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On the Welfare Implications of Exclusive Broadcasting Rights in European Football

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Abstract

The top European football leagues are generating billions of euros in revenues each season and the selling of broadcasting rights is their primary source of income. The selling arrangements for these rights have been under investigation by competition authorities and the European Commission has ruled some of the practices to be in breach with European competition law. In the case of English Premier League, exclusive broadcasting rights is used to enhance the value of the rights by fabricating a monopoly situation for the broadcaster that acquires the rights. The European Commission has taken certain measures to rectify the situation and protect the consumer welfare of English football fans but without success. A restriction on the exclusivity of broadcasting rights is likely to decrease prices charged to consumers but also to decrease revenues for the league. The evidence presented in this paper gives support for an implementation of nonexclusive broadcasting rights in order to promote economic efficiency and consumer welfare.

Keywords: Broadcasting rights, Exclusivity, European football, English Premier League, European Commission

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1. Introduction

1.1 Background

In the latest Annual Review of Football Finance, published by Deloitte in 2021, the market size of European football reportedly amounted to 25.2 billion euros in the season 2019/2020. This was after a 13 percent decrease in revenues from the season before due to the COVID-19 pandemic, the first overall backlash since the global financial crisis in 2008. The five big European top leagues (Premier League, Bundesliga, La Liga, Serie A and Ligue 1) makes up 60 percent of the market and the English Premier League alone generates over 5 billion euros a season (Deloitte, 2021). Broadcasting is an important source of income for all five leagues and accounts for approximately 50 percent of the total revenues. Subsequently, the broadcasting content of Premier League is worth close to 2.7 billion euros per season and constitute more than 10 percent of the total revenues in the European football market (Deloitte, 2021).

Premier League stands out even among the five biggest leagues in Europe in terms of revenues and it seems clear that broadcasting rights is a big part of this development (Lange, 2022). The surge in broadcasting rights fees dates back to the establishment of Premier League in 1992 (Muruga, 2021; Butler & Massey, 2019). The English first division was rebranded and restructured in several ways, and the new collaboration with British Sky Broadcasting (BSkyB) was one of them. The games had earlier been broadcasted on free-to-air channels but that was about to change. In the UK, Premier League was now broadcasted exclusively on the channel Sky Sports and the coverage was restricted to consumers subscribing to BSkyB (Muruga, 2021; Butler & Massey, 2019). This partnership resulted in an almost fourfold increase in the value of domestic broadcasting rights for the English top league (Butler & Massey, 2019). However, the growth since has been even more startling. In 1992 the rights were sold to an annual fee of 42.8 million pounds while the record-breaking deal for the period 2016-2019 amounted to an annual fee of 1.712 billion pounds, exactly 40 times as much as the initial deal sealed in 1992 (Butler & Massey, 2019). During the same period, the international broadcasting rights inflated from a total annual fee of 8 million pounds to 1 billion pounds, adding a considerable amount to the total broadcasting revenue of the league (Muruga, 2021). Nevertheless, the domestic market remains the most profitable for Premier League.

The European football market is big business and the English Premier League has a dominant role in the industry. Broadcasting rights is of major importance for the business model of the league and the domestic market makes up for most of the broadcasting revenues. These are surely some of the reasons to why the European Commission has shown interest for the market structure of domestic broadcasting of the Premier League.

In 2006 the European Commission imposed an antitrust remedy to the “Joint selling of the media rights to the FA Premier League”. They found that the selling arrangement conducted by the league had resulted in an anti-competitive outcome and that it was in breach with EU competition law (European Commission, 2006). The joint selling of all the clubs’ individual media rights was identified as the main concern from the European Commission. Instead of selling their broadcasting rights individually, each club to their own games, they get together and sell the rights to the whole league in the same auction (European Commission, 2006). The clubs are thereby acting as a cartel by granting the governing body of the league exclusivity in the selling process of broadcasting rights. This arrangement was ruled unlawful by the European Commission, but instead of breaking up the upstream cartel, the imposed remedy was aimed at restricting the market power of downstream broadcasters with the purpose to protect the welfare of consumers (European Commission, 2006). At this time, BSkyB had established a dominant position on the downstream broadcasting market in the UK which clearly concerned competition authorities (Butler & Massey, 2019). The commission decision in 2006 followed from earlier negotiations with the Premier League where the league had agreed to divide its domestic broadcasting rights into several packages to prevent a single broadcaster from acquiring exclusive access and thereby establish a monopoly (Geey & James, 2006). However, even with this arrangement, BSkyB managed to outbid its competitors and win the bidding process for every one of the broadcasting packages (Geey & James, 2006). Therefore, the European Commission added the restraint of “no single buyer” to the decision in 2006, making sure that at least two different broadcasters acquire some of the broadcasting rights. This along with a few other notes were implemented to safeguard competition between broadcasters, both in the bidding process for the rights and in the downstream market facing the consumers (European Commission, 2006).

This strategy was questioned even before it was implemented and David Harbord along with Stefan Szymanski argued in an article from 2004 that the European Commission was “tackling the wrong kind of exclusivity” (p. 6). Drawing on the results from earlier economic

analysis by Harbord and Ottaviani (2001), it is suggested that the approach will lead to multiple monopolies in the downstream broadcasting market instead of one and therefore not benefit consumers (Harbord & Szymanski, 2004). They conclude that a situation where multiple broadcasters acquire different packages of games will not be sufficient to reach an efficient market outcome since the broadcasters still have monopoly for their specific package. Instead, in order to improve the welfare of consumers, the same packages should be sold nonexclusively to multiple broadcasters which would create a competitive setting in the downstream market (Harbord & Szymanski, 2004). This theoretical argument seems to have been validated in an empirical analysis by Robert Butler and Patrick Massey in 2019. They show that the remedy imposed by the European Commission in 2006 has resulted in higher subscription fees for Premier League fans in the UK and that the consumers subsequently are worse off with multiple broadcasters than under the former monopoly situation.

Nevertheless, the decision by the European Commission still stands and the games of the current season 2021/2022 is broadcasted by three different broadcasters in the UK: Sky Sports, BT Sports and Amazon Prime Video (Premier League, 2021). After Brexit in 2020, it might no longer be the responsibility of the European Commission to regulate the UK market but the issue at hand is prevailing in the broadcasting markets of other European football leagues as well. The broadcasting rights to English Premier League, German Bundesliga, Spanish La Liga and Italian Serie A are all worth over a billion euros annually (Deloitte, 2021). The commission decision in 2006 is just one example of the concerns shown from competition authorities regarding the broadcasting markets of European football and it is difficult to see that the European Commission along with national authorities are satisfied with the current situation for consumers.

1.2 Purpose

Throughout this paper, I will analyze the strategy chosen by the European Commission in the case of the English Premier League and the UK broadcasting market. My objective is partly to explain the economic welfare effects of the remedy imposed in 2006, which has led to multiple monopolies, and partly to consider the possible consequences of a nonexclusive selling arrangement, which would lead to competition between broadcasters. The main purpose is to provide an answer to the following question: *would consumers be better off if the English Premier League implemented nonexclusive broadcasting rights?*

1.3 Disposition

I will begin by reviewing earlier literature where different aspects of the issue are considered. Emphasis will be on theoretical arguments that explains the development after the commission decision in 2006. Later, I introduce a simple model to conduct a theoretical economic analysis of the case where I compare the monopoly situation prior to the remedy with a duopoly situation similar to the one that occurred subsequent the remedy. I also consider the effects of an alternative remedy where the broadcasting rights are sold nonexclusively. The model where I analyze the economic welfare effects of the three different situations will be my main contribution to the debate. My theoretical results are then discussed in relation to the earlier literature and in relation to the actual development of the UK broadcasting market for the English Premier League. Further, the case of nonexclusive broadcasting rights in Italian Serie A is presented to empirically assess the possible effects of a remedy enforcing this type of selling arrangement. In the conclusion, I will argue in favor of an extensive implementation of nonexclusive broadcasting rights in European football leagues in order to promote economic efficiency and consumer welfare.

2. Literature Review

In most of the literature on the issue there seems to be a common understanding that the remedy imposed by the European Commission has made consumers worse off and that nonexclusive selling of the rights would be a much more effective measure (Harbord & Szymanski, 2004; Butler & Massey, 2019; Geey & James, 2006; Budziniski, et al., 2019).

With this background it is difficult to understand why the European Commission and national authorities still stand by the decision made in 2006. Johan Stennek (2014) claims that there is a correlation between exclusivity and quality in broadcasting and provides a theoretical argument for how this relationship works. If the quality of Premier League is tightly linked to the exclusive selling arrangement for broadcasting rights, then competition authorities might be correct in their assessment to move forward with caution.

Before approaching the conclusion, we need to establish what the actual consequences of the commission decision in 2006 have been. Butler and Massey (2019) have analyzed the price charged to UK consumers to get access to the broadcasted live games of the Premier League from 2000 to 2017. They have adjusted the prices for inflation and presents the total cost for all games in a season in 2015 prices. From 2000 to 2007, Sky Sports exercised a monopoly,

while between 2007 and 2017, there has been a variety of duopolies with Sky Sports constantly involved. In 2007, after the remedy imposed by the European Commission went into effect, Setanta Sports acquired the rights to some of the games which resulted in a substantial increase in the price charged to consumers. The price per game rose by more than 60 percent and has continued to rise since. Butler and Massey find that fans who want to have access to the whole league are worse off under the duopoly while fans who are satisfied with a selected number of games are more or less unaffected. There is no sign that the imposed remedy has led to a competitive pressure on the prices charged to consumers (Butler & Massey, 2019).

Harbord and Szymanski (2004) predicted that the European Commission was “tackling the wrong kind of exclusivity” (p. 6) and Butler and Massey (2019) confirm that the prediction is likely to have been correct. The authors all agree that the remedy fails to impose a competitive environment and rather creates a setting with multiple monopolies selling their products in what is effectively treated as separate markets. Budziniski et al. (2019) provides a neat description of the situation by arguing that the packages of broadcasting rights introduced in 2006 is best described as complements and not as substitutes. In the season 2007/2008, Sky Sports and Setanta acquired exclusive access to some of the games each (Butler & Massey, 2019). If consumers considered the broadcasting services of the two broadcasters to be complements, it is easy to understand why multiple broadcasters have not resulted in fiercer competition in the market. Essentially, if the different packages of broadcasting rights and, in the end, the different broadcasting services is complements rather than substitutes, then they are considered to be different products and the broadcasters will not compete with each other. Even if no single broadcaster has exclusive access to all games in a season, each broadcaster that acquires some of the rights will have exclusive access to these specific games.

The way to tackle the right kind of exclusivity would then be to create broadcasting packages that are substitutes instead, which would force broadcasters to compete for consumers (Harbord & Szymanski, 2004; Budziniski, et al., 2019). Multiple packages of nonexclusive rights to the same games would likely lead to simultaneous broadcasting, leaving it up to the consumer to choose the preferred broadcaster for a given game. The price will certainly affect the choice of the consumer, but it is not the sole determinant. The broadcasters usually offer their services in a bundle with different products. To access Premier League from Sky Sports

in the UK for example, you need to subscribe to a whole range of sports content while also paying for a standard package including Sky TV and Netflix (Sky UK, 2022). This is a form of horizontal product differentiation since consumers are likely to differ in their preferences for the bundles provided by different broadcasters, some prefer Sky Sports and some prefer Setanta. Nonexclusive rights will introduce an element of price competition between broadcasters, but prices will not be the only way to compete for consumers.

An alternative to nonexclusive rights would be to restrict the joint selling arrangement that allows the clubs to act as a cartel. Butler and Massey (2019) argue that the Premier League strategically limits the number of games broadcasted to the harm of consumers. Only 168 out of 380 games were broadcasted during the season 2016/2017 and this was after a continuous increase in output over more than 15 years (Butler & Massey, 2019). The joint selling arrangement has so far been accepted by the European Commission but the decision in 2006 did include an agreement with the league to offer a wider range of broadcasted games each season (European Commission, 2006). There is some support for allowing this arrangement since individual selling, each club selling their own broadcasting rights, could result in a skewed distribution of revenues to the clubs (Harbord & Szymanski, 2004; Butler & Massey, 2019; Budziniski, et al., 2019). The attractiveness of the league is partly determined by the competitive balance between clubs and joint selling of broadcasting rights facilitates redistribution of revenues from bigger, more popular clubs to smaller, less popular ones (Budziniski, et al., 2019). The relevance of this argument is debated in the literature but to simply ban the joint selling arrangement might not be a feasible option.

However, there might be a reason for competition authorities to proceed with caution both when it comes to the joint selling and the exclusivity of rights. The Premier League has created a premium product by acting as a cartel and granting broadcasters exclusive access to certain games through the auctioning of the clubs' collective broadcasting rights. In line with the earlier analysis, Johan Stennek (2014) would agree that for a given product, consumers are likely to be better off with nonexclusive content since it facilitates competition between broadcasters. Nevertheless, the quality of that product depends on the incentives for the producer to make investments (Stennek, 2014). Stennek therefore argues that exclusivity could result in a product of higher quality and thus benefit consumers in the long run. He provides a theoretical argument where he concludes that exclusive rights increase the incentives to invest in quality and that the producer (Premier League) can extract all the

additional revenue from the distributor (broadcaster) of the content. Another interesting result from the analysis is that the value for a distributor to acquire exclusive access to some content is higher than the value of a competing distributor to get in on the deal. This provides an explanation to why BSkyB could outbid all competitors to gain exclusivity to Premier League even when the rights were divided into several packages sold through multiple auctions. The content is more valuable if it is exclusive than if it is nonexclusive.

On the one hand does exclusivity restrict competition and harm consumer welfare but on the other hand it also increases the incentives for the producer to provide a high-quality product. To get an overview of the discussed welfare effects and to compare some concrete results, we now turn to a more formal theoretical analysis.

3. The Model

Assume that there is a market for sports broadcasting with three sports associations (upstream firms): football, motor racing and rugby. Each sports association sell their broadcasting rights to the highest bidder through an auction. There are two broadcasters (downstream firms) that compete in the auction and they are assumed to have identical costs with a marginal cost of zero. The value of the broadcasting rights is determined by the potential revenue for a broadcaster that acquires the rights, which will be the same for both broadcasters. Therefore, the final price in the auction will be equal to the potential revenue and the sports associations can extract all producer surplus from the market.

In turn, the revenue for the broadcasters is determined by the consumer demand for their broadcasting service. The broadcasters offer their service on a subscription basis and consumers purchase at most one subscription per broadcaster. The demand for a given broadcasting service is linear and describes the difference in willingness to pay (WTP) between consumers. There are three consumer groups: football fans, motor racing fans and rugby fans. The three groups of consumers differ in their preferences and their WTP for the different sports. Consider, for example, the demand of football fans for the different sports:

Football fans

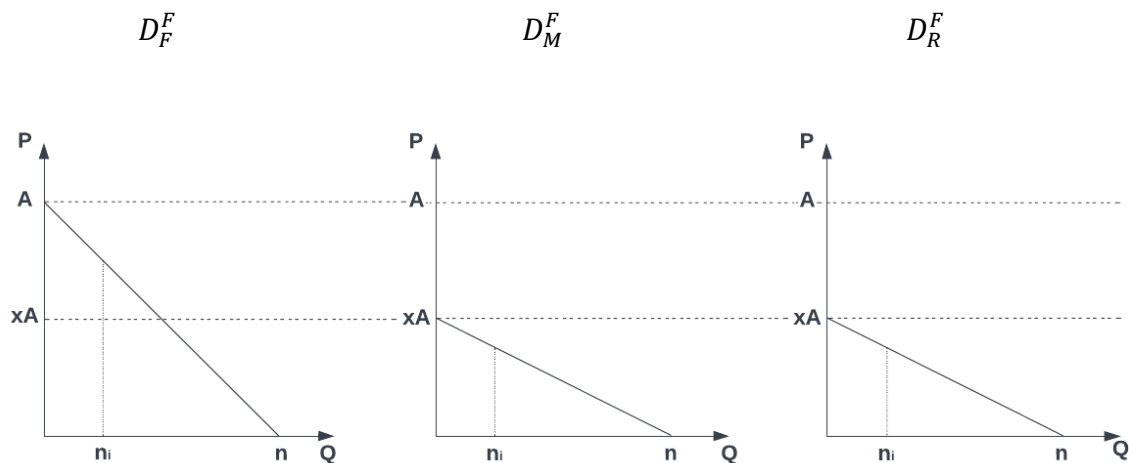
These n consumers are primarily interested in football but also have an interest in motor racing and rugby. Each individual has a WTP for motor racing and rugby that is some fraction x of their WTP for football, where $0 < x < 1$.

$$D_F^F \rightarrow P = A - BQ$$

$$D_M^F \rightarrow P = xA - xBQ$$

$$D_R^F \rightarrow P = xA - xBQ$$

D_F^F : the demand of football fans for football
 D_M^F : the demand of football fans for motor racing
 D_R^F : the demand of football fans for rugby
 P : price
 Q : quantity
 A, B : arbitrary parameters

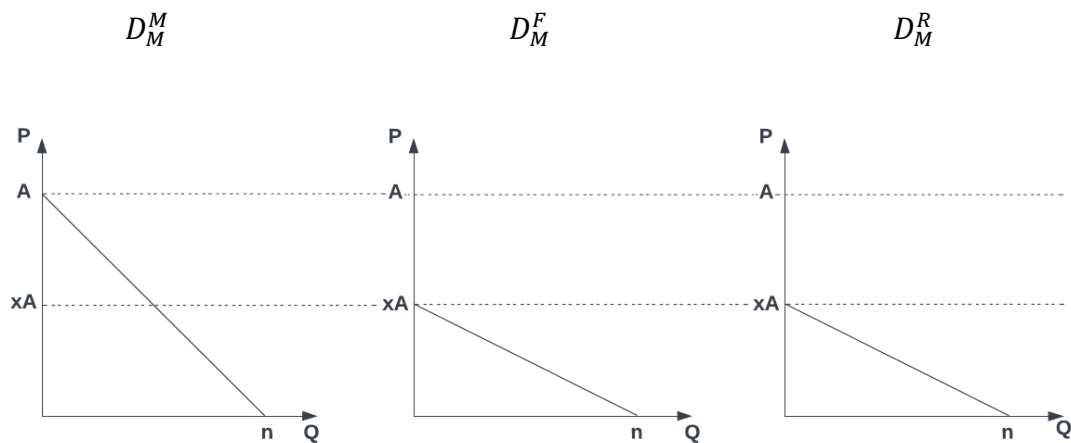


Football fan n_i has a WTP for motor racing and rugby that is a fraction x of its WTP for football.

The demand of the n motor racing fans and the n rugby fans is identical with the only difference that they prefer motor racing and rugby rather than football (see appendix 1). In order to analyze the welfare effects of different market situations, we will compare three different cases: “no remedy”, “no single buyer” and “nonexclusive rights”. The theoretical cases are used to illustrate the situation before and after the remedy imposed by the European Commission in 2006, “no remedy” and “no single buyer”, along with the alternative approach of enforcing “nonexclusive rights”. Since only the football association is affected by these remedies, we will assume that broadcaster 1 acquires the exclusive rights to broadcast motor racing and broadcaster 2 acquires the exclusive rights to broadcast rugby. This will be the outset for the comparison of the three above mentioned cases.

3.1 Outset

Broadcaster 1 has exclusive access to and monopoly for the broadcasting of motor racing while broadcaster 2 has the same market power for the broadcasting of rugby. We will calculate the equilibrium price (P^*), quantity (Q^*) and revenue (R^*) for broadcaster 1 in the given situation and then solve the situation for broadcaster 2 by symmetry. Broadcaster 1 will meet the demand of n motor racing fans, n football fans and n rugby fans. A total of $3n$ consumers.



If $P > xA$, then only motor racing fans will be interested in subscribing to the broadcasting service. If however $P \leq xA$, then at least some consumers from each of the three consumer groups will be interested in the service. Subsequently, the inverse demand curve for motor racing will be divided into two parts. The upper part is given by D_M^M while the lower part is given by the (horizontally) aggregated demand of $D_M^M + D_M^F + D_M^R$ (see appendix 2).

Broadcaster 1 profit maximizes at $MR = MC = 0$. Since the inverse demand curve is divided into two parts, we have to check for solutions on both parts of the curve.

Only motor racing fans ($P > xA$)

$$D_M^M \rightarrow P = A - BQ$$

$$MR = A - 2BQ = 0 \quad \rightarrow \quad Q^* = \frac{1}{2} \frac{A}{B} \quad P^* = \frac{1}{2} A \quad R^* = \frac{1}{4} \frac{A^2}{B}$$

All three consumer groups ($P \leq xA$)

$$D_M^M + D_M^F + D_M^R \rightarrow P = \frac{x}{x+2} 3A - \frac{x}{x+2} BQ$$

$$MR = \frac{x}{x+2} 3A - \frac{x}{x+2} 2BQ = 0 \quad \rightarrow \quad Q^* = \frac{3A}{2B} \quad P^* = \frac{3x}{2x+4} A \quad R^* = \frac{9x}{4x+8} \frac{A^2}{B}$$

The value of x , the relative WTP for other sports than the most preferred one, will determine if only motor racing fans or all three consumer groups are interested in the service provided by broadcaster 1.

For $x = \frac{1}{4}$ broadcaster 1 will be indifferent between setting a high price ($P > xA$), only supplying motor racing fans, and setting a low price ($P \leq xA$), supplying all three consumer groups. In both cases, the corresponding revenue is $R = \frac{1}{4} \frac{A^2}{B}$.

If $x < \frac{1}{4}$, then broadcaster 1 will set a high price ($P > xA$) and supply only motor racing fans while if $x > \frac{1}{4}$, then broadcaster 1 will set a low price ($P \leq xA$) and supply all three consumer groups (see appendix 3).

So, if football and rugby fans have a relatively low WTP for motor racing, then broadcaster 1 gets the highest revenue by setting a price above the highest WTP of any football or rugby fan ($P > xA$). Consequently, only motor racing fans will be interested in the service. If football and rugby fans instead have a relatively high WTP, then broadcaster 1 will profit from reducing its price below the highest WTP of football and rugby fans ($P \leq xA$) to attract a higher demand. Broadcaster 2 faces an identical situation and has to consider whether to set a high price and supply only rugby fans or set a low price and supply all three consumer groups. As concluded, the equilibrium price, quantity and revenue will be determined by the relative WTP, x , for other sports than the most preferred one.

This will be the outset for the comparison of the cases “no remedy”, “no single buyer” and “nonexclusive rights”. In the outset, all three consumer groups and both broadcasters but only two out of three sports associations are involved. When we now consider the first case, “no remedy”, the football association is introduced as well.

3.2 Case 1: No Remedy

Without any interference from competition authorities, the football association, as well as both the motor racing and rugby association, will sell its rights exclusively to a single buyer. We have assumed that broadcaster 1 has acquired the rights to broadcast motor racing while broadcaster 2 has acquired the rights to broadcast rugby. The potential additional revenue of acquiring the rights to football as well is the same for both broadcasters, but let us assume that broadcaster 1 wins the auction and gets exclusive access to broadcast football.

Broadcaster 2 will then be in the exact same situation as in the outset and will set the monopoly price for the broadcasting of rugby. Broadcaster 1 has acquired monopoly for both the broadcasting of motor racing and the broadcasting of football. In this situation, it will be profitable for broadcaster 1 to sell both services in a bundle to a joint subscription fee. The total WTP of consumer n_i for the bundle will then be the (vertically) aggregated WTP for both motor racing and football (see appendix 4). Consequently, the inverse demand of each consumer group for the bundle is:

D_B^M : total demand of motor racing fans for the bundle
 D_B^F : total demand of football fans for the bundle
 D_B^R : total demand of rugby fans for the bundle

Motor racing fans

$$D_M^M + D_F^M = D_B^M \rightarrow P = (x + 1)A - (x + 1)BQ$$

Football fans

$$D_F^F + D_M^F = D_B^F \rightarrow P = (x + 1)A - (x + 1)BQ$$

Rugby fans

$$D_M^R + D_F^R = D_B^R \rightarrow P = 2xA - 2xBQ$$

If $P > 2xA$, then the price exceeds the highest WTP of any rugby fan. Subsequently, only motor racing and football fans will be interested in the bundle with motor racing and football.

If $P \leq 2xA$, then at least some consumers from each of the three consumer groups will be interested. This means that the upper part of the inverse demand curve is given by the (horizontally) aggregated demand of $D_B^M + D_B^F$ while the lower part is given by the (horizontally) aggregated demand of $D_B^M + D_B^F + D_B^R$ (see appendix 5).

Broadcaster 1 profit maximizes at $MR = MC = 0$ and we once again have to check for solutions on both parts of the inverse demand curve.

Only motor racing and football fans ($P > 2xA$)

$$D_B^M + D_B^F \rightarrow P = (x + 1)A - \frac{x+1}{2}BQ$$

$$MR = (x + 1)A - \frac{x+1}{2}2BQ = 0 \quad \rightarrow Q^* = \frac{A}{B} \quad P^* = \frac{x+1}{2}A \quad R^* = \frac{x+1}{2} \frac{A^2}{B}$$

All three consumer groups ($P \leq 2xA$)

$$D_B^M + D_B^F + D_B^R \rightarrow P = \frac{2x(x+1)}{5x+1}3A - \frac{2x(x+1)}{5x+1}BQ$$

$$MR = \frac{2x(x+1)}{5x+1}3A - \frac{2x(x+1)}{5x+1}2BQ = 0 \rightarrow Q^* = \frac{3A}{2B} \quad P^* = \frac{6x(x+1)}{10x+2}A \quad R^* = \frac{9x(x+1)}{10x+2} \frac{A^2}{B}$$

As in the outset when broadcaster 1 set the monopoly price for only motor racing, there is two solutions to the profit maximizing problem since the consumer groups differ in their WTP for the different sports. We have assumed that, for example, football fans have a WTP for motor racing and rugby that is a fraction x of their WTP for football. In the general case there is no way to determine which of the two solutions that will be profit maximizing, it depends on the fraction x . In this case where broadcaster 1 has acquired the rights to both motor racing and rugby, we find the same critical value for x as in the outset where each broadcaster acquired the rights to only one sport.

If $x = \frac{1}{4}$, the revenue generated from the two solutions will be exactly the same and the broadcaster will be indifferent between the two.

If $x < \frac{1}{4}$, the revenue will be higher by setting a high price ($P > 2xA$) and if $x > \frac{1}{4}$, the revenue will be higher by setting a low price ($P \leq 2xA$) (see appendix 6).

If we compare the outset with the “no remedy”-case, it is clear that the bundling strategy used by broadcaster 1 in the latter is profitable no matter the value for x :

Outset (broadcaster 1)

$$x = \frac{1}{4} \rightarrow R = \frac{1}{4} \frac{A^2}{B}$$

$$x < \frac{1}{4} \rightarrow R = \frac{1}{4} \frac{A^2}{B}$$

$$x > \frac{1}{4} \rightarrow R = \frac{9x}{4x+8} \frac{A^2}{B}$$

Case 1: no remedy (broadcaster 1)

$$x = \frac{1}{4} \rightarrow R = \frac{5}{8} \frac{A^2}{B}$$

$$x < \frac{1}{4} \rightarrow R = \frac{x+1}{2} \frac{A^2}{B}$$

$$x > \frac{1}{4} \rightarrow R = \frac{9x(x+1)}{10x+2} \frac{A^2}{B}$$

Broadcaster 1 could choose to sell the broadcasting services separately as two goods, motor racing and football. It could then double the revenue from the outset where it had acquired the rights to only one sport, motor racing. However, by bundling the two services together, broadcaster 1 more than doubles its revenue. This is possible because the consumer groups differ in their WTP for the different sports which the broadcaster can exploit to generate a higher revenue when it sells the differentiated goods in a bundle. Henceforth, we simply assume that the broadcasters will use bundling as a profit maximizing strategy.

Lastly, to measure and compare the social welfare in the three cases that will be considered, we will assume that $x = \frac{1}{6}$. If the welfare effects for all possible values for x were to be presented, the analysis would have to be far too extensive and unnecessary complex in the two cases to be considered in the coming sections. However, before moving on to the case of “no single buyer” and “nonexclusive rights”, the social welfare for the case at hand, “no remedy”, will be presented (see appendix 7):

PS^M : producer surplus for motor racing association	CS^M : consumer surplus for motor racing fans
PS^R : producer surplus for rugby association	CS^R : consumer surplus for rugby fans
PS^F : producer surplus for football association	CS^F : consumer surplus for football fans
TS : total surplus on the market	

$$PS^M = 0.25 \frac{A^2}{B} \quad PS^R = 0.25 \frac{A^2}{B} \quad PS^F \approx 0.33 \frac{A^2}{B} \quad PS^M + PS^R + PS^F \approx 0.83 \frac{A^2}{B}$$

$$CS^M \approx 0.15 \frac{A^2}{B} \quad CS^R = 0.125 \frac{A^2}{B} \quad CS^F \approx 0.15 \frac{A^2}{B} \quad CS^M + CS^R + CS^F \approx 0.42 \frac{A^2}{B}$$

$$TS = 1.25 \frac{A^2}{B}$$

Since the price of the broadcasting rights is assumed to be equal to the potential revenue for a broadcaster that acquires the rights, all producer surplus is extracted by the sports associations.

3.3 Case 2: No Single Buyer

Now consider a case where competition authorities decide to impose a remedy to restrict the auctioning of rights to football. The two other sports, motor racing and rugby, are not affected by the remedy. The football association has to sell its broadcasting rights in two different packages to two different broadcasters. The first package consists of exclusive rights to broadcast one half of the games in a season and the second package consists of the exclusive rights to the other half. Consumers want to have access to the whole league, i.e., all of the games, and are not interested in buying only one of the packages. Thus, the packages are perfect complements. Broadcaster 1 will acquire one package and keep the rights to one half of the games while broadcaster 2 acquires the other. Consumers who are interested in football now have to subscribe to both broadcasters in order to be able to follow the league, which will have an effect on their demand for the sport.

When $x = \frac{1}{6}$, the profit maximizing price set by broadcaster 1 will exceed the highest WTP of any rugby fan and the profit maximizing price set by broadcaster 2 will exceed the highest WTP of any motor racing fan.

Broadcaster 1

Bundle: motor racing and one half of the football games

Interested consumer groups: motor racing and football fans

Broadcaster 2

Bundle: rugby and one half of the football games

Interested consumer groups: rugby and football fans

Since the two packages of football are perfect complements, neither motor racing nor rugby fans get any additional utility from getting access to only one half of the games. Motor racing fans will have the same demand for the bundle of broadcaster 1 with motor racing and one

half of the football games as for only motor racing. Rugby fans will have the same demand for the bundle of broadcaster 2 with rugby and the other half of the football games as for only rugby.

$$D_{B1}^M: \text{total demand of motor racing fans for the bundle of broadcaster 1}$$

$$D_{B2}^R: \text{total demand of rugby fans for the bundle of broadcaster 2}$$

Motor racing fans have an inverse demand for the bundle provided by broadcaster 1 of:

$$D_M^M = D_{B1}^M \rightarrow P_1 = A - BQ_1$$

Rugby fans have an inverse demand for the bundle provided by broadcaster 2 of:

$$D_R^R = D_{B2}^R \rightarrow P_2 = A - BQ_2$$

Football fans are primarily interested in football but are also somewhat interested in both motor racing and rugby and get some additional utility from getting access to these services. Since the bundle of broadcaster 1 and the bundle of broadcaster 2 both are needed to watch the complete content of football, football fans will subscribe to both broadcasters or none of them. The total WTP of football fan n_i for both bundles will then be the (vertically) aggregated WTP for football, motor racing and rugby. Subsequently, the WTP of football fan n_i for the bundle of broadcaster 1 will be the total WTP for both bundles minus the price of broadcaster 2 and vice versa (see appendix 8).

$$D_{B1}^F: \text{total demand of football fans for the bundle of broadcaster 1}$$

$$D_{B2}^F: \text{total demand of football fans for the bundle of broadcaster 2}$$

Football fans have an inverse demand for the bundle provided by broadcaster 1 of:

$$D_F^F + D_M^F + D_R^F - P_2 = D_{B1}^F \rightarrow P_1 = \frac{4}{3}A - P_2 - \frac{4}{3}BQ_1$$

Football fans have an inverse demand for the bundle provided by broadcaster 2 of:

$$D_F^F + D_M^F + D_R^F - P_1 = D_{B2}^F \rightarrow P_2 = \frac{4}{3}A - P_1 - \frac{4}{3}BQ_2$$

Broadcaster 1 will meet the inverse demand of P_1 and broadcaster 2 will meet the inverse demand of P_2 . When setting the profit maximizing price and quantity, the broadcasters have to take into account the same strategic decision of the other. Both broadcasters get the highest

revenue by setting a sufficiently low price ($P_1 \leq \frac{4}{3}A - P_2$ and $P_2 \leq \frac{4}{3}A - P_1$) to attract demand from football fans (see appendix 9). We will work with the demand for broadcaster 1 and then solve the case for broadcaster 2 by symmetry. For broadcaster 1, the relevant part of the inverse demand curve ($P_1 \leq \frac{4}{3}A - P_2$) is given by the (horizontally) aggregated demand of $D_{B1}^M + D_{B1}^F$.

Both motor racing and football fans ($P_1 \leq \frac{4}{3}A - P_2$)

$$D_{B1}^M + D_{B1}^F \rightarrow P_1 = \frac{8}{7}A - \frac{3}{7}P_2 - \frac{4}{7}BQ_1$$

$$MR = \frac{8}{7}A - \frac{3}{7}P_2 - \frac{4}{7}2BQ_1 = 0 \quad \rightarrow \quad Q_1^* = \frac{A}{B} - \frac{3}{8B}P_2 \quad P_1^* = \frac{4}{7}A - \frac{3}{14}P_2$$

By symmetry, broadcaster 2 will face an identical problem and will also have an identical solution. Because the optimal price and quantity for each broadcaster depend on the price set by the other, we find the solution by substituting P_2 in the expression for P_1^* with the expression for P_2^* and vice versa. That will give us the optimal price for each broadcaster given the optimal price for the other.

$$P_1^* = \frac{4}{7}A - \frac{3}{14}P_2 \quad P_2^* = \frac{4}{7}A - \frac{3}{14}P_1$$

$$P_2^* \text{ in } P_1^*: \quad P_1 = \frac{4}{7}A - \frac{3}{14}\left(\frac{4}{7}A - \frac{3}{14}P_1\right) \rightarrow \quad P_1^* = \frac{8}{17}A \quad Q_1^* = \frac{14A}{17B} \quad R_1^* = \frac{112A^2}{289B}$$

The remedy imposed by competition authorities affects the social welfare in several ways. Since the two packages of football games are perfect complements, the broadcasters have to consider the price set by the other. This gives rise to adverse externality effects that reduces the efficiency on the market. If broadcaster 1 lowers its price and offer a higher quantity of its product, then broadcaster 2 will benefit from it as well since the total price for football is reduced. More consumers are willing to pay the lower price for football and the demand is increased for both broadcasters while only broadcaster 1 has lowered its price. Broadcaster 1 do not take into account the surplus of broadcaster 2 and will set a higher price than it would have done with monopoly power over both packages. If the two broadcasters could collude and set a joint price for its two bundles, the total price for football would have been lower and

the revenue for the broadcasters higher. Consequently, the social welfare is negatively affected by the remedy (see appendix 10):

$$PS^M = 0.25 \frac{A^2}{B} \quad PS^R = 0.25 \frac{A^2}{B} \quad PS^F \approx 0.28 \frac{A^2}{B} \rightarrow PS^M + PS^R + PS^F \approx 0.78 \frac{A^2}{B}$$

$$CS^M \approx 0.14 \frac{A^2}{B} \quad CS^R \approx 0.14 \frac{A^2}{B} \quad CS^F \approx 0.06 \frac{A^2}{B} \rightarrow CS^M + CS^R + CS^F \approx 0.34 \frac{A^2}{B}$$

$$TS \approx 1.11 \frac{A^2}{B}$$

Without any intervention from competition authorities, the two broadcasters set the profit maximizing monopoly price for their service without considering the strategy of the other. With the remedy that forces the football association to divide its rights into two distinct packages and sell them to two different broadcasters, the total revenue for the broadcasters, i.e., the aggregated producer surplus, is reduced. The value of the broadcasting rights to football is reduced while the two other sports associations remain unaffected. The efficiency loss affects the aggregated consumer surplus as well, although rugby fans experience an increase in welfare since the price of rugby is reduced. The welfare of motor racing fans is slightly reduced while football fans experience a significant decrease. In total, the social welfare is reduced by the implementation of the remedy.

3.4 Case 3: Nonexclusive Rights

Finally, consider an alternative remedy from competition authorities to restrict the auctioning of rights to football. Instead of selling its broadcasting rights in two different packages with exclusive rights to one half of the games each, the football association is now required to sell the rights to all of the games to two different broadcasters. There will be two identical packages with nonexclusive rights to all of the games in a season, broadcasted by two broadcasters simultaneously. Thus, the packages are perfect substitutes. Broadcaster 1 and broadcaster 2 will acquire one package each and consumers who are interested in football can now choose which service to subscribe to. This means that the two broadcasters will need to compete for consumers. We assume that there are no capacity constraints for either of the broadcasters and that the quantity of broadcasting can be adjusted quickly. In other words, the two broadcasters will compete in prices.

Without competition, the two broadcasters would set a price along the demand curve at $MR = MC = 0$. With price competition and identical products, the two broadcasters would compete fiercely and set the price at $P = MC = 0$. At any market price above marginal cost there would be an incentive for one broadcaster to just slightly undercut the price of the other and thereby attract all consumers on the market. Since the products are identical, consumers simply choose the broadcaster with the lowest price. The competition pushes down the price to marginal cost because below marginal cost the broadcasters would make a negative profit. In this particular setting where $MC = 0$ for both broadcasters, they will both set their price at $P = 0$ and split the market evenly between them. However, the bundles provided by the broadcasters are not identical. Broadcaster 1 is providing motor racing and football in a bundle while broadcaster 2 is providing rugby and football in a bundle. Football fans have an identical demand for the two bundles and will choose the one offered at the lowest price. Motor racing and rugby fans prefer the bundle with motor racing and rugby respectively and have a higher WTP for the preferred bundle. To illustrate the effect of price competition in the model, we begin by considering a situation in which both broadcasters set the monopoly price (given $x = \frac{1}{6}$).

Recall “Case 1: no remedy”, where broadcaster 1 had the exclusive rights to both motor racing and football. In this case, the profit maximizing monopoly price was $P = \frac{7}{12}A$, which resulted in $Q = \frac{A}{B}$ and $R = \frac{7}{12} \frac{A^2}{B}$. If the broadcasters set the same price in the “nonexclusive rights”-case, the broadcasters will split the demand of football fans which results in a lower quantity and a lower revenue than in the monopoly case (see appendix 11).

Nevertheless, there is a possibility for the broadcasters to increase their revenue on the expense of the other. If, for example, broadcaster 1 reduces its price by an arbitrarily small amount, just slightly undercutting the price of broadcaster 2, then broadcaster 1 will win the demand of all football fans and thereby increase its quantity as well as its revenue. Broadcaster 2 will then lose all football fans that former subscribed to their service and experience a decrease in its quantity and revenue.

Given that broadcaster 2 loses all football fans to broadcaster 1, $P = \frac{7}{12}A$ is the profit maximizing price for broadcaster 2 which results in $R = \frac{7}{24} \frac{A^2}{B}$ (see appendix 12). Even

though broadcaster 2 in this scenario only attract rugby fans, it gets a higher revenue with football in its bundle than without it because rugby fans are willing to pay for football as well. Broadcaster 2 prefers this scenario over the scenario in the outset, broadcasting only rugby as a monopoly, and will therefore acquire the nonexclusive rights to football even if no football fans subscribe to its service.

However, broadcaster 2 could increase its revenue by competing with broadcaster 1 for the demand of football fans. If broadcaster 2 uses the same strategy as broadcaster 1, just slightly undercutting the price set by the other, broadcaster 2 could win the demand of all football fans instead and thereby increase its quantity as well as revenue. When both broadcasters use this strategy to maximize profits, they will compete fiercely and push down the price to a level where there no longer is any profit to make from further lowering the price. In our specific case, that occurs when the broadcaster that wins the demand of all football fans receives a revenue of $R = \frac{7}{24} \frac{A^2}{B}$. This was the revenue for broadcaster 2 of only supplying rugby fans and it is also the revenue for broadcaster 1 of only supplying motor racing fans.

There is an incentive for both broadcasters to undercut the price of the other as long as the revenue of setting the lowest market price, and thereby win the demand of all football fans, is higher than the revenue of only supplying one consumer group. In this equilibrium, one of the broadcasters will choose to set the higher price and only supply one consumer group while allowing the other to win the demand of football fans. Since the broadcasters have identical costs and meet an identical demand, there is no way to determine which will set the lower and which will set the higher price. Therefore, let us assume that broadcaster 1 sets a low price and wins the demand of football fans while broadcaster 2 sets a high price and only attract demand from rugby fans.

Broadcaster 2 – bundle with rugby and football

$$D_{B2}^R \rightarrow P = \frac{7}{6}A - \frac{7}{6}BQ$$

$$MR = \frac{7}{6}A - \frac{7}{6}2BQ = 0 \quad \rightarrow \quad Q^* = \frac{1}{2} \frac{A}{B} \quad P^* = \frac{7}{12}A \quad R^* = \frac{7}{24} \frac{A^2}{B}$$

Broadcaster 1 will attract demand from both motor racing and football fans. The inverse demand curve is given by the (horizontally) aggregated demand of $D_{B1}^M + D_{B1}^F$ (see appendix 13). We know that the revenue will be pushed down to $R = \frac{7}{24} \frac{A^2}{B}$ due to the competitive pressure from broadcaster 2. By using this restriction in combination with the demand function, we find the price and quantity in equilibrium (see appendix 14).

Broadcaster 1 – bundle with motor racing and football

$$D_{B1}^M + D_{B1}^F \rightarrow P = \frac{7}{6}A - \frac{7}{12}BQ$$

$$R = \frac{7}{24} \frac{A^2}{B} = PQ = \left(\frac{7}{6}A - \frac{7}{12}BQ \right) Q \rightarrow Q^* = \frac{(\sqrt{2}+1)A}{\sqrt{2}B} \quad P^* = \frac{(\sqrt{2}-1)7}{\sqrt{2}12}A \quad R^* = \frac{7}{24} \frac{A^2}{B}$$

In summary, in a situation where both broadcasters acquire nonexclusive rights to broadcast football and enter a setting characterized by price competition, there will be an equilibrium where one broadcaster sets a high price and supplies only one consumer group while the other sets a low price and supplies two consumer groups.

The alternative remedy facilitates a competitive setting in the broadcasting market where the two broadcasters compete in prices. Their products are not identical since broadcaster 1 provides a bundle with motor racing and football while broadcaster 2 provides a bundle with rugby and football. This is a form of horizontal product differentiation where motor racing fans prefer the bundle of broadcaster 1 and rugby fans prefer the bundle of broadcaster 2. Football fans are indifferent between the two and will choose the one offered at the lowest price. The prices are pushed down closer to marginal cost which positively affects the social welfare (see appendix 15):

$$PS^M = 0.25 \frac{A^2}{B} \quad PS^R = 0.25 \frac{A^2}{B} \quad PS^F \approx 0.08 \frac{A^2}{B} \rightarrow PS^M + PS^R + PS^F \approx 0.58 \frac{A^2}{B}$$

$$CS^M \approx 0.42 \frac{A^2}{B} \quad CS^R \approx 0.15 \frac{A^2}{B} \quad CS^F \approx 0.42 \frac{A^2}{B} \rightarrow CS^M + CS^R + CS^F \approx 1.00 \frac{A^2}{B}$$

$$TS \approx 1.58 \frac{A^2}{B}$$

The football association is forced to sell two identical packages with nonexclusive rights to all football games to two different broadcasters. We have assumed that these two packages are perfect substitutes which leads to price competition between the broadcasters that acquire the rights. The competitive pressure reduces the revenue for the broadcasters and thereby the aggregated producer surplus. Both the motor racing and rugby association remain unaffected while the welfare of the football association is heavily reduced. All consumers benefit from the remedy and the consumer surplus more than doubles compared to the two other cases. The rugby fans are slightly better off but the motor racing and football fans that subscribe to broadcaster 1, the bundle with the low price, benefit the most. In total, the social welfare is increased by the implementation of the alternative remedy.

Comparison of the three cases

	PS^M	PS^R	PS^F	$PS^M + PS^R + PS^F$	CS^M	CS^R	CS^F	$CS^M + CS^R + CS^F$	TS
Case 1: no remedy	0.25	0.25	0.33	0.83	0.15	0.125	0.15	0.42	1.25
Case 2: no single buyer	0.25	0.25	0.28	0.78	0.14	0.14	0.06	0.34	1.11
Case 3: nonexclusive rights	0.25	0.25	0.08	0.58	0.42	0.15	0.42	1.00	1.58

4. Discussion

The results from the model pretty much confirm the conclusions drawn in the reviewed literature. When a monopoly with a complete product is replaced with two monopolies that split the product in half, thus creating perfect complements, the consumers of that product are worse off. That is what Harbord and Szymanski (2004), Butler and Massey (2019), Geey and James (2006) and Budziniski, et al. (2019) all agreed would be and have been the consequence of the remedy imposed by the European Commission in 2006. Moreover, when a monopoly with a complete product is replaced with a duopoly that provides the same product, thus creating perfect substitutes, the producer of that product is worse off. If Stennek (2014) is correct in his analysis of the correlation between exclusivity and quality, then the

alternative remedy, that forces a nonexclusive selling arrangement, might result in a lower price charged to consumers but also a product of lower quality.

The question is then, would reduced revenues from broadcasting drive the Premier League to produce a worse product? There is two layers to this question. The first is about the economic possibilities and incentives for the league to create a high-quality product and the second is about the competitive situation with other European football leagues.

As was presented in the introduction, Premier League generates over 5 billion euros in revenues each season (Deloitte, 2021). The majority of these revenues is used to pay the players with an average yearly salary of more than 3 million pounds, which corresponds to a weekly salary of just over 60,000 pounds (note the difference in the use of currency) (Deloitte, 2021; Ingle, 2019). It could be argued that this stream of revenues allows the league to make investments and improve its product, therefore would a reduction of revenues limit the economic possibilities and incentives to provide a high-quality product that consumers are willing to pay a lot for. It could also be argued that the development of the European football market has led to an inflation of player wages and other costs for the league without creating a more valuable content. Some fans would even argue that the commercialization of European football has resulted in a worse product. This is concluded in a study by Busse Ronald and Damiano Jean-Pierre (2019) where they claim that “Football in Europe tends to be less about the game and more about the business.” (p. 8). In this aspect, it seems plausible that consumers would not be harmed by reduced revenues and salaries in the league.

However, in another aspect, it also seems plausible that high revenues and high salaries gives the league a comparative advantage. Even if more money does not generate a better product per se, more money is likely to attract the best players. Premier League is arguably the best football league in the world, and it is difficult to see that fans or consumers would not be negatively affected if that were to change for the worse. The international interest for the league would most certainly decline but this analysis is focused on the domestic market. It is difficult to predict what would happen to the domestic interest for Premier League if the quality relative to other top leagues were to be reduced, but it is likely that consumers would value the product less.

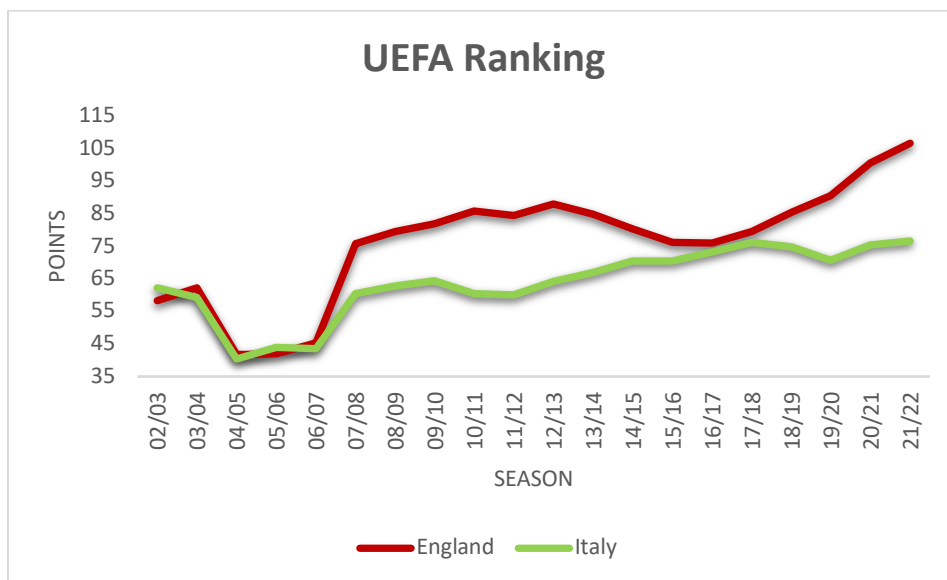
To enforce a nonexclusive selling arrangement for the domestic broadcasting rights to the English Premier League would give the league a disadvantage compared to other European football leagues. It would arguably be an unfair practice and could severely affect the attractiveness of the league. If this policy is considered, it should be implemented in an extended range of countries in order to not distort the market on the expense of Premier League. The welfare effects of this hypothetical remedy are expected to be of the same sort as in the earlier theoretical analysis. Nonexclusive broadcasting rights gives rise to an oligopoly situation with perfect substitutes and price competition. The competitive pressure pushes down the price of the product, the producer surplus is decreased while the consumer surplus is increased and, in total, the social welfare is positively affected.

In summary, if the current packages of broadcasting rights to Premier League are considered to be close complements, then this explains why consumers have been negatively affected by the remedy imposed by the European Commission in 2006. An alternative remedy that enforces nonexclusive rights would result in packages characterized as close substitutes. This would lead to price competition between broadcasters in the downstream market, yielding a lower price for consumers but also lower revenue for the league. Whether this would benefit consumers or not is up for debate since it is unclear how the quality of the product would be affected. Before concluding the analysis, an empirical case of a nonexclusive selling arrangement of broadcasting rights in European football is presented. The Italian Serie A is currently implementing this strategy and stands out among the other European top leagues in this respect.

5. Anecdotal Evidence

In the season 2019/2020, the clubs in Italian Serie A generated just over 2 billion pounds in total revenues whereof approximately 1.2 billion was from broadcasting (Deloitte, 2021). Corresponding figures for the English Premier League amounted to 5 billion and 2.7 billion pounds (Deloitte, 2021). Interestingly, the relative importance of domestic broadcasting is much greater in Serie A than in Premier League. In Serie A, the domestic rights make up for 83 percent of the total broadcasting revenues while in Premier League its only 56 percent (Deloitte, 2021; Butler & Massey, 2019). This tells us that the major advantage Premier League has over Serie A when it comes to generating revenues is the much greater international interest in the league. The international broadcasting rights to Serie A is worth

around 200 million pounds per season while Premier League generated close to 1.2 billion from these rights (Deloitte, 2021; Butler & Massey, 2019). The international interest, more than the domestic, could be an indicator of product quality. International fans can choose to follow the best or the most interesting team/league in the world while domestic fans to a greater extent will support the local club, irrespective of the club’s performance. This argument implies that Premier League is a product of higher quality than Serie A, which the UEFA ranking of European football associations seems to confirm (UEFA, 2022). The ranking is based on the performance of each association’s (country’s) clubs in the big European club competitions, UEFA Champions League and UEFA Europa League. In the early 2000’s, English and Italian clubs performed equally well in these competitions. However, over the last 15 years, English clubs have excelled their Italian competitors.



(source: UEFA, 2022)

It seems plausible that there is a correlation between the broadcasting revenues and the quality of the leagues. Premier League generates more revenues from broadcasting than Serie A and English clubs perform better than Italian clubs in international club competitions. The question is whether there is causal relationship between broadcasting revenues and product quality, and moreover, in which direction the causality goes. This question is too complex to give a definitive answer in the space allowed for in this analysis, but I will argue that the Italian strategy of nonexclusive selling of broadcasting rights has resulted in lower revenues and is likely to be a part of the explanation to why Italian clubs have been left behind.

In 1993, Serie A generated approximately 90 million euros from broadcasting while Premier League received around 50 million pounds per season for its rights during the same period (note the difference in the use of currency) (Muruga, 2021; Butler & Massey, 2019; Christos et al., 2018). Three years later, in 1996, Serie A signed a new deal and increased its yearly broadcasting revenues with 10 percent to 100 million euros (Christos et al., 2018). In 1997, Premier League renegotiated their broadcasting terms as well and the domestic rights alone were sold to an annual fee of 167.5 million pounds, an increase of nearly 400 percent (Butler & Massey, 2019). Serie A has yet not recovered from this divergence in the value of broadcasting rights and while there most certainly is several factors behind this development, the different selling arrangements for the rights could be of significant importance.

In a comparison of the European top football leagues, Augusto Preta (2015) describes how the selling arrangement for the broadcasting rights to Italian Serie A differs from the strategy used by, for example, English Premier League. Between 2012 and 2018 (the whole scope of the study), the packages of rights to Serie A were, to a great extent, sold nonexclusively and multiple broadcasters acquired the rights to broadcast the same games (Preta, 2015). In line with our earlier analysis, Preta argues that this strategy leads to a reduction of the value of the content for both broadcasters and the league compared to the outcome with exclusive rights, which potentially also results in lower prices charged to consumers. However, similar to the reasoning by Stennek (2014), Preta claims that an exclusive selling arrangement would benefit consumers as well since it facilitates investments in the product by both broadcasters and the league.

To summarize, Premier League has surpassed Serie A in terms of broadcasting revenues over the last 25 years and, moreover, English clubs have outperformed Italian clubs over the last 15 years. The nonexclusive selling of broadcasting rights to Italian Serie A has been identified as a possible explanation to the divergence between the leagues. In the light of the results from the model used in the theoretical analysis, the use of nonexclusive rights is likely to decrease producer surplus and increase consumer surplus compared to the outcome of exclusive rights. This would explain the divergence in broadcasting revenues. Still, a reduction of producer surplus could negatively affect the quality of the product in the long run. This would explain the divergence in performance of English and Italian clubs.

6. Conclusion

The evidence presented in this paper suggests that the remedy imposed by the European Commission in 2006 that forced the English Premier League to sell its broadcasting rights to more than one broadcaster has worsened the market situation. The packages of broadcasting rights were designed as complements since each package consisted of exclusive rights to a specific set of games. This created a situation in the domestic broadcasting market where multiple monopolies replaced the former monopoly of Sky Sports. Hence, the European Commission failed to facilitate competition between broadcasters and, instead, contributed to create adverse externality effects which reduced the social welfare. Both the Premier League and the fans are worse off with the implementation of this remedy.

To simply withdraw the remedy and allow a single broadcaster to establish a monopoly for the broadcasting of Premier League would be an improvement of the current situation. One of the alternatives would be to enforce a nonexclusive selling arrangement for the broadcasting rights where the packages are designed as substitutes instead. This would lead to a situation where multiple broadcasters acquire the rights to the same games and consequently need to compete for consumers. The prices charged to consumers will be pushed down closer to marginal cost and the value of the broadcasting rights will decrease. The question is then: *would consumers be better off if the English Premier League implemented nonexclusive broadcasting rights?*

If such a requirement was imposed on the English Premier League alone, the league is likely to follow in the footsteps of Italian Serie A. It is difficult to judge whether Italian fans of Serie A is better or worse off than English fans of Premier League, but nevertheless, revenues from broadcasting seems to be crucial for the quality of the league. The quality might not be determined by the magnitude of revenues in absolute terms, but rather by the relative magnitude compared to other leagues. In conclusion, consumers of the English Premier League are likely to be better off with nonexclusive broadcasting rights if it is implemented in competing football leagues as well. European competition authorities should consider this type of extensive market measure in order to promote economic efficiency and consumer welfare in the European football market.

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Appendix

1.

Rugby fans

$$D_R^R \rightarrow P = A - BQ$$

D_R^R : the demand of rugby fans for rugby

$$D_F^R \rightarrow P = xA - xBQ$$

D_F^R : the demand of rugby fans for football

$$D_M^R \rightarrow P = xA - xBQ$$

D_M^R : the demand of rugby fans for motor racing

Motor racing fans

$$D_M^M \rightarrow P = A - BQ$$

D_M^M : the demand of motor racing fans for motor racing

$$D_F^M \rightarrow P = xA - xBQ$$

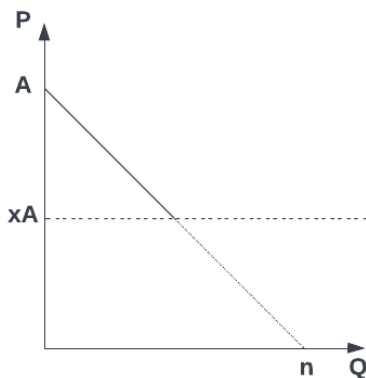
D_F^M : the demand of motor racing fans for football

$$D_R^M \rightarrow P = xA - xBQ$$

D_R^M : the demand of motor racing fans for rugby

2.

If $P > xA$, the total demand for motor racing is $D_M^M \rightarrow P = A - BQ$



If $P \leq xA$, the total demand for motor racing is $D_M^M + D_M^F + D_M^R \rightarrow$

$$\left(Q = \frac{A}{B} - \frac{P}{B}\right) + \left(Q = \frac{A}{B} - \frac{P}{xB}\right) + \left(Q = \frac{A}{B} - \frac{P}{xB}\right) \rightarrow Q = \frac{3A}{B} - \frac{(x+2)P}{xB} \rightarrow P = \frac{x}{x+2} 3A - \frac{x}{x+2} BQ$$



3.

$$x = \frac{1}{4} \rightarrow \quad Q^* = \frac{1A}{2B} \quad P^* = \frac{1}{2}A \quad R^* = \frac{1A^2}{4B}$$

or

$$Q^* = \frac{3A}{2B} \quad P^* = \frac{3x}{2x+4}A = \frac{1}{6}A \quad R^* = \frac{9x}{4x+8} \frac{A^2}{B} = \frac{1A^2}{4B}$$

$$x < \frac{1}{4} \rightarrow \quad Q^* = \frac{1A}{2B} \quad P^* = \frac{1}{2}A \quad R^* = \frac{1A^2}{4B}$$

$$x > \frac{1}{4} \rightarrow \quad Q^* = \frac{3A}{2B} \quad P^* = \frac{3x}{2x+4}A \quad R^* = \frac{9x}{4x+8} \frac{A^2}{B}$$

4.

Motor racing fans have a total inverse demand for the bundle of:

$$D_M^M + D_F^M = D_B^M \rightarrow (P = A - BQ) + (P = xA - xBQ) \rightarrow P = (x+1)A - (x+1)BQ$$

Football fans have a total inverse demand for the bundle of:

$$D_F^F + D_M^F = D_B^F \rightarrow (P = A - BQ) + (P = xA - xBQ) \rightarrow P = (x+1)A - (x+1)BQ$$

Rugby fans have a total inverse demand for the bundle of:

$$D_M^R + D_F^R = D_B^R \rightarrow (P = xA - xBQ) + (P = xA - xBQ) \rightarrow P = 2xA - 2xBQ$$

5.

If $P > 2xA$, the total demand for the bundle is $D_B^M + D_B^F \rightarrow$

$$\left(Q = \frac{A}{B} - \frac{P}{(x+1)B}\right) + \left(Q = \frac{A}{B} - \frac{P}{(x+1)B}\right) \rightarrow Q = \frac{2A}{B} - \frac{2P}{(x+1)B} \rightarrow P = (x+1)A - \frac{x+1}{2}BQ$$

If $P \leq 2xA$, the total demand for the bundle is $D_B^M + D_B^F + D_B^R \rightarrow$

$$\left(Q = \frac{A}{B} - \frac{P}{(x+1)B}\right) + \left(Q = \frac{A}{B} - \frac{P}{(x+1)B}\right) + \left(Q = \frac{A}{B} - \frac{P}{2xB}\right) \rightarrow Q = \frac{3A}{B} - \frac{(5x+1)P}{2x(x+1)B} \rightarrow$$

$$P = \frac{2x(x+1)}{5x+1}3A - \frac{2x(x+1)}{5x+1}BQ$$

6.

$$x = \frac{1}{4} \rightarrow \quad Q^* = \frac{A}{B} \quad P^* = \frac{x+1}{2}A = \frac{5}{8}A \quad R = \frac{x+1}{2} \frac{A^2}{B} = \frac{5}{8} \frac{A^2}{B}$$

or

$$Q^* = \frac{3A}{2B} \quad P^* = \frac{6x(x+1)}{10x+2}A = \frac{5}{12}A \quad R = \frac{9x(x+1)}{10x+2} \frac{A^2}{B} = \frac{5}{8} \frac{A^2}{B}$$

$$x < \frac{1}{4} \rightarrow \quad Q^* = \frac{A}{B} \quad P^* = \frac{x+1}{2}A \quad R = \frac{x+1}{2} \frac{A^2}{B}$$

$$x > \frac{1}{4} \rightarrow \quad Q^* = \frac{3A}{2B} \quad P^* = \frac{6x(x+1)}{10x+2}A \quad R = \frac{9x(x+1)}{10x+2} \frac{A^2}{B}$$

7.

Outset

$$\text{Broadcaster 1: } Q_1^* = \frac{1A}{2B} \quad P_1^* = \frac{1}{2}A \quad R_1^* = \frac{1A^2}{4B}$$

$$\text{Broadcaster 2: } Q_2^* = \frac{1A}{2B} \quad P_2^* = \frac{1}{2}A \quad R_2^* = \frac{1A^2}{4B}$$

In the outset, when $x = \frac{1}{6}$, broadcaster 1 sets the monopoly price for motor racing and pays the full revenue, $R_1^* = \frac{1A^2}{4B}$, to the motor racing association in order to acquire the rights.

Broadcaster 2 sets the monopoly price for rugby and pays the full revenue, $R_2^* = \frac{1A^2}{4B}$, to the rugby association in order to acquire the rights.

Case 1: no remedy

$$\text{Broadcaster 1: } Q_1^* = \frac{A}{B} \quad P_1^* = \frac{7}{12}A \quad R_1^* = \frac{7}{12} \frac{A^2}{B}$$

$$\text{Broadcaster 2: } Q_2^* = \frac{1}{2} \frac{A}{B} \quad P_2^* = \frac{1}{2}A \quad R_2^* = \frac{1}{4} \frac{A^2}{B}$$

In the “no remedy”-case, broadcaster 1 provides a bundle with motor racing and football while broadcaster 2 provides rugby. When $x = \frac{1}{6}$, only motor racing and football fans will be interested in the bundle offered by broadcaster 1 while only rugby fans will be interested in the service offered by broadcaster 2.

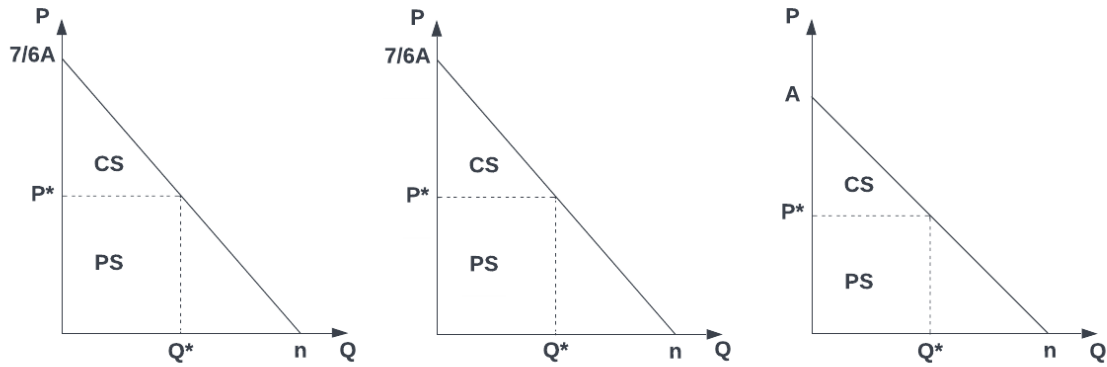
The motor racing and rugby association sell their rights for $\frac{1}{4} \frac{A^2}{B}$ respectively. Compared to the outset, broadcaster 1 gets an additional revenue from broadcasting football of

$\Delta R_1 = \frac{7}{12} \frac{A^2}{B} - \frac{1}{4} \frac{A^2}{B} = \frac{1}{3} \frac{A^2}{B}$ and pays the full addition to the football association in order to acquire the rights.

$$PS^M = PS^R = \frac{1}{4} \frac{A^2}{B}$$

$$PS^F = \frac{1}{3} \frac{A^2}{B}$$

$$D_B^M \rightarrow P = \frac{7}{6}A - \frac{7}{6}BQ \quad D_B^F \rightarrow P = \frac{7}{6}A - \frac{7}{6}BQ \quad D_R^R \rightarrow P = A - BQ$$



The highest WTP of any motor racing fan for the bundle is $\frac{7}{6}A$, the price is $\frac{7}{12}A$ and the quantity sold to motor racing fans is $\frac{1}{2}\frac{A}{B}$. Similarly, the highest WTP of any football fan for the bundle is $\frac{7}{6}A$, the price is $\frac{7}{12}A$ and the quantity sold to football fans is $\frac{1}{2}\frac{A}{B}$. The highest WTP of any rugby fan for rugby is A , the price is $\frac{1}{2}A$ and the quantity sold to rugby fans is $\frac{1}{2}\frac{A}{B}$.

$$CS^M = CS^F = \frac{\left(\frac{7}{6}A - \frac{7}{12}A\right) \times \frac{1}{2}\frac{A}{B}}{2} = \frac{7}{48} \frac{A^2}{B}$$

$$CS^R = \frac{\left(A - \frac{1}{2}A\right) \times \frac{1}{2}\frac{A}{B}}{2} = \frac{1}{8} \frac{A^2}{B}$$

8.

Football fans have a total inverse demand for the bundle provided by broadcaster 1 of:

$$D_F^F + D_M^F + D_R^F - P_2 = D_{B1}^F \rightarrow$$

$$\left(P_1 = A - BQ_1\right) + \left(P_1 = \frac{1}{6}A - \frac{1}{6}BQ_1\right) + \left(P_1 = \frac{1}{6}A - \frac{1}{6}BQ_1\right) - P_2 \rightarrow P_1 = \frac{4}{3}A - P_2 - \frac{4}{3}BQ_1$$

Football fans have a total inverse demand for the bundle provided by broadcaster 2 of:

$$D_F^F + D_M^F + D_R^F - P_1 = D_{B2}^F \rightarrow$$

$$\left(P_2 = A - BQ_2\right) + \left(P_2 = \frac{1}{6}A - \frac{1}{6}BQ_2\right) + \left(P_2 = \frac{1}{6}A - \frac{1}{6}BQ_2\right) - P_1 \rightarrow P_2 = \frac{4}{3}A - P_1 - \frac{4}{3}BQ_2$$

9.

If $P_1 > \frac{4}{3}A - P_2$, the total demand for the bundle of broadcaster 1 is $D_{B1}^M \rightarrow P_1 = A - BQ_1$

If $P_1 \leq \frac{4}{3}A - P_2$, the total demand for the bundle of broadcaster 1 is $D_{B1}^M + D_{B1}^F \rightarrow$

$$\left(Q_1 = \frac{A}{B} - \frac{P_1}{B}\right) + \left(Q_1 = \frac{A}{B} - \frac{3P_2}{4B} - \frac{3P_1}{4B}\right) \rightarrow Q_1 = \frac{2A}{B} - \frac{3P_2}{4B} - \frac{7P_1}{4B} \rightarrow P_1 = \frac{8}{7}A - \frac{3}{7}P_2 - \frac{4}{7}BQ_1$$

Broadcaster 1 profit maximizes at $MR = MC = 0$ and we check for solutions on both parts of the inverse demand curve.

Only motor racing fans ($P_1 > \frac{4}{3}A - P_2$)

$$D_{B1}^M \rightarrow P_1 = A - BQ_1$$

$$MR = A - 2BQ_1 = 0 \quad \rightarrow \quad Q_1^* = \frac{1}{2} \frac{A}{B} \quad P_1^* = \frac{1}{2}A \quad R = \frac{1}{4} \frac{A^2}{B}$$

Both motor racing and football fans ($P_1 \leq \frac{4}{3}A - P_2$)

$$D_{B1}^M + D_{B1}^F \rightarrow P_1 = \frac{8}{7}A - \frac{3}{7}P_2 - \frac{4}{7}BQ_1$$

$$MR = \frac{8}{7}A - \frac{3}{7}P_2 - \frac{4}{7}2BQ_1 = 0 \quad \rightarrow \quad Q_1^* = \frac{A}{B} - \frac{3}{8B}P_2 \quad P_1^* = \frac{4}{7}A - \frac{3}{14}P_2$$

By symmetry, broadcaster 2 will face an identical problem and will also have an identical solution. Because the optimal price and quantity for each broadcaster depend on the price set by the other, we find the solution by substituting P_2 in the expression for P_1^* with the expression for P_2^* and vice versa. That will give us the optimal price for each broadcaster given the optimal price for the other.

Only motor racing/rugby fans:

$$P_1^* = \frac{1}{2}A \rightarrow P_2^* = \frac{1}{2}A$$

$$Q_1^* = \frac{1}{2}\frac{A}{B} \rightarrow Q_2^* = \frac{1}{2}\frac{A}{B}$$

$$R_1^* = \frac{1}{4}\frac{A^2}{B} \rightarrow R_2^* = \frac{1}{4}\frac{A^2}{B}$$

Both motor racing/rugby and football fans:

$$P_1^* = \frac{4}{7}A - \frac{3}{14}P_2$$

$$P_2^* = \frac{4}{7}A - \frac{3}{14}P_1$$

P_2^* in P_1^* :

$$P_1 = \frac{4}{7}A - \frac{3}{14}\left(\frac{4}{7}A - \frac{3}{14}P_1\right)$$

$$P_1^* = \frac{8}{17}A \rightarrow P_2^* = \frac{8}{17}A$$

$$Q_1^* = \frac{14}{17}\frac{A}{B} \rightarrow Q_2^* = \frac{14}{17}\frac{A}{B}$$

$$R_1^* = \frac{112}{289}\frac{A^2}{B} \rightarrow R_2^* = \frac{112}{289}\frac{A^2}{B}$$

$\frac{112}{289}\frac{A^2}{B} > \frac{1}{4}\frac{A^2}{B}$ which means that the broadcasters get the highest revenue by setting a sufficiently low price to attract demand from football fans. Broadcaster 1 provides a bundle with motor racing and one half of the football games while broadcaster 2 provides a bundle with rugby and the other half of the football games. Motor racing fans are only interested in the bundle of broadcaster 1 and rugby fans are only interested in the bundle of broadcaster 2. Football fans subscribe to both services or none of them.

10.

Case 2: no single buyer

$$\text{Broadcaster 1: } Q_1^* = \frac{14}{17}\frac{A}{B} \quad P_1^* = \frac{8}{17}A \quad R_1^* = \frac{112}{289}\frac{A^2}{B}$$

$$\text{Broadcaster 2: } Q_2^* = \frac{14}{17}\frac{A}{B} \quad P_2^* = \frac{8}{17}A \quad R_2^* = \frac{112}{289}\frac{A^2}{B}$$

Broadcaster 1 provides a bundle with motor racing and one half of the football games while broadcaster 2 provides a bundle with rugby and the other half of the football games. When

$x = \frac{1}{6}$, only motor racing and football fans will be interested in the bundle of broadcaster 1 and only rugby and football fans will be interested in the bundle of broadcaster 2.

The motor racing and rugby association sell their rights for $\frac{1}{4} \frac{A^2}{B}$ respectively. Compared to the outset, both broadcasters get an additional revenue from broadcasting one half of the football games of $\Delta R_1 = \Delta R_2 = \frac{112}{289} \frac{A^2}{B} - \frac{1}{4} \frac{A^2}{B} = \frac{159}{1156} \frac{A^2}{B}$ and both pay the full addition to the football association in order to acquire the rights.

$$PS^M = PS^R = \frac{1}{4} \frac{A^2}{B}$$

$$PS^F = \frac{159}{1156} \frac{A^2}{B} + \frac{159}{1156} \frac{A^2}{B} = \frac{159}{578} \frac{A^2}{B}$$

$$D_{B1}^M \rightarrow P = A - BQ \quad D_{B2}^R \rightarrow P = A - BQ$$

The highest WTP of any motor racing fan for their preferred bundle (broadcaster 1) is A , the price is $\frac{8}{17}A$ and the quantity sold to motor racing fans is $\frac{9}{17} \frac{A}{B}$. Similarly, the highest WTP of any rugby fan for their preferred bundle (broadcaster 2) is A , the price is $\frac{8}{17}A$ and the quantity sold to rugby fans is $\frac{9}{17} \frac{A}{B}$.

$$CS^M = CS^R = \frac{(A - \frac{8}{17}A) \times \frac{9}{17} \frac{A}{B}}{2} = \frac{81}{578} \frac{A^2}{B}$$

$$D_F^F + D_M^F + D_R^F \rightarrow P = \frac{4}{3}A - \frac{4}{3}BQ$$

The highest WTP of any football fan for both bundles is $\frac{4}{3}A$, the total price is $\frac{16}{17}A$, and the quantity of each bundle sold to football fans is $\frac{5}{17} \frac{A}{B}$.

$$CS^F = \frac{(\frac{4}{3}A - \frac{16}{17}A) \times \frac{5}{17} \frac{A}{B}}{2} = \frac{50}{867} \frac{A^2}{B}$$

11.

Broadcaster 1 – bundle with motor racing and football

$$D_{B1}^M + \frac{D_{B1}^F}{2} \rightarrow \left(Q = \frac{A}{B} - \frac{6P}{7B}\right) + \left(Q = \frac{A}{2B} - \frac{3P}{7B}\right) \rightarrow Q = \frac{3A}{2B} - \frac{9P}{7B} \rightarrow P = \frac{7}{6}A - \frac{7}{9}BQ$$

$$P = \frac{7}{12}A \rightarrow \quad Q = \frac{3A}{4B} \quad R = \frac{7}{16} \frac{A^2}{B}$$

Broadcaster 2 – bundle with rugby and football

$$D_{B2}^R + \frac{D_{B2}^F}{2} \rightarrow \left(Q = \frac{A}{B} - \frac{6P}{7B}\right) + \left(Q = \frac{A}{2B} - \frac{3P}{7B}\right) \rightarrow Q = \frac{3A}{2B} - \frac{9P}{7B} \rightarrow P = \frac{7}{6}A - \frac{7}{9}BQ$$

$$P = \frac{7}{12}A \rightarrow \quad Q = \frac{3A}{4B} \quad R = \frac{7}{16} \frac{A^2}{B}$$

12.

Broadcaster 2 – bundle with rugby and football

$$D_{B2}^R \rightarrow P = \frac{7}{6}A - \frac{7}{6}BQ$$

$$MR = \frac{7}{6}A - \frac{7}{6}2BQ = 0 \quad \rightarrow Q^* = \frac{1A}{2B} \quad P^* = \frac{7}{12}A \quad R^* = \frac{7}{24} \frac{A^2}{B}$$

13.

The total demand for the bundle of broadcaster 1 is $D_{B1}^M + D_{B1}^F \rightarrow$

$$\left(Q = \frac{A}{B} - \frac{6P}{7B}\right) + \left(Q = \frac{A}{B} - \frac{6P}{7B}\right) \rightarrow Q = \frac{2A}{B} - \frac{12P}{7B} \rightarrow P = \frac{7}{6}A - \frac{7}{12}BQ$$

14.

$$R = \frac{7}{24} \frac{A^2}{B} = PQ = \left(\frac{7}{6}A - \frac{7}{12}BQ \right) Q \rightarrow$$

$$\frac{7}{24} \frac{A^2}{B} = \left(\frac{7}{6}A - \frac{7}{12}BQ \right) Q$$

$$Q^2 - \frac{2A}{B}Q + \frac{1}{2} \frac{A^2}{B^2} = 0$$

$$Q = \frac{A}{B} \pm \sqrt{\left(\frac{A}{B} \right)^2 - \frac{1}{2} \frac{A^2}{B^2}}$$

$$Q_1 = \frac{A}{B} + \frac{1}{\sqrt{2}} \frac{A}{B} = \frac{(\sqrt{2}+1)A}{\sqrt{2}B} \quad Q_2 = \frac{A}{B} - \frac{1}{\sqrt{2}} \frac{A}{B} = \frac{(\sqrt{2}-1)A}{\sqrt{2}B}$$

$Q_1 > Q_2$ which means that $P_1 < P_2$. The price will be pushed down to the lowest possible that yields a revenue of $R = \frac{7}{24} \frac{A^2}{B}$. Therefore, only solution Q_1 is relevant.

$$Q^* = \frac{(\sqrt{2}+1)A}{\sqrt{2}B} \rightarrow \quad P^* = \frac{(\sqrt{2}-1)7}{\sqrt{2}12}A \quad R^* = \frac{7}{24} \frac{A^2}{B}$$

15.

Case 3: nonexclusive rights

$$\text{Broadcaster 1: } Q_1^* = \frac{(\sqrt{2}+1)A}{\sqrt{2}B} \quad P_1^* = \frac{(\sqrt{2}-1)7}{\sqrt{2}12}A \quad R_1^* = \frac{7}{24} \frac{A^2}{B}$$

$$\text{Broadcaster 2: } Q_2^* = \frac{1}{2} \frac{A}{B} \quad P_2^* = \frac{7}{12}A \quad R_2^* = \frac{7}{24} \frac{A^2}{B}$$

Broadcaster 1 provides a bundle with motor racing and football at a low price while broadcaster 2 provides a bundle with rugby and football at a high price. When $x = \frac{1}{6}$, motor racing and football fans will be interested in the bundle of motor racing and football (broadcaster 1) while only rugby fans will be interested in the bundle of rugby and football (broadcaster 2).

The motor racing and rugby association sell their rights for $\frac{1}{4} \frac{A^2}{B}$ respectively. Compared to the outset, both broadcasters get an additional revenue from broadcasting football of

$\Delta R_1 = \Delta R_2 = \frac{7}{24} \frac{A^2}{B} - \frac{1}{4} \frac{A^2}{B} = \frac{1}{24} \frac{A^2}{B}$ and both pay the full addition to the football association in order to acquire the rights.

$$PS^M = PS^R = \frac{1}{4} \frac{A^2}{B}$$

$$PS^F = \frac{1}{24} \frac{A^2}{B} + \frac{1}{24} \frac{A^2}{B} = \frac{1}{12} \frac{A^2}{B}$$

$$D_{B1}^M \rightarrow P = \frac{7}{6}A - \frac{7}{6}BQ \quad D_{B1}^F \rightarrow P = \frac{7}{6}A - \frac{7}{6}BQ \quad D_{B2}^R \rightarrow P = \frac{7}{6}A - \frac{7}{6}BQ$$

The highest WTP of any motor racing fan for the bundle of broadcaster 1 is $\frac{7}{6}A$, the price is $\frac{(\sqrt{2}-1)}{\sqrt{2}} \frac{7}{12}A$ and the quantity sold to motor racing fans is $\frac{(\sqrt{2}+1)A}{2\sqrt{2}B}$. Similarly, the highest WTP of any football fan for the bundle of broadcaster 1 is $\frac{7}{6}A$, the price is $\frac{(\sqrt{2}-1)}{\sqrt{2}} \frac{7}{12}A$ and the quantity sold to football fans is $\frac{(\sqrt{2}+1)A}{2\sqrt{2}B}$. The highest WTP of any rugby fan for the bundle of broadcaster 2 is $\frac{7}{6}A$, the price is $\frac{7}{12}A$, and the quantity sold to rugby fans is $\frac{1}{2} \frac{A}{B}$.

$$CS^M = CS^F = \frac{\left(\frac{7}{6}A - \frac{(\sqrt{2}-1)}{\sqrt{2}} \frac{7}{12}A\right) \times \frac{(\sqrt{2}+1)A}{2\sqrt{2}B}}{2} = \frac{21+14\sqrt{2}}{96} \frac{A^2}{B}$$

$$CS^R = \frac{\left(\frac{7}{6}A - \frac{7}{12}A\right) \times \frac{1}{2} \frac{A}{B}}{2} = \frac{7}{48} \frac{A^2}{B}$$

