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Market Power and Media Revenue Allocation in Professional Sports: The Case of Formula One

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Abstract: Recent allegations from participants of the FIA Formula One World Championship (F1) suggest that the promoter of F1 (possibly together with the sports association) violates European competition law in two ways. First, it allegedly abuses its market power by deducting an inappropriate high share from the revenues of the collective sale of media rights in order to boost the profits of its private equity parent company (vertical allocation of media revenue). Second, it allegedly forms a cartel with selected top teams at the detriment of smaller teams by providing both unjustified extra payments to these teams and enforcing a heavily biased horizontal allocation of media revenues, benefitting the cartel teams. Professional sports championships typically receive common revenue, for instance, from trademark rights and marketing, but often also from the sale of broadcasting and other media rights. This common revenue needs to be allocated in two ways: (i) vertical allocation between the sports authority and the participants, and (ii) horizontal allocation among the participants. Different professional sports championships employ vastly differing schemes for both types of allocation. In this paper, we present an empirical assessment whether the current antitrust allegations against F1 may be valid. We employ concentration measures from empirical economics, like the Hirshman-Herfindahl-Index (HHI), the concentration ratio and the standard deviation in order to assess different allocation schemes from different commercial sports. With the help of these indices we show that the allocation scheme employed in F1 considerably differs from such used in other professional sports cham-

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pionships. We find the empirical picture to be consistent with an anticompetitive interpretation of F1 media revenue structures and policies. We conclude that there is merit in starting an in-depth antitrust investigation of Formula One motor racing, which would also represent an opportunity for the European Commission to correct earlier mistakes.

Keywords: competition, antitrust, abuse of market power, sports economics, formula one motor racing, sports business, media revenue, football

JEL-Codes: K21, L12, L40, L83, Z20

1. Introduction

In October 2015, two teams of the FIA Formula One World Championship (F1; major single seater motor racing) filed a complaint with the competition directorate of the European Commission.[1] Their antitrust concerns are primarily with the allocation of revenues from the collective sale of media rights. Following up on an earlier initiative by a member of the European Parliament (*Budzinski* 2014), the complaint stands in the context of the question whether the authorities of F1 abuse their market power vis-à-vis some of the teams racing in the series. And, moreover, whether the authorities form an anticompetitive cartel with some of the leading teams in order to secure supracompetitive rents and cement (unfair) competitive advantage (*Budzinski* 2015).

Professional sports is a billion euro business and as such subject to competition rules and antitrust policy. The FIA Formula One World Championship (F1) by some accounts represents the second biggest sports business in the world. Its media revenues amount to approx. 1.5 bn € per year. Actually, competition policy is particularly relevant, since the special character of professional sports championships inevitably creates significant market power. In order to be workable and efficient, professional sports championships need common rules and a centralized rule-enforcement by a market-internal regulator: the sports association (like the FIFA and UEFA in European football, the FIA in motor racing, the NFL in American football, etc.). However, the monopoly of the sports association extends to commercial aspects. First, rule-making and -enforcement itself can be subject to commercial considerations, for instance, changing rules to make sports more attractive or more telegenic and mediagenic. Second, since a professional championship represents – in terms of product characteristics – more than the sum of its parts (participants), the 'owners' of the championship more often than not receive common revenue (for instance, from trademark rights and marketing, but often also from the sale of broadcasting and other media rights[2]). This common revenue needs to be allocated in two ways: (i) vertical allocation between the commercial rights holder (e.g. the

[1] See http://www.bbc.co.uk/sport/0/formula1/34388544 (2015-10-05).
[2] In some sports this may be necessary so, in others not; see section 3.

monopolistic sports association) and the participants, and (ii) horizontal allocation among the participants. We descriptively show in this paper that different professional sports championships employ vastly differing schemes for both types of allocation.

In order to derive an empirical assessment whether the allegations in the context of F1 may be valid or just represent the special characteristics of sports markets, we analyze different allocation schemes by employing concentration measures from empirical economics, like the Hirshman-Herfindahl-Index (HHI), the concentration ratio and the standard deviation. With the help of these indices we show that the allocation scheme employed in F1 considerably differs from such used in other professional sports championships. We find the empirical picture to be consistent with an anticompetitive interpretation of F1 media revenue structures and policies. In the light of our analysis, we conclude that the European Commission made inadequate competition policy decisions regarding Formula One motor racing in the past and should change its assessment and policy in the future.

The paper is organized as follows. After reviewing the special market power problem in professional sports (section 2), we categorize different stylized allocation models and their underlying motivation (section 3). Section 4 presents the empirical picture of media revenue allocation in selected sports, compares F1 to the other sports and provides implications for competition policy. Section 5 concludes.

2. Sports Markets and Market Power

When talking about the special market power of sports associations and what that means for the market, we have to consider the special characteristics of (commercial, professional) sports.[3] Sports markets fundamentally differ from "ordinary" markets (*Rottenberg* 1956; *Neale* 1964; *Downward* et al. 2009). In stark contrast to

[3] When we analyze sports markets in this paper, we refer to professional or commercial sports in the sense that a professionally-produced product is sold to different types of demand and different groups of customers (ticket buyers, buyers of broadcasting rights, buyers of advertising space, etc.; *Budzinski* & *Satzer* 2011). Thus, we do not address grassroots sports (no commercial elements) or competitive sports produced by non-professional athletes (i.e. not earning their money with offering sports performance).

ordinary markets, competitors need each other in order to create a sellable product – be it an individual game or the entire championship. This has two important implications (*Fort* 2003; *Lindström-Rossi et al.* 2005; *Kienapfel & Stein* 2007; *Dietl* 2010; *Budzinski* 2012). First, strategies to eliminate the competitors in order to enjoy a monopoly cannot be sustainable in a sports market because a monopoly team would have nobody left to play/compete against and the business would cede to exist. Every sports market needs a sufficient number (the exact number can vary) of competitors in order to create the product "championship". These competitors need to be able to maintain a minimum sportive and economic competitiveness. Second, the competitors cannot act completely independent from each other. Instead, they need to cooperate with each other to a certain extent. Of course, competitors in ordinary (oligopolistic) markets cannot act independently from each other as well. Instead, they find themselves in a situation of strategic interdependency, meaning that the success (reward) of an action by one competitor depends on the smartness of the chosen strategy *as well as* on the reactions of the competitors to this strategy. Competitors in sports markets do face this strategic interdependency as well – for instance, when it comes to sportive competition: the success of a certain playing strategy of a football team depends not only on how good it is executed but also on how the opponent team reacts to it. Regarding the business competition, however, competitors in sports markets depend on each other beyond this strategic interdependency: they need to cooperate with each other on the rules of the game, the schedule of the games in a championship, the format of the championship, etc. No team can provide these necessary elements alone. Instead, all the competitors either need to cooperate on setting and enforcing the regulatory framework or delegate it to a responsible body – the sports association[4].

Consequently, the sports association necessarily enjoys a remarkably powerful position in a sports market. *Neale* (1964) even believes that a sports market constitutes a natural monopoly. In his view, the regulatory framework serves the condition of one firms being able to produce output at lower costs that two or more firms.

[4] We understand the sports association as being the principal governing body of a championship. Terms like sports federation, union, organization, etc. are sometimes used in a synonymous way in the literature.

Sloane (1971) argues that sport markets mirror a cartel because it is the competitors in the sports market that 'own' the monopolistic sports association and dictate its behavior. *Palasca* (2006) reinforces this view by emphasizing the hardcore cartel character of this cooperation among the competitors in sports markets. However, the cartel interpretation rests on the assumption that the competitors (e.g. clubs or teams) own and control the sports association. While the first is true for many sports markets, relevant exceptions do exist (see below section 4.1). Furthermore, the chain of ownership might be rather indirect and due to their organizational structure, many sports associations can de facto act very independent from the clubs and teams and the latter's controlling power is considerably limited (= the agents may be able to act largely independent from their principals). In order to establish a more generalized approach, *Budzinski* and *Szymanski* (2015) conceptualize the market power phenomenon in sports markets as a vertical relationship between the sports association and the clubs. The authors distinguish the vertically-related market stages *competition organizing services* (upstream) and *match playing services* (downstream). Competition organizing services are provided by the sports association. This includes aspects like setting the rules of the game, enforcement of the rules, organizing timetables/calendar, etc. This stage of the supply-chain is typically monopolistic. Match playing services are delivered by the teams who turn up and play. This stage of the supply-chain is competitive. Thus, the supply of competition organizing services represents a bottleneck within the supply-chain of professional sports.[5] In that sense the authors understand the sports association "as the upstream firm that controls access to an attractive product" (*Budzinski* & *Szymanski* 2015: 15). On that basis, (inter alia) *Budzinski* & *Szymanski* (2015) conclude that the position of a sports association might be dominant but possibly also need to be in order to provide the best service for the con-

[5] The market power of this bottleneck could be alleviated if several championships (each with their own 'monopolistic' competition organizing services provider (sports association)) compete with each other within the same or similar sports disciplines (*Ross* 1989, 2003). However, there is good reason to argue that one top or premier championship, bringing the best talent together to compete with each other (on the match playing stage), serves consumers interests better than rival championships (*Budzinski* & *Szymanski* 2015), like for instance the Formula One world championship or a national championship like the British Premier League (European football). That one competition is then best to determine the best team underneath all the competitor. It would not make sense to have more than one Formula 1 championship or more than one league in a country as it would split up the sport and take away from its attractiveness.

sumers and fans. This is also accepted, for instance, by the *European Commission* (2007a, 2007b) who refers to the *monopolistic pyramid structure* of professional sports organizers.

Even though the existence of market power might be inevitable, this does not imply that abuses of this power cannot and should not be subject to antitrust interventions. This is particularly true since the activities of sports associations, or more generally providers of competition organizing services, usually also include business elements. On the one hand, producing the regulatory framework itself as well as the organization of the schedule can be subject to commercial considerations. Examples include the changing of sportive rules to make sports more attractive, more telegenic and more mediagenic or the scheduling of matches that are likely championship deciders for the final round of games. Beyond that, on the other hand, the bottleneck position of the sports association and the associated power set incentives to directly engage in profitable commercial activities – for instance, the collection of revenues from marketing the common product. Thus, we need to further address the commercial rights exploitation of professional sports championships.

3. Media and Broadcasting Revenue Allocation in Professional Sports

The product "championship" consists of its participants, which market themselves (individual team trademark rights and merchandise revenues, sponsorship contracts, ticket revenues for home games, etc.), plus a common brand that creates common revenues (trademark rights of the championship as a whole and related merchandise, sponsorship contracts, etc.). Furthermore, the sale of broadcasting rights (along with other media coverage rights) usually represents a major revenue source of professional sports. However, it is not *a priori* clear whether these revenues are individual (i.e. should be collected on the level of the teams) or collective (i.e. should be collected by the championship organizers). In traditional team sports, like football, an individual marketing of broadcasting rights is easily possible since every team may be viewed to be the 'natural' commercial rights holder for its home games. A collective sale of broadcasting rights may then be viewed to consti-

tute a (price) cartel. On the other hand, it may be argued that the championship context adds to the value of the game (and thus the value of the broadcasting rights) since a specific game of, say Tottenham Hotspurs versus Manchester City, is much more attractive if it is for championship points than if it is played outside the championship. Sports economics literature is rather controversial on this issue.[6] While in team sports leagues an individual sale of broadcasting rights is easily possible (even if its desirability may be controversial), this may differ with respect to other professional sports. Looking at the Formula One World Championship, for instance, gives a more complex picture since a 'natural' commercial rights holder is more difficult to identify: is it the teams, the manufacturers, the drivers, the circuit owners, or 'naturally' the organizer (or the promoter)?

Irrespective of the theoretical merits and disadvantages of collective or centralized sale of broadcasting rights, virtually all professional championships engage in it.[7] Competition policy authorities in Europe and in the U.S. have repeatedly approved this practice.[8] Even if one sides with the critics of centralized marketing, the de facto existence of it still implies that analysis of these practices is warranted. Whenever central revenues exist, any professional sports business faces the task of allocating the commonly collected revenue. This entails two different types of allocation:

(i) a vertical allocation between the competition organizing services provider (sports association) and the match playing services provider (teams, clubs, etc.), i.e. what is the share of the common revenue that is allocated to the participants and how high are the deductibles that the commercial rights holder keeps, and

(ii) a horizontal allocation among the participants (teams).

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[6] See with differing results *Atkinson* et al. (1988), *Késenne* (2000, 2001, 2009, 2014), *Kruse* & *Quitzau* (2002), *Falconieri* et al. (2004), *Gürtler* (2007), *Noll* (2007) and *Peeters* (2011, 2012).

[7] The Spanish football league used to be a prominent exception, however the Spanish league decided to change its system from individual selling to collective selling starting for the 2016/2017 season.

[8] See *Ross* (1999), *European Commission* (2003a, 2005, 2006), *Cygan* (2007), *Massey* (2007), *Bundeskartellamt* (2008), *Budzinski* (2012), and *Mitten* & *Hernandez* (2013). The U.S. Sports Broadcasting Act from 1961 provides far-reaching antitrust exemption for the joint-selling of media rights by U.S. professional sports leagues.

While the first allocation type is merely about how the total of the common revenues is vertically shared between the championship participants as a group and the championship organizer, the second type addresses the horizontal question of the relative inflows of the participants. On both levels, different models can be distinguished.

Regarding the vertical allocation, the organization of the promotion of the championship becomes relevant. Who is acting as a promoter, exploiting the common commercial rights, and who owns the promoter is organized in different ways across different commercial sports. Three stylized models can be distinguished:

a) The sports association as the (monopolistic) competition organizing services provider may act as the promoter (commercial rights holder) itself. In this case, the ownership of the promoter is identical with the ownership (members) of the sports association.
b) The championship participants/teams form a separated promoter organization as the commercial rights holder under their ownership.
c) An independent organization/company, owned by external players, is assigned to act as the commercial rights holder.

Only in model (b) the owners of the commercial rights holder are perfectly congruent with the receivers of the revenue. Here, all common revenue ends up with the teams/participants. In model (a), the owners of the commercial rights holder are not identical with the participants of the championship because usually also teams of lower levels of the sport are (directly or indirectly) members of the sports association. In model (c), there is no overlap between promoter and promoted. Obviously, the models differ in terms of incentives to maximize revenues for the different market stages.

With respect to the horizontal allocation – the allocation among the match playing services providers – four stylized allocation schemes may be distinguished:

- An *equal allocation*, i.e. each team of a championship receives the same share of the common revenues.

- A *performance-based allocation*, i.e. teams that perform better (higher win or points score, better position in the championship ranking, etc.) receive a higher share of the common revenues than such with worse performances do. Obviously, this model covers a wide range of allocation schemes that can be classified according to the degree of inequality of the revenue allocation along a continuous continuum from minimal skewness to a winner-takes-all model.
- A *reverse-performance-based allocation*, i.e. teams performing better receive a smaller share of the common revenue than such who perform worse. Again, different degrees of skewness may be implemented.
- A *brand-value-based allocation*, i.e. teams with a larger fan-base (however this is measured) and/or a higher marketing potential (past success, traditions, etc.) receive higher shares of the common revenues. Again, different degrees of skewness may be implemented.

Of course, these models can be combined, for instance, a defined percentage of the common revenues may be allocated equally, another percentage performance-based, etc.[9] The different models follow different economic considerations and goals.[10]

Competitive balance considerations motivate *equal allocations*: mainstream sports economics theory views financial imbalances between the teams/participants to be the most important factor for competitive imbalance.[11] According to standard sports economics wisdom, the latter reduces the attractiveness of the sports event for the consumers (fans, attendants, viewers, etc.), wherefore a common interest of the teams/participants exists to preserve (some) competitive balance (*Rottenberg* 1956; *Neale* 1964; *El-Hodiri* & *Quirk* 1971).[12] Since individual revenues of teams

[9] The combination of performance-based and reverse-performance-based elements appears to be somewhat inconsistent and contradictory, though.

[10] Beyond economic considerations, aspects and arguments of fairness (according to whatever explicit or implicit concept of this term) often play a considerable role in sports.

[11] See, inter alia, *Késenne* (2000), *Szymanski* (2001, 2006), and *Szymanski* & *Késenne* (2004).

[12] It is, however, controversial how much competitive balance is attractive. Recent research has pointed out that perfect competitive balance (sort of a random walk) may be as unattractive as perfect imbalance (domination of one team) as well as that competitive balance is a complex

(sponsorship contracts, ticket revenues, merchandise revenues, etc.) differ and are usually (imperfectly) correlated to sporting success, unequal allocations of common revenue would further increase the already existing financial imbalances with negative effects on the overall product (the championship). An equal allocation of common revenues, in contrast, would limit the tendency towards financial and competitive imbalance. A *reverse-performance-based allocation* may then be viewed as a means to reduce the imbalance stemming from differing individual revenue potentials, thus, improving financial and competitive balance.

On the other hand, incentive considerations motivate *performance-based allocation schemes*. If a better performance leads to a higher share of the common revenue, the incentive to perform and win is increased beyond the purely sporting desire to do so. While this may be rather ineffective with respect to the fight for championships or against relegation, this additional incentive level becomes more relevant with a decreasing relevance of the sporting competition. For instance, in a professional football league, games between two midfield teams that neither are in contention for the championship or advanced rounds qualifications (play-off, European competitions, etc.), nor in danger of being relegated may lack sufficient sporting incentive to motivate effort (*Feddersen* et al. 2012): if a team ends in P10 or P12 at season's end may be rather unimportant. However, a performance-based allocation of common revenues may alleviate or even compensate the lack of sporting incentives, thus, improving the quality of the overall product.

Eventually, a *brand-value-based allocation* follows the concept to attribute to the participating teams the share that they contribute to the common revenue. A team that has a higher fan-base contributes more to collecting common revenues than one with a small fan-base – and this is not strictly related to current success or performance.

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construct with different dimensions with differing relevance. See the recent surveys by *Budzinski* & *Pawlowski* (2014) for competitive balance issues and *Budzinski* & *Feddersen* (2016) for other demand factors determining attractiveness (and the extensive literature cited in both surveys).

4. Empirical Allocation Schemes in Selected Professional Sports: Abuse of Market Power?

In order to further analyze the different allocation schemes we select some of the main championships within commercial sports: the FIA Formula One World Championship (F1, 1,65 bn US$ estimated annual turnover 2014), the American National Football League (NFL; 13 bn US$ revenue in 2015) and the first European football divisions from Germany (Bundesliga; 2,62 bn € revenue in 2014/2015), England (Premier League; 4,838 bn € revenue in 2014/2015), Italy (Serie A; 1,699bn € in 2013/2014), France (Ligue 1; 1,498bn € in 2013/2014) and Spain (Primera Division; 1,933bn € in 2013/2014). These leagues all represent the highest grossing championships concerning revenues in the US or Europe. The selected European championships generate the highest revenues of all European-style football leagues, above such in Brazil or Argentina. The NFL is the highest grossing league in the US, receiving 3bn US$ more in revenues in 2015 than the second highest earning league, the Major League Baseball (MLB, 8,7bn US$ revenue in 2015). We would have liked to include the MLB as well, however, we were unable to obtain relevant data. Eventually, we include NASCAR (Nascar, 3.1bn US$ in 2013) as the second most professional motorsports championship. For all these championships, we collect data on vertical and horizontal allocation schemes of the common revenues. Despite representing very different sports, all these professional championships share the phenomenon of gaining considerable common revenues (predominantly from media) and having to allocate them vertically and horizontally. Thus, we can compare the different allocation schemes regarding possible exploitations of market power.

4.1 Description of Allocation Schemes

In this section, we present the empirical data about the selected championships.

4.1.1 Vertical Allocation Schemes

Table 1 shows who owns the commercial rights to the individual championships and how these commercial rights holders are organized.[13]

Table 1: Overview Organization of the Commercial Rights Holder

	Governing Sports Association	Commercial Rights Holder	Organizational Structure	Ownership	Organization type
Formula 1	FIA	Formula One Management Ltd. / Delta Topco Ltd.	Private Equity Firm	CVC Capital Partners (35 %), Waddell & Reed (20.9 %), Lehman Brothers (12.3 %), Bambino (8.5 %), Ecclestone (5.3 %), other funds and banks (18 %)	C
NFL	National Football League	National Football League	Non-Profit Organization[14]	Made up of the 32 member clubs	A
Bundesliga	DFB (Deutscher Fußball Bund e.V.)	DFL (Deutsche Fußball Liga GmbH)	Limited Liability Company	Die Liga – Fußball Verband e.V. (DFL is 100% subsidiary of DFB)	B
Premier League	Premier League	Premier League	Private company	owned by the 20 Member Clubs who make up the League at any one time	B
Serie A	Lega Serie A	Lega Serie A	Private Equity firm	Clubs of the league	B
Ligue 1	Ligue de Football Professionnel	Ligue de Football Professionnel	LFP: sports association	made up of all football clubs from 1st & 2nd division	A
Primera Division	Liga Nacional de Fútbol Profesional (short LFP)	Currently individual; Starting 2016 LFP	LFP: sports association	made up of all public limited sports companies and football clubs[15]	B
Nascar	NASCAR	NASCAR	Family owned business venture	France family	A

[13] The information presented in tables 1 and 2 was gathered from the following sources: Formula 1 - Rencken & Barretto 2015, Sylt 2014a; NFL – Constitution and bylaws of the National Football League, Bundesliga – http://www.bundesliga.de/de/dfl/statuten/ ; Premier League - http://www.premierleague.com/ content/premierleague/en-gb/about/who-we-are.html; Serie A – Statuto – Regolamento Lega Nazionale Professionisti Serie A (http://www.legaseriea.it); Ligue 1 – Statuts de la LFP (http://www.lfp.fr/corporate/reglements); Primera Division - http://www.laliga.es /en/lfp/regulations; Nascar - http://www.nascar.com/en_us/news-media/articles/about-nascar.html as well as http://www.sportsbusinessdaily.com/Journal/Issues/2013/07/29/Leagues-and-Governing-Bodies/NASCAR.aspx.

[14] For further information, see: static.nfl.com/static/content//public/static/html/careers/pdf/co_.pdf.

[15] See sports association made up of all the public limited sports companies and football clubs.

Table 1 shows that Formula 1 is the only championship organized according to type c, where the media rights are owned by an external company which is independent from the teams competing in the championship. Formula One Management Ltd. (FOM) is, through a chain of companies, a subsidiary of Delta Topco Ltd. who is owned by several asset management companies under the lead of the private equity company CVC Capital Partners (which holds the majority of voting rights; *Sylt* 2014a). It bought the exclusive commercial rights to F1 for a 100 year period (2010-2110) from the sports association (FIA – Fédération Internationale de l'Automobile). In all other cases the individual teams of the championship are somehow directly connected to the organization selling the commercial rights (types A and B).

Table 2 shows the *vertical* allocation schemes (between commercial rights holder on the one side and the group of participating teams on the other side) for the championships under investigation.

Table 2: Vertical Allocation Schemes; Note: since some championships form packages with lower divisions regarding TV deals, we recalculated the numbers so that 100 per cent represent the common revenue of the respective first division

	Share of the commercial rights holder	Use of the CRH's share	Share of the teams	Other recipients
FIA	35%	profits for Delta Topco	65%	-
NFL	0%	-	100%	-
Bundesliga	0%	-	80%	20% for 2nd division
Premier League	0%	-	100%	-
Serie A	0%	-	100%	-
Ligue 1	0%	-	100%	-
Primera Division	3%	2% administration 1% league system	93%	3.5% parachute payment[16] 0.5% CSD[17]
Nascar	10%	profits for NASCAR	25%[18]	65% to race circuit operators

16 Parachute payments are given to those clubs that get relegated into the second division.

17 A very interesting aspect is the 0.5% for CSD (Consejo Superior de Deportes) that are kept by the LFP in Spain. This money is supposed to be used for aiding female football clubs participating in the women's first division (covering social security contributions), aiding football clubs participating in the second division "B" (in order to pay social security contributions) and to aid to associations or unions of players ('AFE'), referees, coaches and trainers. See http://www.asser.nl/SportsLaw/Blog/post/the-spanish-tv-rights-distribution-system-after-the-royal-decree-an-introduction-by-luis-torres.

18 Of these 25%; 93% go to the Sprint Cup Series Teams, 5% to the Nationwide Series Teams and 2% to the Camping World Truck Series Teams.

Four out of the eight championships we are looking at allocate all the common revenues to the participants of the respective championship (NFL, Premier League, Serie A, and Ligue 1). The DFL allocates 20 per cent of the revenues to the second division, which, however, is part of the package (i.e. the revenues from television rights to broadcast the second league are included in the total revenue). Thus, de facto all the money goes to the sporting competitors here as well. Only three keep a share of the revenues for the commercial rights holder itself. In the case of the Primera Division, the majority (57.1 per cent) of the withheld revenue serves to support the sport in other ways (parachute payments, CSDs) and only 3 per cent of the total revenue end up 'in the pockets' of the commercial rights holder. In the case of Nascar, a remarkably higher share of 10 per cent is withheld from the sport and pocketed as profits by the sports association. Perhaps not surprisingly, this share is raising substantial criticism and controversy within Nascar and viewed to be too high.[19] The complete outlier in the vertical allocation schemes is Formula One. Here, the commercial rights holder pockets 35 per cent of the common revenue for its profits[20], which is more than three times higher than the already controversial Nascar share. Interestingly enough, the significantly higher share of F1's commercial rights holder corresponds to F1 being the only sports of our organization type C (see table 1), i.e. a commercial rights holder that is ownership-wise completely independent from the participants in the sports.

4.1.2 Horizontal Allocation Schemes

In order to compare the different *horizontal* allocation schemes, i.e. among the participants of the championship, we define the total volume of money distributed to the teams as 100 percent. This yields table 3.

[19] See http://www.sportsbusinessdaily.com/Journal/Issues/2013/07/29/Leagues-and-Governing-Bodies/NASCAR.aspx.

[20] In former years, the share was about 40 per cent and higher.

Table 3: Horizontal Allocation Schemes; sources: Rencken & Barretto 2015, www.bleacherreport.com, www.fernsehgelder.de, DFL 2012, 2014, www.totalsportek.com, www.forbes.com, www.asser.nl, www.sportsbusinessdaily.com

	Equal allocation (percentage of total volume)	Performance based (percentage of total volume)	Reversed performance based (percentage of total volume)	Brand value based allocation (percentage of total volume)
Formula 1	none	50% final position in the constructor's championship of last season	None	15 % "heritage payment"
NFL	100%	None	none	None
Bundesliga	none	- 100% are allocated based on performance - complex point system regarding the last 5 seasons[21]	none	None
Premier League	50%	25% last season's final position	none	25% "facility fee"
Serie A	40%	5 % last season's final position 15% results of last 5 seasons 10% historical results[22]	none	25% "supporter index element" 5% community population
Ligue 1	50%	30% last season's final position	none	20% based on TV ratings
Primera Division (starting 2016)	50%	25% position of last 3 seasons	none	25% resource generation ability
Nascar	100%	None	none	None

Out of the eight professional sports championships, six allocate at least a share of the distributed common revenue equally among the teams. The two U.S.-based championships even allocate all the common revenue equally. In contrast, Formula One and the Bundesliga have no equal allocation at all.[23] Overall, competitive balance considerations seem to play a role in the majority of the horizontal allocation schemes. However, the concern with competitive balance issues does not appear to

[21] The last season is being weighted with factor 5, the least recent year is weighted with 1. Within each year the final position is award points ranging from 36 for the first in division 1 to 1 point for the last in division 2.

[22] The historical results are based on the rank of the club in the league since 1946 (http://www.financialfairplay.co.uk).

[23] Note that an equal distribution may be 'hidden' in the merit payment allocation. The performance-based payment for the team finishing last represents the baseline payment that every team receives – and could be viewed to represent sort of an equal payment.

be strong enough to offset incentive issues.[24] Interestingly none of the selected championships employs elements of a reversed-performance-based system, whereas everyone except of the NFL and Nascar distributes some of the revenues according to performance-based concepts. The incentive-based share ranges from 25 per cent (Premier League and Primera Division) up until 100 per cent (Bundesliga). In doing so, some allocation schemes consider success in between three and five past seasons (Bundesliga, Serie A, Primera Division), whereas others exclusively focus on the last season (Formula One, Premier League, Ligue 1).

Five out of the eight championships additionally consider brand value concepts, albeit in very different ways. The Serie A allocates a total of 30 per cent of the common revenue according to a so-called "supporter index element" (SIE; 25 per cent) and a community population measure (5 per cent). The SIE tries to capture the number of supporters of each club. This is done by polls conducted among football fans by three market research companies, seeking to identify how enthusiastic they are and which clubs they support. Even though the measuring method remains rather intransparent so far[25], the general idea is: the more popular a team is among fans, the more money it receives in this distribution. By attempting to measure the size of the fan base, this clearly corresponds to the brand value concept. Taking the population of the community of each team as an indicator points in the same direction: teams with larger home markets receive more money than teams with smaller home markets, probably as a proxy for potential fan-bases. The Premier League allocates 25 per cent of the common revenues according to a so-called "facility fee". It is determined by how often any game of the respective team is being shown live on TV and also meant to serve as a proxy for a team's popularity among fans (assuming that TV stations will seek to broadcast the most attractive games for fans). In similar ways, the Primera Division also allocates 25 per cent according to a(nother) proxy for brand value, called "resource generation ability" (an index consisting, inter alia, of number of club members, attendance, ticket sales,

[24] Or, alternatively, the common interest in competitive balance may not be strong enough to overcompensate the self-interest of the big players. The latter may be particularly relevant when the teams 'own' the promoter.

[25] See http://www.financialfairplay.co.uk/latest-news/tv-revenue-distribution-%E2%80%93-comparing-italian-and-english-models.

etc.) and Ligue 1 20 per cent simply according to TV ratings. Eventually, Formula One allocates 15 per cent of the common revenue as so-called 'heritage payments' exclusively to six teams (Ferrari, Red Bull, Mercedes, McLaren and Williams). If 'heritage' in the sense of historical value to F1 is meant to be captured by this allocation element, it also belongs into the brand value concept category.

In summary, there is clearly a desire to capture brand value of teams and factor this into the horizontal allocation: traditional teams with large fan bases (incumbents) shall receive higher shares then newcomers with (as yet) smaller fan bases because if the traditional teams are successful, they draw a bigger audience, thus maximizing common revenues for the championship (at least in the short run). At the same time, there is a considerable diversity of proxies with which the different championships try to measure brand value. Note that an alternative explanation for employing brand value concepts to allocate common revenues could be to favor insiders over outsiders, incumbents over newcomers – and thus to create an entry barrier and protect the rents of the current insiders against fresh competition. The possible anticompetitive character of such concepts becomes particularly clear if one considers that the easiest way of procompetitively including brand value would be to revert to a competitive revenue generation, namely individual instead of collective marketing of media rights.

From table 3, we can see that the horizontal allocation schemes are somewhat complex so that it cannot be immediately assessed how equal or unequal the resulting distribution is. Therefore, in order to better assess which effects the different schemes yield on the (un-) evenness on money distribution among the teams, we calculate how the distribution would pen out for a recent season of the selected championships (tables 4-7).

Table 4: Revenue Allocation in Formula 1 in season 2014 in $Mio; source: Rencken & Barretto 2015) as well as own calculations

Rank in Constructors Championship	Team	Heritage payment received	Performance-based distribution received	Total sum received	% of overall revenues
1	Mercedes	34	92	126	14.27
2	Red Bull Racing	74	82	156	17.67
3	Williams	10	73	83	9.40
4	Ferrari	97	67	164	18.56
5	McLaren	34	63	97	10.99
6	Force India	-	60	60	6.80
7	STR	-	54	54	6.12
8	Lotus	-	51	51	5.77
9	Marussia	-	48	48	5.44
10	Sauber	-	44	44	4.98
Total		249	634	883	100

Table 4 shows that due to the heritage payments for five of the teams participating in the F1 championship, the distributed sums vary intensely. Also notable is the fact that due to the heritage payments, it is not the first in the championship that receives the biggest share of the overall sum. Actually the team with the highest share of the common revenues only finished 4th in that year's championship. Remarkably, the heritage payment for Ferrari alone was higher than the performance-based share for the winner (97m to 92m). This implies that non-heritage teams (≈ half of the teams) cannot earn more than Ferrari from common revenues irrespective of performance. Consequently, the horizontal allocation scheme in F1 is predominantly based upon the heritage payments, ostensibly reflecting brand value[26], with incentive considerations playing a minor role and competitive balance considerations being obviously irrelevant. Furthermore note that the number of teams actually should be 12. However, due to financial distress, not all teams' slots could be filled for the 2014 season. Note also that new teams will reportedly not receive any share of the common revenue in the first three years of participation (*Rencken & Barretto* 2015).

[26] We will shed more light on this in section 4.3, table 9 and the accompanying text.

The NFL (National Football League) generated $4,065bn in 2013. These revenues were shared equally among all clubs participating in the NFL (*Vrooman* 2012). Regarding that there are 32 teams participating in the NFL that means that purely in national TV rights, each team received roughly $127mil that year. Thus, the NFL clearly values competitive balance considerations higher than incentive or brand value concepts. In a similar way, Nascar shares the common revenues equally among the teams in line with a strong focus on competitive balance considerations.

Table 5: Revenue Allocation Deutsche Bundesliga in Season 2014/15 in T€; source: http://www.fernsehgelder.de/201415.php and own calculation

Rank at the end of the season	Team	Revenues received from National TV market	% of overall revenues
1	FC Bayern München	38,044	7.39
2	VfL Wolfsburg	31,331	6.09
3	Borussia Mönchengladbach	33,569	6.52
4	Bayer 04 Leverkusen	35,807	6.96
5	FC Augsburg	22,379	4.35
6	FC Schalke 04	34,688	6.74
7	Borussia Dortmund	36,925	7.17
8	TSG 1899 Hoffenheim	25,736	5.00
9	Eintracht Frankfurt	24,617	4.78
10	SV Werder Bremen	26,855	5.22
11	1.FSV Mainz 05	30,212	5.87
12	1.FC Köln	20,141	3.91
13	Hannover 96	32,450	6.30
14	VfB Stuttgart	27,974	5.43
15	Hertha BSC	21,260	4.13
16	Hamburger SV	24,617	4.78
17	SC Freiburg	29,093	5.65
18	SC Paderborn 07	19,022	3.70
∑		514,720	100

Now we are turning to the European-style football leagues. In the case of the Bundesliga (table 5), the payments do not strictly correlate with the championship position of the last season, which is due to the performance in the last five seasons being used for this allocation scheme (see table 3). Therefore, Borussia Dortmund, a team that has been much more successful in the preceding seasons, earns more from the common revenue than the teams finishing directly in front of it. However, notwithstanding, it represents a clearly incentive-based allocation as performance –

over a five-year period – is the only criterion for the distribution of money. The spread between the teams is obviously bigger than in the NFL but appear to be smaller than in F1. Note that there is an ongoing discussion among Bundesliga clubs whether brand value aspects like tradition and fan-base shall be added to the allocation scheme in the future.

Table 6: Revenue Allocation Premier League 2013/14; source: http://www.premierleague.com/en-gb/news/news/2013-14/may/premier-league-broadcasting-commercial-payments.html and own calculation

Rank at the end of the season	Team	Equal Share	Facility Fee	Merit Payment	Total	% of overall revenue
1.	Manchester City	21.6	19.7	24.7	66.0	6.94
2.	FC Liverpool	21.6	21.9	23.5	67.0	7.04
3.	FC Chelsea	21.6	19.7	22.2	63.5	6.68
4.	FC Arsenal	21.6	19.7	21.0	62.3	6.55
5.	FC Everton	21.6	13.1	19.8	54.5	5.73
6.	Tottenham Hot-spur	21.6	18.9	18.5	59.0	6.20
7.	Manchester Uni-ted	21.6	19.7	17.3	58.6	6.16
8.	FC Southampton	21.6	8.6	16.1	46.3	4.87
9.	Stoke City	21.6	8.6	14.8	45.0	4.73
10.	Newcastle United	21.6	11.6	13.6	46.8	4.92
11.	Crystal Palace	21.6	8.6	12.4	42.6	4.48
12.	Swansea City	21.6	10.9	11.1	43.6	4.58
13.	West Ham United	21.6	11.6	9.9	43.1	4.53
14.	AFC Sunderland	21.6	10.9	8.7	41.2	4.33
15.	Aston Villa	21.6	13.1	7.4	42.1	4.43
16.	Hull City	21.6	8.6	6.2	36.4	3.83
17.	West Bromwich Albion	21.6	8.6	4.9	35.1	3.69
18.	Norwich City	21.6	8.6	3.7	33.9	3.56
19.	FC Fulham	21.6	8.6	2.5	32.7	3.44
20.	Cardiff City	21.6	8.6	1.2	31.4	3.30

In the English Premier League (table 6), a much richer set of criteria is employed. Performance-based considerations (merit payment) and brand value concepts (facility fee) explain the differences in outcome and the facility fee effect leads to considerable deviations between championship ranking and money ranking (from common revenues). For instance, the vice-champion out-earns the champion in this specific season. Compared to the Bundesliga, the equal share (competitive balance considerations) should reduce the differences between the teams (if effective).

However, this is difficult to assess without employing further measures (see section 4).

Table 7: Resource Allocation in Serie A in season 2013/2014 in €Mio; source: http://bitterandblue.sbnation.com/2015/2/20/8063543/television-revenue-and-distribution-in-the-top-european-leagues and own calculation

Rank at the end of the season	Team	Money received	% of overall revenue
1	Juventus Turin (M)	94	11.00
2	AS Rom	61.4	7.18
3	SSC Neapel	59.8	7.00
4	AC Florenz	44.4	5.19
5	Inter Mailand	80.4	9.41
6	FC Parma [1]	34.3	4.01
7	FC Turin	35.5	4.15
8	AC Mailand	77.9	9.11
9	Lazio Rom (P)	61.4	7.18
10	Hellas Verona (N)	23.2	2.71
11	Atalanta Bergamo	29.1	3.40
12	Sampdoria Genua	34.3	4.01
13	Udinese Calcio	34.9	4.08
14	CFC Genua	33.3	3.90
15	Cagliari Calcio	30.9	3.61
16	AC Chievo Verona	23.2	2.71
17	US Sassuolo Calcio (N)	17.9	2.09
18	Catania Calcio	29.4	3.44
19	FC Bologna	30	3.51
20	AS Livorno (N)	19.5	2.28

The allocation system in Italy's Serie A (table 7) is rather difficult to analyze due to their "Supporter's Index Element" (SIE) which is used in order to reward the most popular teams in the country with more money than those with smaller fan bases. It seems that the SIE was employed as a sort of compensation mechanism for those that earned more under the previous decentralized allocation system. Unfortunately, due to a lack of in-depth information, we cannot report more than the final distribution.

Since Spain is only going into the centralized distribution system, we do not have any numbers yet as to how much exactly each team will receive in the future under the new system.

4.2 Employing Concentration Measures for the Comparison of the Horizontal Allocation Schemes

In order to systematically assess and compare the different degrees of skewness in the horizontal allocations listed above, we employ three different measures. First, we calculate a simple concentration ratio (CR5), representing the accumulated share of the five biggest receivers in each championship. A higher value of CR5 represents a stronger skewness in favor of the biggest teams. Second, we calculate the Herfindahl-Hirschman-index (HHI) for each championship according to its standard expression: $H = \sum_{i=1}^{N} s_i^2$, with s_i being the share of the revenue received by team i. The HHI ranges from 0 to 1. Higher values imply a concentration of the allocation towards the top teams, i.e. a stronger skewness. Third, we calculate the standard deviation of the allocations. Standard deviation is a measure of the dispersion of a set of data from its mean. The more spread apart the data, the higher the deviation. Standard deviation is calculated as the square root of variance.

Table 8: Different Degrees of Skewness of the Allocation Schemes

Championship	CR5	HHI	Standard Deviation
Premier League	33.41	0.053	11.35
Formula One	70.93	0.124	43.37
NFL	15.62	0.031	0
Bundesliga	34.78	0.058	5.75
Serie A	43.88	0.063	21.45
Ligue 1	40.29	0.058	10.01
Nascar	22.72	0.045	0

Table 8 clearly shows that the allocation of the common revenues in Formula One is much more skewed towards the top teams then in all the other championships. So, F1's specific mix of performance-based and especially brand-value-based ("heritage payments") elements – without an element of equal allocation – creates the biggest imbalance between teams, advantaging a small group of privileged teams and disadvantaging the smaller teams. In other words, the market power of top teams vis-à-vis midfield and smaller teams in F1 by far exceeds the one that top teams in other championships enjoy. If we isolate the performance-based elements of the horizontal allocation schemes (i.e. column 4 of table 4 and column 5 of table 6), F1 sill displays the highest HHI (0.105) – compared, for instance, to the Premier League

(0.065) and the Bundesliga (0.0578). As a consequence, *all* elements of F1's horizontal allocation scheme exceed the skewness towards the top of other leagues. Even though the so-called heritage payments play the most prominent role, already the merit payment allocation alone comparatively advantages the top teams. This is further aggravated to a considerable extent by the heritage payments.

The European football leagues display quite similar concentrations. Italy's Serie A applies the most top-skewed allocation within this group, which appears to be particularly driven by "supporter's index" as a proxy for brand value. Still, the distance to F1 is huge (CR 43.88 to 70.93; HHI 0.063 to 0.124; SD 21.45 to 43.37). Ligue 1's and Bundesliga's allocation is a little more skewed in favor of the top teams than the Premier League when looking at CR5 and HHI. According to SD, Bundesliga displays the most even distribution of common revenues among teams – despite employing no equal share and no brand value element (in contrast to Ligue 1 and Premier League). This can partly be explained by a steeper distribution in the performance-based element of the Premier League (isolated merit payment HHI of 0.065 exceeding Bundesliga's 0.0578). In general, equal share elements appear to be overcompensated by the inherent skewness of the performance-based elements[27], whereas – in line with the other observations – brand value concepts appear to be a driving-force for a less equal distribution of common revenues.

The American professional sports championships NFL and Nascar rely solely on equal sharing and, thus, display the lowest values of the concentration measures. Here, competitive balance considerations appear to have considerably more weight than on the other side of the Atlantic. This may be due to differences in the preferences of U.S. sports fans. However, a recent study casts doubt on this theory and hints to the relevance of differences in the popular sports disciplines instead (*Nalbantis & Pawlowski* 2016). Unfortunately, Nascar was not part of this study, so it remains open whether the differences in money allocation in these motor racing championships correspond to differences in sports or (fans) preferences or neither.

[27] Note again that the base of a performance-based allocation, i.e. the amount of money received by the worst-performer, may be viewed to represent a *de facto* equal allocation element.

Given the impressive degree of the differences in revenue allocation, possible market power explanations warrant a closer look.

5. Implications for Market Power and Its Possible Abuse in Formula One

Combining the results from both types of allocation reveals that Formula One differs from all other professional sports in two ways:

(i) vertical allocation: the share of the common revenues that is *not* allocated to the participants is considerably higher: 35 per cent to 10 per cent of the second highest (Nascar), i.e. that is more than three times higher.

(ii) horizontal allocation: the concentration of revenue allocation towards the top teams is considerably higher: the HHI and the standard deviation of F1's allocation roughly doubles the respective values of the other championships and CR5 is almost 30 points higher than the second most skewed.

How can the remarkable differences in both types of allocation be explained? With respect to the vertical allocation between the commercial rights holder and the participating teams – or in other words, between the market stages – the high share that F1's promoter keeps for its own profits stands out. Therefore, a reason may be viewed in the type of relation between the two levels. As explained in section 2 of this paper, top sports championships do not directly act in a competitive market. The nature of top-level, professional sports inevitably assigns significant market power to the sports association and/or (its) commercial rights holder. This market power may be abused vertically upstream at the expense of the participating teams if the commercial rights holder acts unilaterally (*Budzinski* & *Szymanski* 2015; section 2 of this paper). If these two market stages – promotion and marketing services and match playing services – are vertically integrated (i.e. the participants own the commercial rights holder), this abuse potential disappears. This is corroborated by the examples reported in this paper: the only case of an apparent upstream abuse is the only case where the participants of the championship cannot exert (not even imperfect) ownership influence on the commercial rights holder. In the case of Formula One, the private-equity-company-owned commercial rights holder,

Delta Topco, keeps roughly 35 per cent of the revenues (in former years up to and more than 40 per cent). In all the other cases, the (directly or indirectly) vertically related commercial rights holders merely deduct up to 10 per cent. In absolute numbers, the profits of parent company CVC drawn from the commercial rights to F1 accumulate to a sum between 4.5 to 8bn US$ in total between 2006 and 2014 according to media reports[28], i.e. around 500-900 million US$ per year (including profits from selling minority shares of Delta Topco) – which is more than all the teams of F1 together received from the common revenues during that time (~ 3.7 bn US$). Given that the FIA sold the rights for a 100-year period for a one-off lump sum price of US$ 313.7 million[29], considerable market power rents were and are guaranteed by the specific organization of Formula One's commercial rights exploitation. Note that already the *annual* pay-out to the owners of Delta Topco exceeds the *one-off* lump sum price it once paid. All this money is generated by the sports participants but flows into the profits of the 100-year exclusive commercial rights holder, i.e. out of the sports. Interestingly, this set-up that offers obvious scope for an abuse of market power was the result of an earlier intervention of the European Commission that closed with a – self-declared – 'successful' monitoring of the (back then) new set up.[30]

While it appears to be quite obvious that the differences in vertical allocation are caused by different scope for abusing the existing market power by the commercial rights holder (due to differences in the ownership and organization structure), it is not so clear whether this can be extended to the horizontal allocation among the participants. Again, we find the same pattern: Formula One differs from all the other professional championships. Here, it is a significantly higher concentration of the allocated common revenues in the pockets of few teams. The top earners secure a significantly higher share of the common revenues for themselves than in the other championships. Note that the top earners do not rank performance-

28 See *Sylt* (2014a), https://www.theguardian.com/business/2015/jul/25/cvc-capital-partners-biggest-winner-history-formula-one (2016-06-08) and http://www.sueddeutsche.de/sport/formel-motorsport-unbezahlbar-1.2199000 .

29 See *Sylt* (2014a, b). It goes beyond the scope of this paper to speculate whether this deal was subject to side-payments, bribery or external common interest of the main deal-makers.

30 See *European Commission* (2001, 2003b). An ex-post analysis of this antitrust case offers *Budzinski* (2012, 2014, 2015).

based in Formula One. While this also happens in other commercial sports (either due to longer-term performance-based elements or due to brand value elements), the differences in values are much larger in F1. In 2014, the champion lacked roughly 4 percentage points behind its best earning competitor who finished a distant 4th in the championship (see table 4).[31] In the Premier League, the champion lacks 0.1 percentage points behind the best owner (the vice champion, see table 6). In Formula One, one team (Ferrari) receives more in heritage payments (97m US$) than the winner of the constructor's championship in merit payment (92m US$). Teams that do not receive heritage payments (roughly half of the grid) cannot earn as much as Ferrari from common revenues irrespective of performance. These huge differences in F1 are due to the so-called heritage payments that ostensibly relate to past success. Thus, a procompetitive explanation of the exceptionally uneven horizontal allocation may be that the brand values of these teams considerably differ. Then the skewness of the horizontal allocation merely represents the extremely uneven contribution of the different teams to F1's revenue drawing ability. Furthermore, the balance between diverging contributions (popularity, audience building capabilities, etc.) and the benefits of having a full and competitive grid, then, must differ between F1 and other professional sports where the latter appears to be playing a considerably more important role.

While there can be no doubt that Ferrari contributes more to F1's commercial media success than, say, Sauber, it still appears to be true that a lack of competitors (i.e. Ferrari racing only Ferrari) and small grids which huge performance differences between the cars are not attractive either. Moreover, and maybe more importantly, it is difficult to derive any sound criteria that would unite the existing heritage payments with objectified values based on history and tradition (see table 9). Why McLaren and Williams receive less "heritage payments" than Red Bull and Mercedes is difficult to reason against the background of heritage (be it long-time participation or success). Furthermore, the performance-based part of the allocation scheme

[31] This is more than the difference between the best-owning and the worst-owning team in both the Bundesliga and the Premier League (each about 3.6 percentage points, see tables 5 and 6).

is also, in comparison, strongly biased to the top. Thus, the procompetitive story is not sound.

Table 9: Comparison of heritage payments and success figures in F1 until 2014

Teams	Heritage Payments (mn US$)	Seasons in F1	First Season	WCCs	WDCs	Wins
Ferrari	97	65	1950	16	15	221
Red Bull Racing	74	10	2005	4	4	50
Mercedes	34	7	1954	1	3	46
McLaren	34	49	1966	8	12	182
Williams	10	38	1977	9	7	114
Lotus	-	42	1958	7	6	75

However, it is possible to tell an anticompetitive story about this revenue allocation as well. The bargaining power of the teams vis-à-vis the commercial rights holder is not necessarily similar. Top teams, financially strong teams and/or such with a comparatively large fan-base may be more important to the commercial rights holder than their competitors. Thus, incentives exist to form a cartel between the monopoly commercial rights holder and selected top teams. The cartel agreement may then serve to (i) protect the rent of the commercial rights holder and, at the same time, (ii) generate additional rents for the top teams (strongly skewed revenue allocation) *and* cement their competitive position against the non-privileged competitors (teams outside to the cartel) as well as against potential new entrants. Thus, competition within the championship is harmed/decreased and entry barriers are established. Moreover, perhaps even existing outsider teams may be deterred, thus, allowing for the 'cake' being allocated among fewer teams. This last element can only become plausible, however, if the reduction of participating teams does not reduce the revenue pool or if the marginal reduction of the revenue pool is smaller than the marginal increase of the revenue shares of the cartel insiders.

So, is there indication for the anticompetitive story in the case of Formula One? Most of the heritage payments, incidentally, were negotiated at a time where the teams of Formula One jointly threatened to form a breakaway series with a different commercial rights exploitation system. Even more incidentally, the teams with

the highest heritage payments – Ferrari and Red Bull Racing – were the ones first to abandon the breakaway plans and sign up with FOM again (*Rencken* & *Barretto* 2015; *Rencken* 2015). Furthermore, in Formula One as a technology-driven sport, competitiveness of teams heavily depends on budgets. Thus, the effect of cementing the competitive order by implementing a heavily front-skewed revenue allocation may be particularly strong – and for the cartel members particularly beneficial. An interesting additional detail is the formation of the so-called Steering Group, consisting of FIA (6 votes), FOM (the commercial rights holder; 6 votes), the five privileged teams receiving heritage payments (one vote each) and only one of the non-privileged teams (one vote). This Steering Group is highly influential on the shaping and, in particular, the changing of (sporting) rules in F1 (*Sylt* 2014b; *Rencken* 2015). Consequently, the influence of the competitors in the market for match playing services – the teams – on the rules of the game differ: those who are privileged in the revenue allocation are also those that are privileged regarding influence on rules. This crucially includes one of the hottest topics in F1: rule changes that reduce the costs of participating/competing.

Altogether, the possible cartel insiders enjoy significant power over rule-changes and rule-making, further strengthening the anticompetitive benefits from the revenue allocation. Eventually, what about the deterrence argument? Normally, this should not be plausible in professional sports since the top teams need the other ones to compete against (*Rottenberg* 1956). However, there is an interesting rule in Formula One that may cast doubt over this assessment: if the number of participating teams falls below a certain threshold (8 teams à 2 cars[32]), the privileged teams are required to increase to three-car-teams, so that the grid remains of the usual size. This may alleviate the loss of media revenues due to less teams (by keeping grid numbers up) and increase the incentives to deter outsider teams and new entrants.

Combining the conspicuousness of both the vertical and the horizontal allocation in comparison to other premium commercial sports indicates that suspicion about

[32] Teams must run exactly two cars in all events of the championship.

anticompetitive conduct may be justified. Based upon the publicly available information, the anticompetitive stories of abuse of market power and cartelization appear to be more plausible than possible procompetitive explanations. Furthermore, the unique organization of common revenue creation in F1, again compared to virtually all other premium commercial sports, the 100-year contract with a private equity company for a fraction of the value of the media rights appears to play an important role in the anticompetitive arrangements and conduct in F1. Even disregarding that a contract of such length in exchange for an obviously inappropriate price can hardly be viewed to be procompetitive arrangement in itself, the abuse of the resulting market power requires antitrust challenge. Ironically, the 100-year contract came as a result of previous competition policy intervention by the European Commission where it sought to separate the powers of sports authority and championship promotion in order to frustrate the deterrence of rival championships (*European Commission* 2001; *Cygan* 2007). While the importance of having rival championships is arguable from a sports economics perspective, the goals of the separation were not necessarily achieved: the commercial rights holder is member of the Steering Group and influences virtually all parts of F1's sporting authority. In particular, the CRH's representative (or CEO) Ecclestone is significantly influencing every aspect of Formula One according to recent scientific management analysis (*Ciolfi* & *Stuart* 2013). Furthermore, in 2014, the FIA became a minority shareholder in the commercial rights holder, so that the separation is partly resolved (*Budzinski* 2014). Eventually, rival series are not flourishing under FIA's reign; quite in contrast, it has recently taken steps to create a single ladder of feeder categories for F1 – one of the very few areas where rival championships did actually exist. Thus, it is difficult to see what advantages exist that may offset the anticompetitive effects.[33] This is particularly true since the separation of powers need not necessarily go hand-in-hand with a 100 year monopoly privilege for a private equity company. Many other commercial sports demonstrate that a vertical integration of commercial rights holder and participating teams frustrate the scope for abuses of market power here (see table 1).

[33] Beyond the scope of this paper, it may also require further analysis why race circuit operators are forced to pay enormous sums to hold a race in F1, whereas in Nascar they actually represent one of the main receivers of central money.

6. Conclusion

Recent allegations from participants of the FIA Formula One World Championship suggest that the promoter of F1 (possibly together with the sports association) violates European competition law in two ways. First, it allegedly abuses its market power by deducting an inappropriate high share from the revenues of the collective sale of media rights in order to boost the profits of its private equity parent company (vertical allocation of media revenue). Second, it allegedly forms a cartel with selected top teams at the detriment of smaller teams by providing both unjustified extra payments to these teams and enforcing a heavily biased horizontal allocation of media revenues, benefitting the cartel teams. We analyze whether the existing vertical and horizontal allocation of collective revenues displays indication of anticompetitive conduct. For this purpose, we compare the allocation schemes of F1 with allocation schemes in other relevant commercial sports championships. Our empirical analysis reveals that both the vertical allocation and the horizontal allocation considerably differ from those of the other sports. The very special media revenue allocation in F1 benefits the promoter, the sports association, and selected teams competing in F1. It disadvantages the other teams as well as consumers (fans) of this sport by failing to provide a full competitive grid. In our discussion, we cannot find a convincing procompetitive story for the empirical result. Instead, additional features of F1's media revenue arrangement – like the 100-year-exclusive commercial rights privilege for a private equity company apparently without adequate reward for the 'producers' of the good (teams, circuit owners, etc.) and the asymmetric influence of cartel and non-cartel teams on rule-making and -changing – indicate anticompetitive arrangements and conduct. Ironically, the anticompetitive elements are facilitated by a former intervention of the European Commission's competition directorate.

One implication of our analysis is that competition authorities like the European Commission should bring a new antitrust case related to Formula One and use the opportunity to correct failures of earlier interventions. The opportunity is there since two midfield teams launched a respective complaint with the European Commission (*Budzinski* 2015). Another implication relates to the antitrust exemp-

tion for centralized marketing in the areas where it is not necessary. A collective sale of broadcasting rights is currently legal if the arrangement complies with certain obligations aiming to protect the demand side (media companies and, at the end of the day, consumers). In addition, it should only be allowed if the resulting revenue allocation does not harm competition among the championship participants.

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