard deviation of win percentages for measuring competitive balance [...]", such as a variable upper bound that makes cross-league comparisons hard.

The degree of competitive balance may also be measured by the deviation of the Herfindahl-Hirschman Index (dHHI) from the "most equal distribution of wins" (Larsen et al. (2006)). This index is mathematically related to the standard deviation of wins, and is a common measure in several industries to examine market structure. The Herfindahl-Hirschman Index (HHI) itself is defined as quadratic summation of all firm market shares in an industry. The case that a team wins exactly half of its games, meaning perfect competitive balance, results in an dHHI of zero. However, the dHHI suffers from the same bias as the adjusted Gini coefficient, as the upper bound of the dHHI is usually not attainable in a sports league. Nevertheless, the dHHI is a popular indicator used to track competitive balance.

Besides the indicators just discussed, there is a large variety of other indicators, measuring competitive balance in difference ways (Roland Berger Strategy Consultants, & University of Tübingen (2013)). They can be generally structured in long-term or inter-seasonal ones (e.g. H index), medium-term or intra-seasonal ones (e.g. UCS measure) and short-term or individual ones (e.g. Theil index). A combination of all types results can be used to compare competitive balance in different leagues objectively.

3.3. Demand

3.3.1. Introduction

The core product of a professional sports league is the game itself, including what happens on and off the field and the manner the contest is conducted (Borland and MacDonald (2003)). As most teams engage in a yearly tournament where every team plays against each other, another product of the game is created: a sports league. The league does not only represent the sum of all games, but also other elements, e.g. non-saleable externalities such as the league standing effect[6]. The essence of demand for a game or a sports league is fan interest, a force that is expressed by watching or listening to games in the stadium or away, live or delayed, regularly or erratic. Fan interest is also reflected by the purchase of products related to the game: merchandising products, gambling or products of sponsors. The utility that fans obtain from these actions can be generally divided in two categories. Firstly, identification with a team, founded on a geographic or emotional connection, which undisputedly enhances fan interest. Secondly, the quality of the contest, driven by extraordinary physical or mental ability of the players and uncertainty of outcome.

One has to differentiate between direct and derived demands for sporting contests (Borland and MacDonald (2003)). Direct demand describes the case where a consumer derives value from the sporting contest, in form of live attendance at a match or demand for watching matches on a pay-per-view (PPV) basis. Derived demand is a more complex topic, as it includes the demand of broadcasters seeking input of a game to produce shows, organizations

[6] Describing the effect that the demand for a match is higher, when table standings are closer

seeking opportunities to market their products or enhance their brand name or governments seeking economic activity to attract tourists to the country.

According to Borland and MacDonald (2003), "understanding about the nature and determinants of demand is arguably the most important empirical issue in analysis of professional sporting markets". The objective of most teams is to maximize profits or competitive success. To achieve this, it is a crucial factor to maximize team revenue, which is often driven by demand and fan interest. Therefore, most objectives of sports leagues can be reduced to the objective of maximizing fan interest, showing that demand is an essential factor for most decisions being made by sports teams.

3.3.2. Determinants of Demand for Attendance

The economic theory of demand for attendance at professional sports matches is based on a consumer-theory model, where the consumer chooses a consumption bundle that maximizes utility, while under a budget constraint. Applying this theory suggests five main categories of determinants for demand for attendance, which will be introduced in the following (Borland and MacDonald (2003)).

Consumer Preferences fundamentally determine the demand for attendance at sporting competitions. Demand increases with the quality-adjusted quantity consumed, meaning that the spectator will gain more utility when visiting more games, when his favoured team wins, the stadium is sold out (bandwagon effects) or he has a habit of visiting matches (team loyalty).

Economic factors can be generally split in personal and macroeconomic factors. Factors such as the price of admission, opportunity costs and the spectator's income play an important role in the decision-making progress of whether to attend a match or not. Another important aspect are substitutes – a person can substitute attending the game directly by watching the game on TV, or indirectly by other forms of entertainment, such as visiting a cinema. Macroeconomic factors rather determine the overall pool of attendance at a game: factors like the rate of unemployment and size of population drive the overall attendance at a match.

Quality of viewing describes the venue where the match takes place, taking into account factors such as quality of seating, weather conditions, placement of seating, as well as the timing of the match.

The characteristics of the sporting contest are some of the most important demand determinants. This factor includes the success of the teams playing in a match, the quality of the match, uncertainty of the game outcome and significance of the contest. Consequently, fan interest increases when e.g. successful teams are playing, the players' skill is high, the matchup is even and the game is decisive, as in a tournament final or derby[7]. Uncertainty of outcome can be divided into two drivers of fan interest: Firstly, intra-seasonal uncertainty is expressed for instance through an even degree of team winning percentages at a point in a season, meaning that more teams are likely to still reach the playoffs or international qualifying positions. Secondly, inter-seasonal uncertainty of outcome describes the "extent of turnover in the identity of teams" (Borland and MacDonald (2003)) which win titles or participate in tournaments. Schreyer et al. (2016) showed that season ticket holders indeed react favourably to a high uncertainty of outcome. However, Buraimo and Simmons (2015) found that there is no significant long-term impact of outcome uncertainty on demand, but a preference for increased talent, a "preference for [...] entertainment delivered by superstars". We can observe that the findings regarding the significance of several parts of this demand determinant are partly contrary, and leave room for further research (see Chapter 3.5).

The last determinant of attendance is supply capacity, which relates to the actual capacity of the stadium or venue. While desired attendance is lower than stadium capacity, it is equal to actual attendance, but as soon as it is larger, there is a capacity constraint on attendance, leading to a lower actual than potential attendance.

Scelles et al. (2013) tried to determine drivers of demand through a differentiation of competitive balance and competitive intensity. While they defined competitive balances as equilibrium between teams in a league, leading to uncertainty of outcome, they introduced competitive intensity as additional criterion. According to them, the latter relates to the prizes distributed to the contest and the stakes of the match. As an example, a game of a top team against a bottom-of-the-table team, that decides whether the top team will win the championship, would have a high competitive intensity while having a low uncertainty of outcome. Cup competitions, playoffs and relegation matches are other examples for games with high competitive intensity. Based on data of attendance at Ligue 1[8] games, they found that competitive balance does not significantly impacts demand, while the effect of competitive intensity is significantly positive. Their findings show that the severity of the game outcome should always be considered in addition to "traditional" competitive balance, when analysing demand for attendance at football games. Although it is likely that this relationship is a general one, it is not entirely clear whether these findings also fully hold in other leagues and, more importantly, for TV broadcasts.

3.3.3. Effects of TV Broadcasts

While these determinants are important drivers of demand for attendance, one must consider that demand for a sports league is not only driven by physical attendance, but even more by demand for broadcasting. For broadcasting, such as live TV conferences, factors like quality of viewing and supply capacity only play a tangential role. At the same time, there is evidence that some factors play a more important role in the context of TV broadcasts, such as uncertainty of outcome, which significantly attracts (Schreyer

[7] Synonym for a match of two local rivals

[8] Prime French Football League

et al. (2016)) the "couch potato audience" (Forrest et al. (2005)). In the last years, the television audience for many sports leagues became so big that it "dwarfs that in the stadium" (Forrest et al. (2005)), which is reflected in constantly rising player salaries and the fact that teams gain more revenue from TV than from physical attendance.

The exact effect of TV broadcasts on physical attendance has been discussed in several academic works. There seems to be an asymmetric effect between both forms of demand: physical attendance positively influences TV demand, while broadcasting negatively influences physical demand (Buraimo (2008)). It is important to distinguish between season ticket holders (STHs) and pay-at-the-gate spectators (Allan (2008)), as the latter are less likely to attend a large number of games in a season, and is likely to be more sensitive to match factors than STHs. Furthermore, it is useful for further analysis to split the pay-at-the-gate group into home and away spectators. According to Allan, STHs tend to be loyal supporters that attend matches independently of most external factors. On the contrary, pay-at-the-gate spectators seem to be significantly affected by TV broadcasting of the respective match. Empirical data suggests a reduction of approximately 30% of attendance through the broadcast, while this figure only counts for home pay-at-the-gate supporters, with away supporters being uninfluenced despite their higher cost of attendance. A possible explanation for this is that away supporters are above-average loyal and are often STHs themselves for their respective home matches. The reduction of attendance through TV broadcasting plays an important role for the home team. It does not only lose a significant share of ticket revenue, as merchandising revenues, which are mainly driven by pay-at-the-gate spectators, decrease as well. Nevertheless, clubs normally receive higher incomes through TV broadcasting, which may neutralize the effect described before. While the effects found by Allan were based on data from the Scottish Premier League, it is likely that they hold for most other sports leagues as well. Forrest et al. (2005) showed that "the whole of the variance in [...] demand models comes from those who pay for tickets on a game-by-game basis", confirming Allan's findings.

As this implies that STHs represent the majority of "reliable demand", it seems like renewal of STHs' tickets should be one of the main objectives for teams to maintain and increase demand for attendance at their games. McDonald (2010) found that "ratings of the on-field performance of the club are almost identical between those [STHs] who renewed and those wo did not". He also found that years of membership and number of games attended highly correlate with renewals of season tickets, which seems intuitive. As STHs "appear to value the connection they form with the club highly", which boosts satisfaction and reduces the probability of churning, clubs have to focus on building a loyal STH fan base to avoid churning season ticket amounts. The risk of losing a STH is highest in the first three years, especially the first, so special attention has to be paid to newly acquired STHs.

3.4. Interdependencies

Neale (1964) highlighted several peculiarities of sports leagues in comparison to traditional industries, which are important to consider when thinking about a league's revenue sharing system. His most relevant findings regarding this topic are briefly introduced in the following. The Louis-Schmelling Paradox describes the phenomenon that an overdominant team loses fan interest through boredom and low uncertainty of outcome. As an extreme example, if Bayern Munich buys every player in the Bundesliga, there are no opponents, no competition and no matches to earn income from. As a consequence, monopolies in sports leagues are not profit maximizing for the monopolist, contrary to other industries. This is based on the Inverted Joint Product, through which two firms (teams) create a product (the match) together. The Roger Maris Cobweb describes the fact that the demand for a team or player depends on the respective performance in the previous year. As an example, if a club surprisingly becomes league champion in a season, but performs averagely again in the season afterwards, the demand for its games will be higher than it would have been after a "normal" season. These phenomena are important to consider when thinking about the potential demand for a match or a league.

According to Borland and MacDonald (2003) paper on demand for sport, there are several interdependencies between demand and other factors surrounding a sports contest. Their first finding is that uncertainty of outcome, which is enhanced through competitive balance, seems to increase intra-seasonal and inter-seasonal demand. This is an important finding as demand is related to the majority of team objectives – leading to the consequence that competitive balance is also an important factor when trying to match a team's objectives. Secondly, a higher contest quality increases fan interest and attendance at the game, meaning that, as an example, a perfectly balanced amateur league is much less demanded than a perfectly balanced professional league. This relationship introduces a trade-off between competitive balance and quality of play in some situations: leagues must decide what to focus on in order to maximize demand. Their third finding says that quality of viewing strongly matters for attendance, while the fourth one states that there is a price sensitivity of spectators. Finally, Borland et al. found that TV broadcasts as potential substitute for attendance at a game might matter, although they acknowledged that more research is required to sketch out the exact impacts and relationships.

However, these findings are hard to generalize determinants of demand for sports as spectators can differ heavily in their interests and behaviour. As an example, Domizio (2013) found that the "Italian couch potato" does not seem to be significantly more interested in TV broadcasts of games with a higher outcome uncertainty. At the same time, Forrest et al. (2005) found that broadcasters and the TV audience tend to "favour matches [...] expected to be close". Schreyer et al. showed that both German season ticket holders (Schreyer et al. (2016a)) and German TV au-

diences (Schreyer et al. (2016b)) tend to prefer Bundesliga matches with a high outcome uncertainty. Additionally, German fans seem to slightly prefer those matches of the English Premier League that have a high uncertainty of outcome (D. Schreyer et al. (2016)b). These examples show that, while there are some overarching trends and coherences, audiences across the globe have their own oddities in viewing behaviour. Additionally, there are differences between the behaviour of audiences in stadiums and through broadcasting.

Cox (2018) attempted to build a consensus view on the question whether the uncertainty of outcome hypothesis (UOH)[9] should be rejected or accepted. His findings show that the UOH for physical stadium attendance can be refuted, which confirms the views of Forrest et al. (2005). Therefore, spectators attending the match in the stadium seem to favour certain outcomes. However, there seems to be a significant difference to the TV audience, as the UOH holds when analysing broadcasting audiences, again similarly to Forrest et al. (2005). Consequently, it is important to consider the potential movements in both physical and broadcasting demand when implementing means, such as a TV revenue sharing system, that aim at promoting competitive balance. As our conclusion primarily deals with demand from TV audiences, we assume that the UOH holds in this case.

In his 2001 paper, Szymanski analysed the consequences of a growing inequality of resources between clubs, which seems to be a persistent trend in the last decades. Based on his data set of English football, there seems to be a weak, but significant negative impact of growing inequality on attendance. This decline in demand is likely caused by declining competitive balance through growing gaps in financial resources. It is therefore important to note that an even league, both financially and competitively, is likely to maximize attendance. In 2003, Szymanski published his paper "The Economic Design of Team Sports Contests", in which he discussed several issues regarding professional team sports setups. He summarizes with the statement that "empirically, some fundamental issues remain unsolved", mentioning examples such as the impact of outcome uncertainty on demand and the optimal institutional design of team sports. However, he concludes that finding the "optimal design of a sporting contest [...] is not beyond the capabilities of the economics profession", showing that there is more useful research to be done in this field. Another important takeaway regarding competitive balance was found by Mourão and Teixeira (2015): "Everyone who is interested in enhancing the competitive balance of soccer leagues must devote particular attention to the dynamics of exogenous macroeconomic factors [...]". In other words: in every discussion concerning competitive balance, close attention has to be paid to external factors, as these are able to impair findings significantly.

[9] Saying that games with uncertain outcomes are more likely to be demanded by spectators

4. Means to Enhance Professional Team Sports Leagues

4.1. Chapter Overview

In the history of professional sports leagues, there has been an ongoing discussion regarding the appropriateness of different means to increase competitive balance and drive demand in a league. While an analysis of each mean is a topic on its own, the most prominent ones, with a focus on revenue sharing mechanisms, will be briefly introduced in the following. It is not clear whether these measures actually enhance competitive balance, as Rottenberg's Invariance Principle argues that such interventions do not affect a league's talent allocation, and, as a consequence, its degree of competitive balance. However, these mechanisms can still lead to interesting considerations regarding the appropriateness of revenue sharing mechanisms.

4.2. TV Revenue Sharing – Definition and Impact

TV Revenue Sharing is one of the most prominent competitive balance measures and is used by the majority of sports leagues worldwide. It describes the collective sale of broadcast rights of a leagues, e.g. to a broadcaster like Sky Sports. In contrary to a system where broadcasting rights are sold per team or per game, TV revenue sharing allocates the funds generated by the sale back to all teams in the league. This allocation usually follows a certain key, for example the Bundesliga's new four-pillar revenue sharing model. Exemplary criteria that are being used for this allocation are past competitive success, market-value based metrics and figures that measure the team's contribution to the development of the respective league. However, instead of using a special distribution key, some leagues distribute revenues equally to all clubs within the respective league. TV revenue sharing is seen as necessary measure in most leagues as the wealthiest and strongest clubs in a league usually generate well above-average spectatorship. The broadcast of matches of smaller clubs with substandard team strengths are usually not demanded in the same dimension. If every club would receive the TV revenue directly generated by them, larger clubs would consequently become even wealthier, drastically decreasing competitive balance in the league. It is therefore usually not discussed whether there should be a TV revenue sharing system, but how it should be designed. In their 1995 paper, Fort & Quirk concluded that "TV revenue sharing per se should have no effect on competitive balance", as payments to clubs do not depend on each team's competitive success in equally allocating systems. Szymanski (2003) summarized that revenue sharing has a neutral impact, confirming the Invariance Principle, explaining that the majority of research in this field has been done on the general feasibility of revenue sharing, while often ignoring the impact of different allocation keys. Thus, there are no well-known academic works on the impact of different revenue sharing systems yet, although the exact impact of this mean highly depends on the specific form that it is implemented in. Consequently, this thesis tries to serve as a starting point for further academic work in this field.

4.3. Gate Revenue Sharing – Definition and Impact

Gate Revenue Sharing describes the sharing of revenues directly generated through physical attendance of spectators at the stadium. Usually, the visiting team receives a fixed amount of the generated revenue, in contrast to the conventional model where the home team fully receives all ticket revenues. This measure aims at decreasing the advantage of having a large venue and populous territory, as smaller clubs with smaller fan bases get the chance to participate in the infrastructural advantage of larger teams. The measure is discussed controversially in academics as some works suggest that gate revenue sharing actually reduces the degree of competitive balance (Szymanski and Késenne (2004)), while reducing the total investment in talent by teams. However, some works related to the invariance principle argue that the measure does not affect the degree of competitive balance (Fort and Quirk (1995)) (Vrooman (1995)). The main difference in these contrary academic approaches is that those works, who could not find an impact of revenue sharing on competitive balance, took "a different assumption about the derivative of the contest success function". Therefore, it is still not entirely clear whether this mean actually enhances competitive balance. In practise, gate revenue sharing is used in several American sports leagues, such as the National F0otball League (NFL). In the Bundesliga, as usual in European football leagues, the home team receives almost all revenues generated through ticketing, meaning that no gate revenue sharing is practised.

4.4. Other Means to Enhance Sports Leagues

Salary Caps, one of the most prominent competitive balance measures, limit the total amount of salaries that a club can pay to its team to a certain amount. It also exists in the form of a per player salary cap, that limits the amount of salary a single player can earn per season. The rationale behind this is to balance out the overall salaries paid by all teams in a league and, therefore, even out playing strengths in the league. Academically, it is seen as one of the best means to enhance competitive balance (Fort and Quirk (1995)), however, it requires that there are no competing leagues as profit-maximizing top players would likely transfer to those leagues where their potential salary is not cut. Therefore, an implementation in a European type sports league is not likely to be successful in terms of maintaining level of play while enhancing competitive balance. In their 2012 paper, Dietl, Franck, Lang, & Rathke, confirmed this assessment, before suggesting a percentage-of-revenue salary cap as a possible compromise in European leagues. Based on their assumptions, such a model could help producing more balanced leagues, while decreasing aggregate salary payments.

Progressive Tax Rates are another mean aiming at enhancing competitive balance in a sports league. In contrast to a fixed tax rate, as it is used in most professional leagues at the moment, a progressive tax rate creates asymmetric changes in the marginal revenues or marginal costs of clubs (Van Der Burg and Prinz (2005)). The respective effect depends on whether the progressive tax is imposed on the sports clubs' revenues or their payroll, although both effects would increase competitive balance. As by Van der Burg's model, the resulting tax proceeds would not get redistributed to smaller clubs, as they would consequently have an interest in larger clubs employing more talent or earning more money. He found a progressive tax rate to be a superior method to enhance competitive balance, while the tax revenues generated can be used for other causes as an additional bonus.

4.5. Main Takeaways

After analysing the most common forms of means that aim to enhance competitive balance in professional sports leagues, we can infer some useful takeaways. Although almost every mean tries to make the wealthiest and strongest teams weaker (both financially and competitively), some means redistribute the obtained resources to smaller clubs, while others use them for investments in the league itself, not necessarily helping any clubs directly. A redistribution to smaller clubs intuitively makes sense, as the goal to enhance competitive balance requires both larger clubs becoming weaker and smaller clubs becoming stronger. However, such a redistribution mechanism results in an interest of smaller clubs in the economic and competitive success of larger clubs, which has the potential to be harmful for competition. As an example, if a smaller and a larger club both want to sign a certain player, and competitive balance taxes are active including a redistribution system, the smaller club has two choices. The club can either sign the player, or not sign the player and likely get a share of the larger club's excess salary spending through the tax. In the case that there is no redistribution system, the club can either sign the player, or not sign him, without any benefits. Therefore, a smaller club would have more incentives to outbid the larger club in a system without redistribution. However, a redistribution mechanism still reallocates funds from wealthier to poorer clubs, which can potentially increase a league's competitive balance. Hence, the exact impact of such a system is not entirely clear.

Another important learning is that sharing mechanisms in professional sports leagues can allocate funds to a league's teams in two ways. Firstly, they can be distributed based on equal shares for all clubs, which is a system commonly used in North American leagues. Secondly, funds can be allocated by performance-based criteria, also known as "prize-like elements" (Szymanski and Késenne (2004)), typical for European leagues. The exact impact of those sharing mechanisms highly depend on the chosen allocation system, which is a topic yet to be fully understood by academics.

5. Comparison of the New Model with Other Sports Leagues

5.1. Chapter Overview

This Chapter will be the foundation for an international comparison of the Bundesliga's new TV revenue sharing model. After covering the revenue sharing models of the Bundesliga's two large European competitors, Premier League and La Liga[10], as well as the US-American Major League Soccer[11], this paragraph also considers other sports leagues, namely the Handball Bundesliga[12] and National Football League[13]. The Chapter will serve as external benchmark for the assessment of the Bundesliga's new system to determine potential learnings from other sports leagues. To summarize, it concludes with an overview of takeaways from other leagues.

5.2. Revenue Sharing in the Premier League

The Premier League (PL), based in Great Britain and formerly known as Barclay's Premier League, is often given the title of the most popular football league in the world. While there are several factors that set the Premier League apart, such as a high quality of players, English as local language and unique stadiums, the PL is often praised for its high perceived competitive balance. It is a common opinion that "everyone can beat everyone" in the Premier League (T., 2015), partly driven by the fact that almost all teams feature several international star players. Another major reason for this high outcome uncertainty is the distribution of the revenues the PL receives through its large TV deals, such as the recently closed one for the 2016-2019 period (cf. Figure 3).

At the moment, the revenue distributed to clubs includes income from the sale of national and international central broadcasting rights and other commercial rights. The Premier League calls its allocation mechanism, which was signed by all initial clubs that formed the league in 1992, "the most equitable of Europe's major football leagues" (Premier League (2016)). This is proven by a ratio of 1.52 to 1 between the top and bottom finishing clubs in the 2015/2016 season, which is the lowest ratio in the history of the PL, and the lowest one of all major European football leagues (cf. Figure 6).

On UK broadcasting level, 50% of revenues are equally split between the 20 PL clubs. 25% are paid in merit payments, working as prize money per place in the table, which works as a performance-based allocation mechanism. The remaining 25% of UK broadcast revenue are paid in facility fees each time that a team's games are broadcast on TV[14]. All international broadcast revenue, as well as central commercial revenue, is split equally among all clubs, regardless of their participation in international competitions. An overview of the Premier League's allocation system for the 2015/16 season can be found in the Appendix (cf. Figure 5)

Based on the recently signed TV deal for the next three years, which consisted of approximately £5.5 billion of domestic revenue and £3.2 billion of international revenue (Totalsportek (2015)), ~37% of TV revenues come from international contracts. Therefore, the weighted average of total TV revenues that are allocated equally to all teams is ~68%[15]. Consequently, only 32% of the model are (somehow) based on performance-related metrics. This only weakly performance-based system boosts financial and competitive equality in the Premier League, hence enhancing competitive balance. As English (and international) spectators seem to care about a high uncertainty of outcome (Forrest et al. (2005), cf. Chapter 3.5), demand and fan interest are likely to increase as well. This again leads to even more profitable TV deals, building a logical loop that enhances club finances, competitive balance and demand (cf. Figure 10).

5.3. Revenue Sharing in La Liga

The Spanish football league La Liga, also referred to as Primera División and La Liga Santander, is one of the most successful football leagues globally. The league features two of the world's most prestigious football clubs, FC Barcelona (FCB) and Real Madrid (RM), and has been dominating European football in the last years. The league has the highest UEFA coefficient[16] at the moment, which has been permanently reflected in the international competitive success of Spanish clubs. In the last three seasons[17], both Champions League and Europa League were won exclusively by La Liga teams.

In the past, TV revenue distribution in La Liga has been extremely uneven: Teams had the right to negotiate their own TV contracts and consequently, top clubs generated much higher incomes than bottom-of-the-league teams (cf. Figure 6). The model was introduced with the 1997/87 season, and was a counter model to the systems used in other European football leagues, and the majority of sports leagues worldwide (McMahon (2015)). It finally led to widening financial gaps in the league, decreasing competitive balance and increasing the top teams' advantages even more. Even leading clubs, besides FCB and RM, suffered through this system: In 2015, Atletico Madrid, one of Spain's best teams, earned less TV revenue than the club who came last in the

[10] Chosen because of their strong commercial success, which indicates that the leagues are using feasible and demand-maximizing revenue sharing mechanisms

[11] Chosen because of the fundamentally different league system, that may serve as source for innovation

[12] Chosen because of the same geographical scope (Germany) and the subsequentely similar spectator base

[13] Chosen because of the fundamentally different league system and strong commercial success

[14] Each club is entitled to a minimum of ten facility fees per season (The Guardian (2012))

[15] £5.5/(£5.5+£3.2) * 50% + £3.2/(£5.5+£3.2) * 100% = ~68%

[16] The UEFA coefficient is a figure used to allocate participation slots for leagues, based on their past performance in international competitions, such as the Champions League

[17] 2013/14 to 2015/16

Premier League (Heckle (2015)). Consequently, several critics raised concerns about the feasibility of the league's revenue sharing system.

In 2015, La Liga's existing system was replaced through an intervention of the Spanish government, establishing a new system similar to the Premier League's model (McMahon (2015)). While 7% of both domestic and oversea revenues are reserved for several smaller causes[18] and 10% are transferred to Spain's second league, 83% go to La Liga teams. Within the amount allocated to La Liga teams, 50% are distributed equally among all teams, 25% are "merit money" based on how clubs performed in the last 5 years, and 25% of the sum are distributed based on resource generation ability of clubs. Additional consequences of the new system are a mandatory maximum ratio between the highest and lowest paid club of 4.5 to 1[19], as well as a provision that requires clubs to prioritize paying debts owed to the government.

The recent change in La Liga's allocation system shows that an individual sale of TV rights is not feasible in the long run, as large clubs tend to earn multiple times the TV income of smaller clubs. Part of the new mechanism's vision was to ensure that no club gets less income than it got with the existing system, while the majority of clubs should get more income than before. This movement was made possible through a new domestic TV deal worth € 2.65 billion for the 2016-2019 seasons, which significantly boosted La Liga's total earnings (Totalsportek (2016)). There is no empirical evidence on the effectiveness of the new system yet, as it was just recently implemented and competitive balance measures are influenced by a variety of factors, and not exclusively by the TV revenue sharing model.

5.4. Revenue Sharing in the Major League Soccer

The Major League Soccer (MLS) is USA's prime football, in the US referred to as soccer, league. Although the sport was dominated by the "Big Four" leagues[20] in the country in the last decades (Heitner (2015)), the league has been growing quickly in the last years. This has been reflected by double digit growth in a variety of dimensions, e.g. attendance, sponsorship deals and live broadcasting. While only 98 games were broadcasted on TV in 2014, all 340 games are on live TV today. The increasing relevance of the MLS can also be observed by the recent transfers of international star players such as Steven Gerrard, Bastian Schweinsteiger or Sebastian Giovinco to the league.

The Major League Soccer is organized differently compared to most football leagues: Clubs, known as so-called franchises, are owned by private team owners, who are voting shareholders of the league itself. If a franchise signs up a player, he usually signs the contract with the MLS, who controls franchises' finances and has the possibility to intervene. Consequently, contrary to European football leagues, the MLS has implemented several mechanisms to enhance competitive balance: a draft system, a salary cap, and revenue sharing, which are all popular means used in North American leagues (Taylor (2015)). The MLS has historically been unprofitable, which is bound to change in the next years due to the strong growth.

After a relatively unprofitable TV deal in the beginning of the 2010's, the MLS signed a new 8-year broadcasting agreement with several TV channels in 2014. The deal as a whole is reportedly paying a combined sum of $90 million per year, which roughly tripled the previous deal (Smith (2014)). The MLS has a "central sponsorship and broadcast rights strategy" (Taylor (2015)), expressed through a reciprocal support system between league and teams. The exact financial system is not disclosed; however, it is known that there are various revenue streams being passed on from league to teams and vice versa. Due to the league's special structure, the league pays for player salaries and travel costs, while teams transfer a percentage of their income, e.g. from tickets, to the league to cover those operating expenses. As the franchises legally belong to the league, all league revenues are shared by the teams. In addition, clubs have the possibility to sell their own local sponsorships. This system significantly differs from European revenue sharing and can only be maintained through the special ownership and franchise structure in the United States. Although it is impossible to establish a similar system in Europe (cf. Chapter 3.2.2), it is notable that, while there are several factors contributing to this trend, the strong growth of the MLS is driven by this special sharing model.

5.5. Revenue Sharing in the National Football League

The National Football League (NFL) is the USA's American football league and is widely considered as largest professional sports league in the world, both financially and reachwise. As American football is a sport mainly played in the USA, it is also the most relevant league in this sport globally, by far. In 2016, total revenues were projected to surpass $13 billion (Belzer (2016)), up by more than 50% from 2010[21]. This figure compares to a yearly total revenue of about $10 billion in the Major League Baseball (Nightengale (2016)), and to roughly $4 billion in the Premier League (Wilson (2016)), which has the highest total revenue of all football leagues. The Super Bowl, which is the annual championship game of the NFL, is regarded as one of the biggest sports events in the world. In the last years, the event had an annual TV viewership in the US only of over 100 million people (Statista (2017)). Although it can already be considered as the world's leading professional sports league, the NFL plans to continue its remarkable growth, having set its 2027 total revenue goal to $25 billion.

In the recently completed 2016 season, the 32 NFL teams

[18] Including parachute payments for relegated clubs, league overheads and grassroots initiatives (McMahon (2015))

[19] 3.5 to 1 in case that revenues exceed $1.6 billion per season

[20] American Football (NFL), Baseball (MLB), Basketball (NBA) and Hockey (USHL)

[21] Total revenues in 2010 summed up to approximately $8.5 billion

shared about $7.1 billion[22] in national revenue, consisting of "national sponsorships, broadcast deals, licensing and merchandise sales" (Novy-Williams (2016)). The national revenue is split roughly equally among all teams (Atkinson et al. (1988)), leading to an income of approximately $223 million per team for the respective fiscal year. The NFL follows a similar franchise system for clubs like the MLS (see 5.4), where clubs are owned by the league. Therefore, it is possible for the league to implement a balanced allocation mechanism like this without significant resistance of those clubs, who would be better off with an individual sale of broadcasting rights. In addition to the equal sharing of TV revenues, the NFL practises in heavy gate revenue sharing, as 40% of all ticket revenues are distributed to the away team. The system is often perceived as remarkable because it resembles a socialist idea in one of the most capitalistic countries, and still works well overall (Bloom (2014)).

5.6. Revenue Sharing in the Handball-Bundesliga

The DKB Handball-Bundesliga (HBL) is Germany's prime handball league. While football is the most popular sport in Germany without a doubt, handball only plays a minor role in terms of average spectators and media coverage. To elucidate this by an example, all Handball Bundesliga teams sold 1.3 million tickets in total in the 2015/16 season (DKB (2017)), while Borussia Dortmund alone sold 1.4 million (Kicker (2017)) in the same period of time.

In November 2016, the HBL announced the sale of a new domestic broadcasting rights package to the German TV channels Sky (Pay-TV), ARD and ZDF (both public TV channels). The deal includes live broadcasting of the first two leagues, the DHB-Pokal (domestic cup) and several other competitions[23]. Although there are no official details regarding the volume of the agreement, estimates range from € 3 to € 5.5 million (Beck (2017)). When comparing this Figure to the dimensions of football TV deals, it becomes evident that handball plays in a significantly lower financial dimension. This leads to an important conclusion: while gate revenue only represents a minor share of football clubs' income nowadays due to large TV deals, it is still a major income factor for handball clubs as TV deals are significantly smaller. Additionally, the HBL's new deal does not primarily serve as direct income boost, but rather as opportunity to further market the sport in Germany. While the HBL centrally sells its broadcasting rights, there is no exact allocation key publicly available. Mr. Schmedt, Vice President of the HBL, recently pleaded to distribute the new funds to specific, useful purposes, e.g. development of the sport, upgrades of infrastructure or youth centres.

5.7. Learnings from Other Sports Leagues

After comparing the (TV) revenue sharing models in several sports leagues worldwide, there are some interesting findings regarding the impact of these systems. Unfortunately, it is not possible to compare the effectiveness of the different mechanisms empirically, as the leagues differ highly in their initial situations, league compositions and governance. Furthermore, some revenue sharing systems have been introduced just recently, so their impact cannot be measured at this point in time yet. Still, a qualitative comparison of mechanisms and repercussions is useful for the assessment of the Bundesliga's new four-pillar system.

The Premier League is an example of how a relatively equal allocation key can create a perceivably balanced, attractive league. The league is perceived as one of football's most balanced, and, to a big part because of that, very popular around the world. This leads to a high demand and rapidly growing TV revenues, making the league even more interesting as teams can use these revenues to buy additional star players and develop their infrastructure. It seems that almost all PL teams are satisfied with the system as they are all rewarded with increasing broadcasting incomes. However, the league's clubs only managed to win two European cup titles since the 2008/2009 season[24], while the La Liga's teams won ten titles in the same period of time. This, among multiple other reasons, can be seen as a sign of insufficient funding of the PL's top clubs, caused by the league's revenue sharing system.

The Spanish La Liga serves as a good example of what happens when broadcasting rights are not sold collectively, as usual in football, but individually. Before the reform in 2015, top-to-bottom income ratios were the highest in Europe (cf. Figure 6), and the demand for matches not featuring the league's top teams was very low. This led to smaller domestic TV deals in comparison to the Premier League, which again weakened all, especially small, teams in La Liga. However, as mentioned before, the leading La Liga teams have been extremely successful on a European basis. As the old individual marketing system has been abolished and replaced with a mechanism similar to the PL's, we can infer that an individual rights sale system is not feasible in the long run in European football. However, such a system appears to lead to a small number of extremely strong clubs, which can be a goal to aim for under some circumstances.

Although this matter certainly has to be examined further to draw significant conclusions, we can observe a trade-off between a balanced, in demand league with mediocre international success and an imbalanced league with few dominating teams, which are internationally successful. This is a trend to consider when thinking about the Bundesliga's potential development in the next years.

While both observed US-American Leagues, MLS and NFL, are structured fundamentally different through the franchise, closed-league system, we can observe some interesting developments. The NFL engages in the imaginable most equal way of TV revenue sharing: every team (roughly) gets the same share of the collectively sold deal. This, among

[22] This overall revenue Figure is extrapolated from the publicly owned Green Bay Packers' financial statements

[23] Namely the REWE Final Fours, the PIXUM Super Cup and the All Star Game

[24] 2011/12 UEFA Champions League (FC Chelsea) and 2012/13 Europa League (FC Chelsea)

other reasons, makes the league balanced and unpredictable, proven e.g. through the fact that there were 8 different Super Bowl winners in the last 9 seasons[25]. Similarly to the Premier League, this leads to a circle of rapidly rising broadcasting incomes through increasing demand, which again leads to an even better and balanced league with profitable teams (Forbes (2016)). Although the MLS' exact revenue sharing and allocation mechanisms are not publicly disclosed, the league seems to follow a similar system of equal sharing. While football was a fringe sport in the US a few years ago, it continues to grow quickly and becomes increasingly relevant. This can be seen as a sign that an even revenue distribution can work in football, too. However, these conclusions must be treated with caution, as the US-American system allows for several mechanisms which are not feasible in European football (cf. Chapter 5.4).

Finally, the Handball Bundesliga does not give us any insights of the effectiveness of revenue sharing systems, due to the incomparable size and unknown allocation mechanisms. However, we can derive some interesting thoughts from the league's vision. The HBL sees TV deals as an opportunity to promote the league and sport further, instead of (only) maximizing broadcasting revenue. This could be a starting point for further research on the question whether it makes sense to prefer rather unprofitable TV deals with high reach to rather profitable 0nes with low reach, to maximize long-term demand, and, consequently, future revenues. Additionally, the HBL follows an approach to reinvest revenues into the development of the sport. This may be a potential approach for other sports leagues too, as an addition or alternative to a purely monetary return for league and teams.

6. Assessment of the Bundesliga's TV Revenue Sharing Model

6.1. Chapter Overview

In the following Chapter, the Bundesliga's new revenue sharing model is assessed based on the league's current situation, its international positioning, and its potential strategic aims. After forming three objectives based on the league's aims, potential ways to tackle these aims using revenue sharing are introduced. Finally, we evaluate the reformed model based on its capacities to contribute to the Bundesliga's overall strategy. We conclude the thesis with several starting points for further improvement of the system.

6.2. Current Situation

To be able to assess the Bundesliga's new TV revenue sharing model, it is of high importance to understand the league's current situation in terms of competitive balance, league structure and financials. In the 2015/16 season, the 18 1. Bundesliga clubs generated total revenues of € 3.2 billion (DFL (2017)), which is a record number for the league and an increase of about 24% to the previous season. Out of this Figure, € 933 million was received through media marketing, meaning a 29% share[26]. At the same time, those clubs earned a total net profit of about € 206 million, showing that most clubs operate profitably, contrary to other football leagues, e.g. the MLS. It is notable that the revenue share of media marketing differs between clubs of different strengths. While the top six clubs in terms of paid salaries generate 26.5% of their revenues through media on average, the middle six clubs compare with 27.4%, and the bottom clubs with 40.2%[27]. This shows that media income seems to be a more important revenue stream for financially smaller clubs, making them more sensitive and dependent on this income source. However, one has to note that this is based on the fact that revenues are shared. If a smaller club would sell its TV rights individually, the demand would likely be so low that the media share of income would be significantly lower than currently observed.

When analysing the structure of teams, the most noticeable one certainly is Bayern Munich, that has been dominating the league for the last decades, consequently being the record champion of the league. Since the 1998/1999 season, the club won 12 out of 18 seasons, showing its strong dominance. Munich has been accused of "destroying the league through transfers", fuelled by its recent transfers of star players of competitors, such as R. Lewandowski or M. Hummels. These transfers were made possible through the financial and competitive superiority of the club, and led to several critical voices from Germany and abroad, stating that the Bundesliga is a boring, one-team league.

Borussia Dortmund, a typical German Traditionsverein, played an important role in the league as well in the last years, as it was Munich's strongest rival in several competitions. However, the club's weaker infrastructure, finances, and team make it seem impossible that the gap between the two teams will close in the near future.

Another club important to mention is RB Leipzig, a club backed by the Austrian company Red Bull. Although the club just recently played in the third league, it was promoted to 1. Bundesliga in the 2016/17 season and immediately performed so well, that it qualified for the Champions League. There is strong criticism regarding the club's origin and financing, as many fans in Germany perceive the club to be artificial, commercially-oriented and lacking tradition. Through its financial background, Leipzig was able to spend significantly more for transfers than it earned, making the team a potential title candidate in the next years.

Besides those clubs, the Bundesliga seems to be balanced relatively well for a European sports league type, with several groups of clubs normally competing for European cup qualification spots, mid-table spots and avoidance of relegation. In the ongoing 2016/17 season, many potentially weaker clubs

[25] Based on Super Bowl XLIII (2009) to LI (2017)

[26] An exact split of the Bundesliga's revenue can be found in the Appendix (cf. Figure 7)

[27] Top six: 88.157/333.234=26.5%, middle six: 34.153/124.873=27.4%, bottom six: 33.241/82.615=40.2%

managed to finish in the upper half of the table, while some traditionally well-performing clubs found themselves in the bottom table half. This arguably shows that, besides the unilateral situation at the top of the league, the Bundesliga is relatively balanced in terms of playing strengths. An overview of performances in the last seasons (cf. Figure 8) and current total market values (cf. Figure 9) can be found in the Appendix.

In 2010, Pawlowski, Breuer, & Hovemann (Pawlowski et al. (2010)) highlighted the issue of a decreasing competitive balance in the top five European football leagues. Based on their observations, this phenomenon is based on the fact that successful clubs can participate in the profitable UEFA Champions League (UCL), that pays out large sums to its participants, who can then strengthen their teams even further. This leads to a vicious circle (or blessing for top teams), where the same teams participate in the UCL permanently, widening the gap between cup participants and smaller clubs in their respective domestic leagues. This is an important mechanism to consider when thinking about the allocation of domestic TV revenues, as these do not represent the full media incomes of internationally competing clubs.

6.3. Aims and Strategic Positioning

To assess the actual feasibility of the new system, it is finally important to discuss the aim of the system, based on the current situation of the league. After the introduction of the new system, Mr. Rauball, president of the DFL, stated that the new model would be in the interest of media partners, spectators in the stadiums and broadcasting audiences, as it promotes an attractive competition (Sportschau (2016)). He added that the system aims to develop the Bundesliga in a positive way through appreciation of sustainability and work with young talents, connecting meritocracy and solidarity. An attractive competition is hard to define, however, it is likely that attractiveness relates to the maximization of demand and an attractive competition relates to a high degree of competitive balance. At the same time, meritocracy aims at rewarding those who perform well, and solidarity aims at coherence and mutual support between the league members.

To find the correct answer to the question on how to achieve the goals formulated by Mr. Rauball, it is useful to briefly analyse the Bundesliga's competitive standing and image in comparison to its direct competitors. The Premier League has the clear unique selling point (USP) of a balanced league with constant quality across all teams, while La Liga features the arguably best two teams in the world and some of football's best players. The French Ligue 1 and the Italian Serie A seem to be stuck in the middle, as they do not have any clear qualities that other leagues do not have. Although the Bundesliga is neither known for equality of playing strengths nor outstanding individual teams and players, it has some other USPs. Firstly, it leads in terms of stadium attendance and is known for great atmospheres and fans. Secondly, the league is known for its international success in cup competitions. While only Bayern Munich managed to win an European cup in the last years, the Bundesliga currently ranks second in the UEFA ranking (UEFA (2017)). Finally, the league is known for its youth work. Contrary to leagues like the Premier League, the Bundesliga features a large number of players born and trained in Germany, resulting in harmonic, tactically excellent teams.

When thinking about how to leverage those USPs to clearly position the league in the market for football and maximize demand, it becomes evident that it is not possible to rule out La Liga's position as leader in quality of players and top teams due to a lack of prestigious clubs and financial resources. However, it is indeed possible to aim for the Premier League's image of a quality league with high uncertainty of outcome, as the Bundesliga is already relatively balanced and features several star players. One could argue that what currently hinders the Bundesliga from being perceived as balanced is the presence of Bayern Munich, which is internationally seen as too dominant on several dimensions. If the league would manage to equalize Bayern Munich's strength with its main competitors Dortmund and Leipzig, a significant increase in demand is imaginable. Furthermore, the average quality and market value of teams and players (total market value of € 2.63 billion, (Transfermarkt.de (2017a))) is not seen as strong as in the Premier League (€ 4.91 billion) and La Liga (€ 3.64 billion). Finally, it seems that the competitiveness of clubs within the middle and bottom regions of the Bundesliga has room for further potential. While the Bundesliga is one of the most balanced leagues in Europe (Roland Berger Strategy Consultants, & University of Tübingen (2013)), bottom-of-the-table clubs in Germany, like Darmstadt 98, usually do not sign any valuable players due to their lack of financial resources. Comparing this to the Premier League, where those clubs can buy star players for several million pounds and outbid top five Bundesliga clubs for players, it becomes evident that the Bundesliga still needs to enhance financial and competitive balance within the league. Overall, it seems that the Bundesliga can move into a more profitable and demanded strategic league position by (1) further decreasing financial and competitive inequalities between clubs, (2) increasing its average player and team quality and (3) balancing out Bayern Munich's dominance to make a suspenseful title race possible again. However, one has to keep in mind that these aims are based on the assumptions and claims in this chapter, and do not represent universal truths about the state of the Bundesliga.

6.4. Strategy Implementation and Theoretical Revenue Sharing Design

6.4.1. Enhancement of Financial and Competitive Balance

As income through media, such as TV revenues, is one of the main drivers of clubs' revenues, there is a large impact of the league's TV revenue sharing system on the clubs' finances. Finances again are an important driver of team strength, as more money generally provides the ability to sign better players. The balance of team strengths, and consequently team finances, are the definition of competitive balance. To determine the influence of a revenue sharing system in professional team sports on the competitive balance in a league,

an economic model is necessary. In the following, a system that is able to determine the effects of equal-share-based and performance-based revenue sharing systems on the financial and competitive balance within a league is introduced. The model is based on several assumptions that are elaborated in the following. Therefore, the findings should be treated with caution. However, the model illustrates the effects of different revenue sharing approaches on the competitive balance in a sports league. These findings help us in determining the feasibility of the Bundesliga's new revenue sharing system for strategic aim (1).

We assume that a team's quality and playing strength in a season t are perfectly mapped by the total market value (MVt) of its players. Under the assumptions that teams operate equally profitable and TV revenue is the only source of income, their market value increases each season by reinvesting the profit margin (i) of the team's last TV revenue (Rt-1), in other words, the team's residual income.

$$MV_t = MV_{t-1} + i * R_{t-1} \tag{1}$$

The TV revenue (Rt) that is distributed to a team is mainly based on the league's total TV revenue (LRt), as this is the sum that is allocated to the clubs. We divide the sharing mechanisms into a performance based share (SP), that rests upon a past performance indicator (P), and an equal share (SE), that allocates the respective sum equally to all (T) teams in the league.

$$R_t = LR_t * S_P * P + LR_t * S_E * \frac{1}{T} = LR_t * (S_P * P + S_E * \frac{1}{T}) \tag{2}$$

with $S_P + S_E = 1$.

If we now insert the formula for an individual team's revenue (2.1) into the formula for a team's market value (1), we get the following:

$$MV_t = MV_{t-1} + i * LR_{t-1} * (S_P * P + S_E * \frac{1}{T}) \tag{3}$$

with $S_P + S_E = 1$.

Using this approach, we can test for repercussions of different revenue sharing systems, as we are able to alternate the shares that are allocated performance-based and equally. We can now compare two teams, a stronger Team A and a weaker Team B, which have significant differences in market values (MVt-1) and, as performance depends on market values, past performances (P). To determine their ratio in market value as a proxy for disparity (Dt-1) between the teams, we take

$$D_{t-1} = \frac{MV_{t-1;A}}{MV_{t-1;B}} \tag{4}$$

with $MV_{t-1;A} \geq MV_{t-1;B}$ and $P_A \geq P_B$.

In a perfectly even revenue sharing system ($S_E = 1$ and $S_P = 0$), competitive balance after one season would amount to

$$D_{t;E} = \frac{MV_{t;A}}{MV_{t;B}} = \frac{MV_{t-1;A} + i * LR_{t-1} * \left(1 * \frac{1}{T}\right)}{MV_{t-1;B} + i * LR_{t-1} * \left(1 * \frac{1}{T}\right)} \tag{5}$$

with $MV_{t-1;A} > MV_{t-1;B}$. Contrary, if funds are solely allocated by past performance ($S_E = 1$ and $S_P = 0$), competitive balance after one season would amount to

$$D_{t;P} = \frac{MV_{t;A}}{MV_{t;B}} = \frac{MV_{t-1;A} + i * LR_{t-1} * (1 * P_A)}{MV_{t-1;B} + i * LR_{t-1} * (1 * P_B)} \tag{6}$$

with $MV_{t-1;A} > MV_{t-1;B}$ and $P_A > P_B$. Comparing these results[28], we can detect that

$$\frac{MV_{t-1;A} + i * LR_{t-1} * (1 * P_A)}{MV_{t-1;B} + i * LR_{t-1} * (1 * P_B)} > \frac{MV_{t;A}}{MV_{t;B}} > \frac{MV_{t-1;A} + i * LR_{t-1} * (1 * \frac{1}{T})}{MV_{t-1;B} + i * LR_{t-1} * (1 * \frac{1}{T})} \tag{7}$$

Therefore, we can conclude that

$$D_{t;P} > D_{t-1} > D_{t;E}$$

In other words, the approach shows that, under the given assumptions, solely performance-based revenue sharing widens the gap between two differently strong teams, while perfectly equal revenue sharing narrows the gap. Therefore, disparity in our example is lowest, when revenues are shared equally among teams. However, the model can only be seen as approximation to the matter as we based it on several assumptions, which do not always precisely hold in reality.

We can transfer the learnings of this model to the Bundesliga's current situation, yielding the result that the DFL should try to implement as much equal-sharing components as possible to decrease the current economic and competitive imbalances in the league.

6.4.2. Increase of Game Quality and Team Values

After discussing the impact of revenue sharing systems on competitive balance, it is now important to analyse the potential impact of those mechanisms on game quality and team values, as our second objective is to increase both.

Based on previous Chapters and our analyses of competing football leagues, we found that there seems to be a logical cycle of even revenue sharing systems in some leagues, e.g. in Premier League and NFL. In the case of even revenue systems, which allocate funds to all clubs primarily on an equal basis, the league becomes more and more balanced, hence increasing uncertainty of outcome. This, as a consequence, increases demand for TV audiences (cf. Chapter 4.5) and results in an increasing viewership. A larger demand for broadcasts means more income for broadcasters, and therefore a higher willingness to pay for a TV deal, increasing the contract's value. As the value of the new, larger TV deal gets equally allocated among all clubs again, the league becomes even more balanced. Additionally, the increase in demand and deal value transfers more absolute income to the league, making it possible to spend more on players. Therefore, an even revenue sharing system enhances both competitive balance and team values (cf. Figure 10).

[28] Proof for this equation can be found in the Appendix

On the contrary, uneven revenue sharing systems, like the abolished mechanism in La Liga, consequently yields opposing results. If revenues are shared based on an unequal basis, for example past performance, top clubs receive more income than smaller clubs. As a consequence, top clubs can even further develop their competitive advantage and are likely to become even stronger. Therefore, uncertainty of outcome and competitive balance decrease, making TV audiences less interested. Hence, demand and viewership both diminish, resulting in less profitable broadcasters and smaller TV deals in comparison to equal revenue sharing. Less lucrative TV contracts decrease the overall payment to the league, which lowers the clubs' ability to sign valuable players. Out of the already smaller new TV deal, an overproportional amount is again given to larger clubs, widening the financial and competitive gap within the league even more. Thus, we can see that an uneven revenue sharing system results in a vicious circle yielding lower competitive balance and slower growth of team values (cf. Figure 11).

As media income only represents a fraction of clubs' incomes (cf. Chapter 6.2), both cycles just discussed only describe the theoretical connection between competitive balance, revenue sharing, demand and player quality. Therefore, our findings for now only hold when all other variables are held constant. Based on the assumption that the uncertainty of outcome hypothesis holds for TV audiences (cf. Chapter 4.5) and those audiences demand leagues with higher outcome uncertainty, we can infer some important findings. An even, or equally-based, revenue sharing system does not only lead to payoffs that promote a higher financial balance within the league, but also tends to increase TV deal values and the league's overall quality.

6.4.3. Reduction of Bayern Munich's Dominance

We finally need to analyse how it is theoretically possible to reduce a single team's dominance through revenue sharing, without harming the basic principle of meritocracy. Although it is clearly a possibility to engage in perfectly equal revenue sharing, such as in the NFL, and consequently not paying more funds to more dominant than to weaker teams, we want to focus on opportunities in performance-based systems. These yield more realistic results, as most European revenue sharing systems contain performance-based criteria, and gives us several approaches on how to tackle this issue.

Performance-based revenue systems usually rank teams in order of a certain figure, e.g. last year's place in the table, and allocate funds proportionally to the respective team's ranking place. The best team gets the highest share, the second best the second highest share, and so on. In this system, an overdominant team can increase the gap to its competitors even more. To avoid this, it is useful to build performance clusters within the system. As an example, instead of ranking all teams after each other, there could be three groups of clubs, divided in positive, medium and negative performance. Using such a system, an overdominant club is still rewarded for its performance, while not financially outpacing its direct competitors, which may struggle to keep up with the top team anyways.

A second possibility to limit a single team's dominance is to use performance-based criteria, in which the respective club is not leading. Although most performance-based criteria are related to team's competitive success, in which a dominant club is commonly first, it is possible to introduce alternative criteria. Examples for this are spectator-based criteria, like TV viewing figures or social media activities, sustainability-based criteria, like league belonging or investments in young talents, and others, such as fair play rankings or ethical behaviour. A dominant club can reach good ratings in those dimensions, too, but they give every club the possibility to maximize their share of revenues, even without a valuable team. This mean does therefore not harm the principle of meritocracy, while rewarding performance in different dimensions and finally makes an overdominant team relatively weaker.

A final possibility is to cap the final top-to-bottom payout ratio within the league, as introduced with the new La Liga revenue sharing system. It works as an upper limit for the multiple the highest earning team earns in comparison to the lowest earning team. If the allocation based on the key yields a distribution in which club A earns four times the amount team B earns, and the cap is at a multiple of three, club A's share would be reduced by the amount it needs for the multiple to be three. The accruing new funds can then be allocated to different causes. In order to boost competitive balance, the funds could be allocated e.g. equally to the bottom five earning clubs. Using a cap like this, it's possible to limit the impact of performance-based allocation to a certain degree. Consequently, if a low multiple, e.g. 1.5, gets chosen, the league administration can guarantee a relatively even distribution regardless of the chosen allocation key.

6.5. Feasibility of the Four-Pillar Revenue Sharing Model

After assessing the Bundesliga's current situation, its aims and optimal strategic positioning, and required modifications of a revenue sharing system in order to achieve these objectives, we are now finally able to evaluate the feasibility of the new system.

Based on the previous analyses, it seems that an even revenue sharing system solves our objectives one and two[29]. However, it is not common to allocate all funds equally among clubs in sports leagues. The nominal share that gets distributed equally to all clubs amounts to 50% of domestic revenues in both La Liga and Premier League. In the NFL, this share is almost 100%, as the American sports league type enables such equal systems while they would not be feasible in European leagues. Although the Bundesliga's new model does not include an even share at first appearance, one of its elements partly works like one. Pillar 1 (Performance) allocates 70% of domestic revenues according to performance, while always allocating 2.9% to the worst ranked 1. Bundesliga team, and 0.75% to the worst 2. Bundesliga team.

[29] Enhancement of Financial and Competitive Balance (1) and Increase of Game Quality and Team Values (2)

Better ranked teams naturally get a higher share, but the base of 2.9% or 0.75% can be seen as an equal share, as it gets allocated to every team in the respective league, regardless of its performance. Consequently, 65.7%[30] of pillar 1 is allocated equally, while only the remaining 34.3% are truly performance-based. Pillar 2 (competitive sustainability) and 3 (young talent) do not follow a similar logic, as it is possible for a team to have both zero Bundesliga seasons in the past (pillar 2) and zero playing minutes of young players (pillar 3), respectively resulting in a pillar share of 0%. Pillar 4 (competition) works similarly to pillar 1, while the exact percentages per table place are not disclosed. If we assume that the same amount (65.7%) of revenues are allocated on an equal basis through pillar 4, we can calculate the "real" equally distributed share of the Bundesliga's new system, resulting in a final percentage of about 61%[31]. However, one has to keep in mind that this figure considers both 1. and 2. Bundesliga, while 2. Bundesliga clubs get a smaller equal share. If we exclude 2. Bundesliga from this calculation, we find that 48.5%[32] of total domestic revenues are exclusively shared equal among 1. Bundesliga clubs.

Although this is a comparable figure to the nominally equal domestic revenue parts in Spain and England (50% each), both systems have similar minimum pay-out caps (e.g. the last ranked team gets 2% of revenues) in their remaining distribution pillars. Therefore, their effective equal share of domestic revenues is higher than 50%. We can see that the Bundesliga's share of equal distribution is in a similar dimension to the ones in its competing leagues, but slightly lower.

For international Bundesliga revenues, the league's new model only allocates 25% equally, with the remaining 75% based on previous performances in international competitions. In the Premier League, 100% of all international revenues are distributed equally, which shows a huge difference to the new German system. While mainly the best clubs of the Bundesliga, who arguably drive international demand, get rewarded for demand from abroad, all Premier League clubs, regardless of their contribution, get the same share of those revenues. This mechanism promotes the principle of meritocracy within the Bundesliga, although it seems to strongly damage competitive balance (cf. Figure 11) as international revenues represent a significant share of league incomes. We can conclude that the Bundesliga's current share of equally allocated revenues are a step in the right direction, but still lacks consistency in comparison to the league's international competitors. In order to tackle the objectives of increasing the Bundesliga's overall quality and competitive balance better, it would make sense to increase this share even more, for example through a radical reform of the distribution system for international revenues.

When thinking about the feasibility of the new system in fulfilling objective three[33], several notable points become apparent. Independently from the discussion of performance-based and equal systems, the Bundesliga's new model features multiple starting points for a system that weakens an overdominant team. Firstly, pillar 4 features a clustering system in which several teams get the same reward of a performance-based criteria. More specifically, the first six teams in this weighted five-year ranking get the same share of revenues. However, pillar 4 is the only element to use such a cluster, representing 23% of total revenues, which is still a relatively small number. Secondly, the new four-pillar model includes several performance-based criteria that are not based on competitive success. Both pillar 2 and 3 reward clubs for accomplishments (league belonging and youth work), that are achievable without being one of the league's top teams, incentivising clubs to work in a sustainable way to maximize their income. This type of pillar prevents a dominance of Bayern Munich in all pillars, as it is e.g. hard to maximize both competitive success and playing minutes of young players. Still, those two pillars only cover 7% of all revenues, meaning that only a small share of the system follows this logic. Finally, the Bundesliga indirectly uses a top-to-bottom payout cap. As explained before, pillar 1 and 4 allocate revenues based on a ranking of the clubs' competitive success, although the payout per ranking place is fixed to a certain percentage. This prevents an overdominant team from gaining overproportional shares of revenue. No matter if Bayern Munich achieved 1 or 100 more points more than the second-best team in the respective ranking, the club's share will still be the same. Overall, we can summarize that the Bundesliga's new revenue sharing model features several feasible starting points to tackle the issue of an overdominant FC Bayern. However, their weighting should be higher to fully use these mechanisms. In the system's current state, the scope of those means is too low to expect immediate results.

After analysing the feasibility of the new system in terms of meeting the league's potential objectives, it makes sense to discuss the system's consequences on its main stakeholders in order to fully understand the reform's scope. As the reform decreased the performance-based share of the allocation key, the system is likely to produce a more balanced league than before. Based on Chapter 3.5, a higher competitive balance is likely to increase demand for TV broadcasts and decrease demand for attendance. However, both the difference between the old and new model, as well as the impact of uncertainty of outcome on demand for football, are rather low. Therefore, we can infer that the impact of the new model on demand will be neutral or slightly positive (as TV audiences play a larger role in the clubs' income than stadium audiences). Based on our thoughts and assumptions, it is likely that the Bundesliga aims to follow a strategy similar to the Premier League's one, by building a high-quality league with high uncertainty of outcome. If the league succeeds in doing so, which seems like a realistic scenario through the new

[30] 2.9% * 18 teams + 0.75% * 18 teams = 65.7%

[31] 65.7% * 70% (P1) + 0% * 5% (P2) + 0% * 2% (P3) + 65.7% * 23% (P4) = 61.1%

[32] 2.9% * 18 teams * 70% (P1) + 0% * 5% (P2) + 0% * 2% (P3) + 2.9% * 18 teams * 23% (P4) = 48.5%

[33] Reduction of Bayern Munich's Dominance (3)

revenue sharing system, the Premier League might suffer in terms of future growth and dominance. Although La Liga currently seems to have a protected strategic positioning, its international demand might be threatened by the Bundesliga in the future as well.

The effect on the Bundesliga's internal stakeholders, its clubs, differs based on the individual team's situation. In general, the system aims at increasing every club's income through the league's new TV deal. Therefore, there are no teams that lose income in absolute terms, but clubs whose relative income is impacted. While we do not have the possibility to compare the new system directly with the incumbent one, we can see some clear trends. Firstly, the league tries to move away from only rewarding competitive success, as it included several new success criteria in its model. Secondly, the share of income that gets distributed equally to all clubs, increased. Finally, international revenues are still allocated heavily performance-based, especially in comparison to other leagues. These effects lead to different impacts within the league. New performance-based criteria benefit all clubs who cannot achieve top ranking positions in competitive rankings, but can dominate the new pillars 2 and 3. A more even system in general benefits every club with below-average revenue sharing income, as the performance-based share becomes smaller and freed-up funds are distributed equally to all clubs, leading to a higher relative share of less wealthy teams. However, the performance-based distribution of international TV revenues works in the opposite direction: clubs who participate in international competitions are heavily rewarded for it, which gives them the possibility to extend their advantage even more and makes them likely to participate in those cups again. Overall, we can conclude that clubs in the bottom-table region and clubs, who participate in international competitions, benefit. As these groups are normally mutually exclusive, it is hard to determine specific winners and losers of the reform.

However, the new system can be seen as a step into the right direction, as several starting points that can work towards the league's aims and objectives were integrated. These mechanisms have a relatively weak impact by now, mitigating an immediate effect of the reform. If their weight in the system is reassessed and raised, it is likely that the system will support the Bundesliga in achieving its goals in the near future. Therefore, we evaluate the total effect of the reform as slightly positive, with potential for future improvements.

6.6. Possible Enhancements to the New Model

While the Bundesliga's new four-pillar revenue sharing system is already an improvement compared to the existing system, there are several possible enhancements that could be realised in the future. Through the theoretical league model introduced in Chapter 6.4.1, it is possible to model potential consequences of different revenue sharing systems on the medium-term development of a league. A simulation of a solely performance based (cf. Chapter 7.3), balanced (cf. Chapter 7.4) and perfectly equal revenue (cf. Chapter 7.5) sharing system applied on the Bundesliga's current market value distribution can be found in the Appendix. When comparing these simulations, the theoretical result from 6.4.1 holds: the higher the share of performance-based allocation, the lower the future competitive balance. In our practical example, this is confirmed through higher top-to-bottom and top-to-average market value multiples, as well as a higher standard deviation of market values. Figure 12 shows this negative relationship between the share of equally distributed revenues and the ratio of market values between the highest and lowest team. Hence, it would make sense to increase the equally distributed share in the system even more. This would likely lead into the cycle of even revenue sharing systems (cf. Figure 10) discussed before. To implement this, the easiest lever would be to reform the distribution of international TV revenues from a heavily performance-based system to a perfectly equal system. An additional option would be to modify the percentages per ranking place of some pillars. Pillar 1 allocates 5.8% to the first ranked Bundesliga team and 2.9% to the last one. This could be modified to e.g. 4.8% and 3.9%, respectively, narrowing the gap between teams within the league and enhancing competitive balance.

As noted before, some mechanisms in the new system are useful, but should be implemented heavier in order to reach their full potential of intervention. It would make sense to increase the respective shares of pillar 2 and 3, which are relatively low at the moment. If those would cover a larger share of total revenues, more funds would be distributed to clubs across the whole league (as any club can perform well on these criteria) and the financial dominance of stronger clubs would diminish. As these pillars were just implemented, it makes sense to check for general feasibility for some seasons first. If the criteria are found to work well, the Bundesliga can think about increasing their share, e.g. doubling their weight to 10% (pillar 2) and 4% (pillar 3). Additionally, the clustering system used in pillar 4 could be transferred to the other pillars as well. Using groups within rankings, it is possible to prevent few clubs from having significantly different incomes than others. This balances out financials within the league and increases competitive balance. As an example for an implementation of this enhancement, every pillar could, instead of ranking club by club, build groups of six clubs and order these by good, medium and bad performance. This could lead to a payoff distribution in which FC Bayern Munich, Borussia Dortmund and RB Leipzig would all get the same amount of revenues, as they all performed in the top group in every pillar, preventing Bayern Munich from outpacing its competitors.

Finally, it could make sense to implement an explicit cap that limits the top-to-bottom payout ratio, similar to La Liga's new system. As discussed before, such a limit prevents single clubs from incurring unproportional amounts of revenue, both at the upper and lower end. Regardless of the exact workings of the revenue sharing system, the final payoff

would always be lower than a certain multiple[34]. While the top-to-bottom income ratio is already comparably low in the Bundesliga (cf. Figure 6), this would be an opportunity to further narrow the gap between high and low earning clubs. This could again lead to the circle of even revenue sharing systems (cf. Figure 10).

While the majority of these possible enhancement aim at lowering current top earners' incomes, one has to consider the revenue split of Bundesliga clubs. As discussed before, top earning teams earn less than 30% of their revenues through media. Additionally, clubs participating in international cup tournaments usually receive high participation prizes, especially in the UEFA Champions League. Therefore, these possible improvements would damage higher earning clubs only little, while creating relatively high additional incomes for smaller clubs. All the suggested enhancements appear to be feasible, as they do not actively disadvantage top clubs, but rather introduce new ways of performance-based revenue distribution. Especially smaller clubs and the league's administration (DFL) are likely to approve these suggestions, as they have the potential to make the Bundesliga more balanced, attractive and demanded, while leveraging the league's existing USPs.

This assessment, including possible enhancements to the system, is based on the steps the Bundesliga should take to achieve the strategic positioning discussed in Chapter 6.3. If the Bundesliga's aim would be to maximize Bayern Munich's financial and competitive strength in order for it to win international titles, regardless of the domestic situation, the assessment would certainly be a different one. Furthermore, our assessment is based on the assumption that the Uncertainty of Outcome Hypothesis is (partly) accepted (for TV audiences) (cf. Chapter 3.5). However, Mr. Rauball's statement regarding the system's aim, and the majority of Bundesliga spectators from Germany and abroad, would agree that the Bundesliga should preferably become more balanced in order to be successful in the future. Therefore, this assessment is likely to be congruent with the Bundesliga's aims for the next decades. It remains to be seen how the new revenue sharing model will influence the league's balance, international positioning and overall development. Based on our assessment, it is likely that this reform will not be the last of its kind in the next decades, as several key mechanisms have been introduced, but not yet been given enough weight to have significant impact on the league.

[34] As an example, the highest earning team could never earn more than twice the lowest earning team

References

Allan, G. Does television crowd out spectators? *Journal of Sports Economics*, 9(6):592–605, 2008.

Andreff, W. Some comparative economics of the organization of sports: competition and regulation in north American vs. European professional team sports leagues. *The European Journal of Comparative Economics*, 8(1): 3–27, 2011. Retrieved from http://halshs.archives-ouvertes.fr/halshs-00677436.

Ashelm, M. Bündnis „Team Marktwert“: Traditionsklubs wollen mehr TV-Geld, 2016. URL http://www.faz.net/aktuell/sport/fussball/bundesliga/buendnis-team-marktwert-traditionsklubs-wollen-mehr-tv-geld-14151976.html. Retrieved March 21, 2017.

Atkinson, S. E., Stanley, L. R., and Tschirhart, J. Revenue sharing as an incentive in an agency problem: An example from the National Football League. *The RAND Journal of Economics Journal of Economics*, 19(1): 27–43, 1988.

Beck, J. Neuer TV-Vertrag wirft seine Schatten voraus, 2017. URL http://www.volksstimme.de/sport/handball/sc_magdeburg/handball-neuer-tv-vertrag-wirft-seine-schatten-voraus. Retrieved April 11, 2017.

Belzer, J. Thanks To Roger Goodell, NFL Revenues Projected To Surpass $ 13 Billion In 2016, 2016. URL https://www.forbes.com/sites/jasonbelzer/2016/02/29/thanks-to-roger-goodell-nfl-revenues-projected-to-surpass-13-billion-in-2016/#23a90d541cb7. Retrieved April 11, 2017.

Besanko, D. A. and Simon, D. Resource allocation in the baseball player's labor market: An empirical investigation. *Review of Financial Economics*, 21(1):71–84, 1985.

Bloom, H. NFL revenue-sharing model good for business, 2014. URL http://www.sportingnews.com/nfl/news/nfl-revenue-sharing-television-contracts-2014-season-business-model-nba-nhl-mlb-comparison-salary-cap/gu0xok7mphu01x3vu875oeaq6.

Borland, J. and MacDonald, R. Demand for sport. *Oxford Review of Economic Policy*, 19(4):478–502, 2003.

Buraimo, B. Stadium attendance and television audience demand in English league football. *Managerial and Decision Economics*, 29(6):513–523, 2008.

Buraimo, B. and Simmons, R. Uncertainty of outcome or star quality? television audience demand for English Premier League football. *International Journal of the Economics of Business*, 22(3):449–469, 2015.

Cox, A. Spectator demand, uncertainty of results, and public interest: Evidence from the English Premier League. *Journal of Sports Economics*, 19 (1):1–28, 2018.

Destatis. Bevölkerung in Deutschland voraussichtlich auf 82,8 Millionen gestiegen, 2017. URL https://www.destatis.de/DE/PresseService/Presse/Pressemitteilungen/2017/01/PD17_033_12411.html. Retrieved March 26, 2017.

DFL. Deutsche Fußball Liga: DFL-Präsidium fasst einstimmigen Entschluss zur Verteilung der Medien-Erlöse, 2016. URL http://www.bundesliga.de/de/liga/news/dfl-medienerloes-beschluss-einstimmig-agmd.jsp. Retrieved March 20, 2017.

DFL. Deutsche fußball liga: Dfl-report 2017, 2017.

Dietl, H. M., Franck, E., Lang, M., and Rathke, A. Salary cap regulation in professional team sports. *Contemporary Economic Policy*, 30(3):307–319, 2012.

DKB. Dkb handball bundesliga - zuschauer, 2017. URL http://www.dkb-handball-bundesliga.de/de/dkb-hbl/statistiken/saisonen/statistiken/saison-15-16/saisonstatistik/zuschauer/. Retrieved April 11, 2017.

Domizio, M. D. Football on TV: An Empirical Analysis on the Italian Couch Potato. *Papeles de Europa*, 26(1):26–45, 2013.

DPA. Der Streit um die Verteilung der TV-Gelder, 2016. URL http://www.sueddeutsche.de/news/sport/fussball-der-streit-um-die-verteilung-der-tv-gelder-dpa.urn-newsml-dpa-com-20090101-161123-99-289401. Retrieved March 21, 2017.

El-Hodiri, M. and Quirk, J. An economic model of a professional sports league. *Journal of Political Economy*, 79(6):1302–1319, 1971.

Evelt, A. Bundesliga: Klubs aus dem “Team Marktwert” müssen besser arbeiten, 2016. URL http://www.spiegel.de/sport/fussball/bundesliga-klubs-aus-dem-team-marktwert-muessen-besser-arbeiten-a-1084817.html. Retrieved March 21, 2017.

Fishman, P. Competitive balance and free agency in major league baseball. *The American Economist*, 47(2):86–91, 2003. URL http://proquest.umi.com/pqdweb?did=527829711&Fmt=7&clientId=65345&RQT=309&VName=PQD.

Forbes. The business of football list, 2016. URL https://www.forbes.com/nfl-valuations/list/. Retrieved April 13, 2017.

Forrest, D., Simmons, R., and Buraimo, B. Outcome uncertainty and the couch potato audience. *Scottish Journal of Political Economy*, 52(4):641–661, 2005.

Fort, R. and Maxcy, J. Competitive balance in sports leagues: An introduction. *Journal of Sports Economics*, 4(2):154–160, 2003.

Fort, R. and Quirk, J. Cross-subsidization, incentives, and outcomes in professional team sports leagues. *Journal of Economic Literature*, 33(3): 1265–1299, 1995.

Fort, R., Maxcy, J., and Diehl, M. Uncertainty by regulation: Rottenberg's invariance principle. *Research in Economics*, 70(3):454–467, 2016.

Harris, N. Premier League sides have their eye on the TV cash bonanza, 2016. URL http://www.dailymail.co.uk/sport/football/article-3381083/Premier-League-sides-eye-TV-cash-bonanza-worst-season-relegated-flight.html. Retrieved March 21, 2017.

Heckle, H. A new law will see La Liga television money distributed evenly, stopping Real Madrid and Barcelona taking the most cash, 2015. URL http://www.dailymail.co.uk/sport/football/article-3063560/A-new-law-La-Liga-television-money-distributed-evenly-stopping-Real-Madrid-Barcelona-taking-cash.html. Retrieved April 3, 2017.

Heitner, D. How Major League Soccer Is Closing The Gap With The Big Four, 2015. URL https://www.forbes.com/sites/darrenheitner/2015/12/22/how-major-league-soccer-is-closing-the-gap-with-the-big-four/#620ee1386c20. Retrieved April 5, 2017.

Kicker. 1. Bundesliga: alle Zuschauerzahlen der Saison 2015/16, 2017. URL http://www.kicker.de/news/fussball/bundesliga/spieltag/1-bundesliga/2015-16/zuschauer-der-saison.html. Retrieved April 11, 2017.

Landwehr, F. Chronik: Die Entwicklung der TV-Rechte im deutschen Fußball, 2015. URL http://www.11freunde.de/artikel/chronik-die-entwicklung-der-tv-rechte-im-deutschen-fussball/page/1. Retrieved March 28, 2017.

Larsen, A., Fenn, A. J., and Spenner, E. L. The impact of free agency and the salary cap on competitive balance in the National Football League. *Journal of Sports Economics*, 7(4):374–390, 2006.

McDonald, H. The factors influencing churn rates among season ticket holders: An empirical analysis. *Journal of Sport Management*, 24(6):676–701, 2010.

McMahon, B. $1.6B Worth Of TV Deals Good News For Real Madrid, Barcelona and La Liga, 2015. URL https://www.forbes.com/sites/bobbymcmahon/2015/12/05/1-6b-worth-of-tv-deals-good-news-for-real-madrid-barcelona-and-la-liga/#1fd73983166f. Retrieved April 3, 2017.

Mitteldeutsche Zeitung. Vereine mit TV-Gelder-Verteilung zufrieden, 2016. URL http://www.mz-web.de/sport/fussball/bundesliga/verein e-mit-tv-gelder-verteilung-zufrieden-25170008. Retrieved April 11, 2017.

Mourão, P. R. and Teixeira, J. S. Gini playing soccer. *Applied Economics*, 47 (49):5229–5246, 2015.

Neale, W. C. The peculiar economics of professional sports. *The Quarterly Journal of Economics*, 78(1):1–14, 1964.

Nightengale, B. MLB officials cautiously optimistic they'll beat deadline for new CBA, 2016. URL https://www.usatoday.com/story/sports/mlb/2016/11/29/mlb-collective-bargaining-agreement-lockout/94609712/. Retrieved April 11, 2017.

Novy-Williams, E. NFL Revenue Reaches $7.1 Billion Based on Green Bay Report, 2016. URL https://www.bloomberg.com/news/articles/2016-06-24/nfl-revenue-reaches-7-1-billion-based-on-green-bay-report. Retrieved April 11, 2017.

Owen, P. D. Limitations of the relative standard deviation of win percentages for measuring competitive balance in sports leagues. *Economics Letters*, 109(1):38–41, 2010.

Pawlowski, T., Breuer, C., and Hovemann, A. Top clubs' performance and the competitive situation in european domestic football competitions. *Journal of Sports Economics*, 11(2):186–202, 2010.

Premier League. Premier League's payments to clubs in 2015/16, 2016. URL https://www.premierleague.com/news/60138. Retrieved March 30, 2017.

Quitzau, J. Tradition ist mehr Fernsehgeld wert, 2015. URL http://www.capital.de/meinungen/tradition-ist-mehr-tv-geld-wert.html. Retrieved March 28, 2017.

Roland Berger Strategy Consultants, & University of Tübingen. How exciting are the major European football leagues?, 2013. URL https://www.rolandberger.com/publications/publication_pdf/roland_berger_competitive_balance_of_football_leagues_20130220_1_.pdf.

Rosen, S. and Sanderson, A. Labour markets in professional sports. *The Economic Journal*, 111(469):47–68, 2001.

Rottenberg, S. The baseball players' labor market. *The Journal of Political Economy*, 64(3):242–258, 1956.

Sanderson, A. R. and Siegfried, J. J. Thinking about competitive balance. *Journal of Sports Economics*, 4(4):255–279, 2003.

Scelles, N., Durand, C., Bonnal, L., Goyeau, D., and Andreff, W. Competitive balance versus competitive intensity before a match: Is one of these two concepts more relevant in explaining attendance? The case of the French football Ligue 1 over the period 2008–2011. *Applied Economics*, 45(29): 4184–4192, 2013.

Schreyer, D., Schmidt, S. L., and Torgler, B. Game outcome uncertainty and television audience demand: New evidence from German football. *German Economic Review*, pages 1–22, 2016.

Schreyer, D., Schmidt, S. L., and Torgler, B. Against all odds? exploring the role of game outcome uncertainty in season ticket holders' stadium attendance demand. *Journal of Economic Psychology*, 56:192–217, 2016a.

Schreyer, D., Schmidt, S. L., and Torgler, B. Game outcome uncertainty in the English Premier League: Do German fans care? *Journal of Sports Economics*, pages 1–20, 2016b.

Sloane, P. J. Rottenberg and the economics of sport after 50 years: An evaluation. *Journal of Sports Economics*, 2175, 2006.

Smith, C. Major League Soccer Announces New TV Deals With ESPN, Fox, Univision, 2014. URL https://www.forbes.com/sites/chrissmith/2014/05/12/major-league-soccer-announces-new-tv-deals-with-espn-fox-univision/#73c1478a2de7. Retrieved April 5, 2017.

Sportschau. DFL verteilt das Fernsehgeld neu, 2016. URL http://www.sportschau.de/fussball/bundesliga/bundesliga-fussball-dfl-verteilt-fernsehgeld-100.html. Retrieved March 20, 2017.

Statista. Number of Super Bowl viewers (TV) 2017, 2017. URL https://www.statista.com/statistics/216526/super-bowl-us-tv-viewership/. Retrieved April 12, 2017.

Szymanski, S. The economic design of sporting contests. *Journal of Economic Literature*, 41(4):1137–1187, 2003.

Szymanski, S. and Késenne, S. Competitive balance and gate revenue sharing in team sports. *The Journal of Industrial Economics*, 52(1):165–177, 2004.

Taylor, M. Revenue Sharing In Major League Soccer. Coventry University, 2015. URL https://curve.coventry.ac.uk/open/file/e8eb7c23-8f98-4b28-bd67-1a6050222a00/1/RevenueSharingInMajorLeagueSoccer_Redacted.pdf.

The Guardian. Premier League broadcasting revenue: how is it distributed?, 2012. URL https://www.theguardian.com/news/datablog/2011/oct/12/football-broadcasting-deal-liverpool. Retrieved March 30, 2017.

Totalsportek. Premier League TV Rights Money Distribution (2016-19), 2015. URL http://www.totalsportek.com/money/premier-league-tv-rights-money-distribution/. Retrieved March 30, 2017.

Totalsportek. Spanish La Liga New 3 Year TV Deal Worth € 2.65 billion, 2016. URL http://www.totalsportek.com/money/spanish-la-liga-new-3-year-tv-deal-worth-e2-65-billion/. Retrieved April 5, 2017.

Transfermarkt.de. Die letzten Marktwert-Updates, 2017a. URL http://www.transfermarkt.de/spieler-statistik/marktwertaenderungen/marktwertetop. Retrieved May 4, 2017.

UEFA. UEFA rankings for club competitions, 2017. URL http://www.uefa.com/memberassociations/uefarankings/country/. Retrieved April 24, 2017.

US Census Bureau. U.S. and World Population Clock, 2017. URL https://www.census.gov/popclock/. Retrieved March 26, 2017.

Van Der Burg, T. and Prinz, A. Progressive taxation as a means for improving competitive balance. *Scottish Journal of Political Economy*, 52(1):65–74, 2005.

Vrooman, J. A general theory of professional sports leagues. *Southern Economic Journal*, 61(4):971–990, 1995.

Wilson, B. Premier League revenues hit a new high but profits fall, 2016. URL http://www.bbc.com/news/business-36034403. Retrieved April 11, 2017.

Zimbalist, A. S. Competitive balance in sports leagues: An introduction. Journal of Sports Economics, 2002.