DEPARTMENT OF ECONOMICS

Broadcasting sports, Pay-TV or Free-TV?

Stefan Kesenne

UNIVERSITY OF ANTWERP
Faculty of Applied Economics

Stadscampus
Prinsstraat 13, B.226
BE-2000 Antwerpen
Tel. +32 (0)3 265 40 32
Fax +32 (0)3 265 47 99
http://www.ua.ac.be/tew

FACULTY OF APPLIED ECONOMICS

DEPARTMENT OF ECONOMICS

Broadcasting sports, Pay-TV or Free-TV?

Stefan Kesenne

RESEARCH PAPER 2011-003
MAY 2011

University of Antwerp, City Campus, Prinsstraat 13, B-2000 Antwerp, Belgium
Research Administration – room B.226
phone: (32) 3 265 40 32
fax: (32) 3 265 47 99
e-mail: joeri.nys@ua.ac.be

D/2011/1169/003

Broadcasting sports, Pay-TV or Free-TV ?

Stefan Kesenne

Economics Department, University of Antwerp

Department of Human Kinesiology, Catholic University of Leuven

1. Introduction

Over the last decades, broadcast rights have become the most important revenue source of professional sports clubs, -leagues and – organisers on both sides of the Atlantic, (see Andreff and Staudohar, 2000; Deloitte, 2004). On the other hand, broadcasters need sports programming because major sporting events are key drivers of TV-ratings and advertising.

However, fundamental differences in sports coverage exist between the US and Europe. The broadcast rights of all US major leagues are monopolised and sold by the league whereas, in some southern European countries, such as Spain, Portugal, Italy and

Greece, soccer clubs can sell the rights of their home games individually. Furthermore, in the US major leagues, NBA, MLB and NFL, all games are broadcast free-to-air or on (low-fee) cable TV, while the majority of European networks do not show the national soccer matches free-to-air, but rather on subscription or pay-per-view TV. Following Dietl and Hasan (2007), free-to-air and cable-TV networks will be referred to as free-TV while subscription-TV and pay-per-view will be referred to as pay-TV.

In the field of sports and the media, two markets are at play, which, though interdependent, should be clearly distinguished. The first one is the market of TV-rights, with the sports clubs and the league on the supply side and the broadcasters on the demand side. The second market is the market of televised sports, with the broadcasters on the supply side and the TV-spectators on the demand side. If the TV-rights are monopolised and sold to just one (highest bidding) broadcaster, another monopoly is created in the market of televised sports. If pay-TV is an option, the price charged to the TV-spectators will then be too high and the number of games that are broadcast will be too low. Moreover, in deciding about either free-TV or Pay-TV, the broadcaster has also to take into account the interests of the sports organizer, who prefers more TV-viewers to less TV-viewers. So, a broadcaster can be considered as a platform in a two-sided market (See Evans and Schmalensee, 2007).

In this paper, we present a simplified theoretical model describing and analyzing the behaviour of a private commercial TV-company that holds a monopoly position in the market of televised games, and we try to find out under what conditions a profit-maximizing broadcaster chooses free-TV or pay-TV.

However, for many public and subsidised TV-companies in Europe, subscription fees or pay-par-view are not an option because many European politicians argue that a national pastime, such as soccer in Europe, is a semi-public good that should be broadcast free-to-air and not hidden behind a decoder. Quite recently, FIFA and UEFA, the World and European Football Association, complained about the loss of TV-revenue caused by the European prohibition to broadcast the so-called crown jewels by a pay-tv channel. This protest by FIFA AND UEFA suggests that pay-tv is more profitable than free-TV in broadcasting sports. Furthermore, it is also possible that the public threatens to boycott a private pay channel claiming the exclusive right to broadcast the games and charging too high a price as the Dutch Football Union (KNVB) experienced with its own TV-channel called "Sport 7" back in the early nineties (see T. Van der Burg, 1996). The Dutch simply refused to turn to the 'Sport 7' channel to watch the championship games, and 'Sport 7' lived a very short life.

2. A simplified model.

Assume that the demand for TV-sports, supplied by a monopolist broadcaster is given by $p = \alpha - \beta q$ where p is the price per view (or the subscription fee) and q is the number of spectators or the number of subscribers.

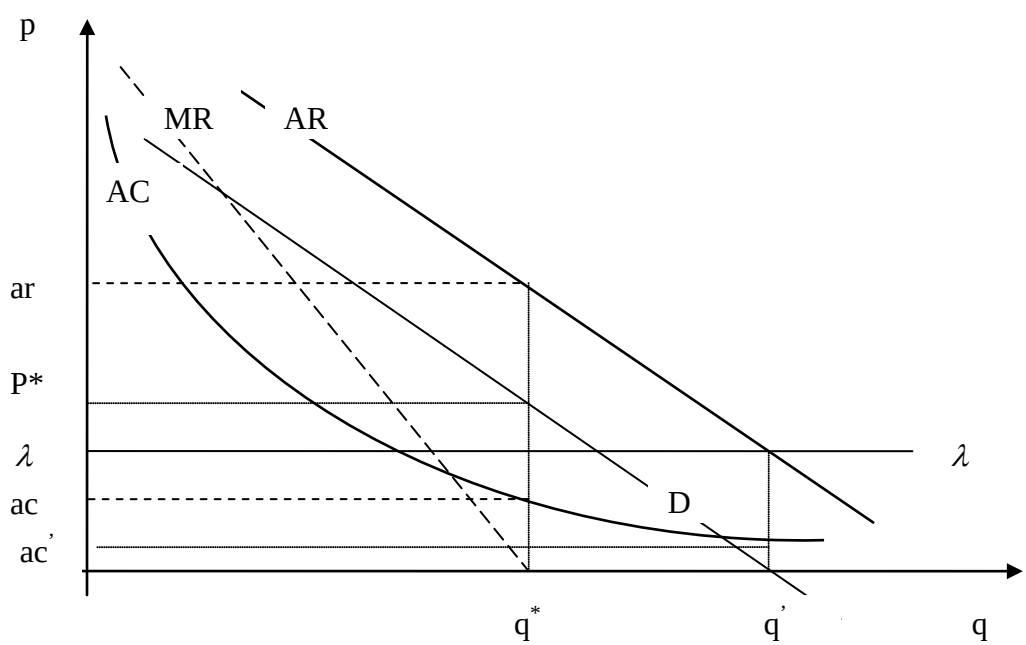
The smaller β, the more price-elastic is the demand for TV-sports. However, pay-TV is not the broadcaster's only source of revenue. Besides the payments by TV spectators, a broadcaster can also receive income from TV-advertising before, during or after the

games. Assume that advertisers are willing to pay an amount as large as λ per TV-viewer. It follows that the broadcaster's total revenue can be written as:

$$R = pq + \lambda q = (\alpha + \lambda)q - \beta q^2 \qquad (1)$$

On the cost side, we consider two cost categories: the broadcast rights the TV-company has to pay, and the operational cost to broadcast the games, including transportation, equipment and personnel. These costs are all independent of the number of spectators that watch the games on TV. So the total cost $C = C_0$ is fixed and the marginal cost is zero. (see Kesenne, 2007). In figure 1, this model is graphically presented.

Figure 1. The broadcaster's revenue and cost model



On the horizontal axis, the number of spectators is measured and, on the vertical axis, the pay-per-view price or the subscription fee. The demand for TV-sport is presented by the

linear curve D. Given the constant average revenue (λ) from TV-advertising, the total average revenue and marginal revenue curves of the broadcaster are given by the AR and MR Because the total cost is constant, the marginal cost is zero and the average cost is the downward sloping curve AC.

3. Pay-TV versus Free-TV

If the pay-TV broadcaster is a profit maximizer, he will set a price that maximizes profits $\pi_p = R - C = (\alpha + \lambda)q - \beta q^2 - C_0$. From the first-order condition $(\alpha + \lambda) - 2\beta q = 0$ the optimal pay-TV price and the optimal number of spectators will be:

$$p^* = \frac{\alpha - \lambda}{2} \quad with\ \alpha > \lambda$$
$$q^* = \frac{\alpha + \lambda}{2\beta} \tag{2}$$

Substituting the optimal values in the profit function, the broadcaster's profit in the pay-TV scenario is then:

$$\pi_p^* = (\alpha + \lambda)\frac{(\alpha + \lambda)}{2\beta} - \beta\frac{(\alpha + \lambda)^2}{4\beta^2} - C_0 = \frac{(\alpha + \lambda)^2}{4\beta} - C_0 \tag{3}$$

In the free-TV scenario with zero price, $p' = 0$, the demand for games or the number of spectators would be $q' = \frac{\alpha}{\beta}$. So, profit would then be equal to:

$$\pi_f^* = (\alpha + \lambda)\frac{\alpha}{\beta} - \beta\frac{\alpha^2}{\beta^2} - C_0 = \frac{\alpha\lambda}{\beta} - C_0 \tag{4}$$

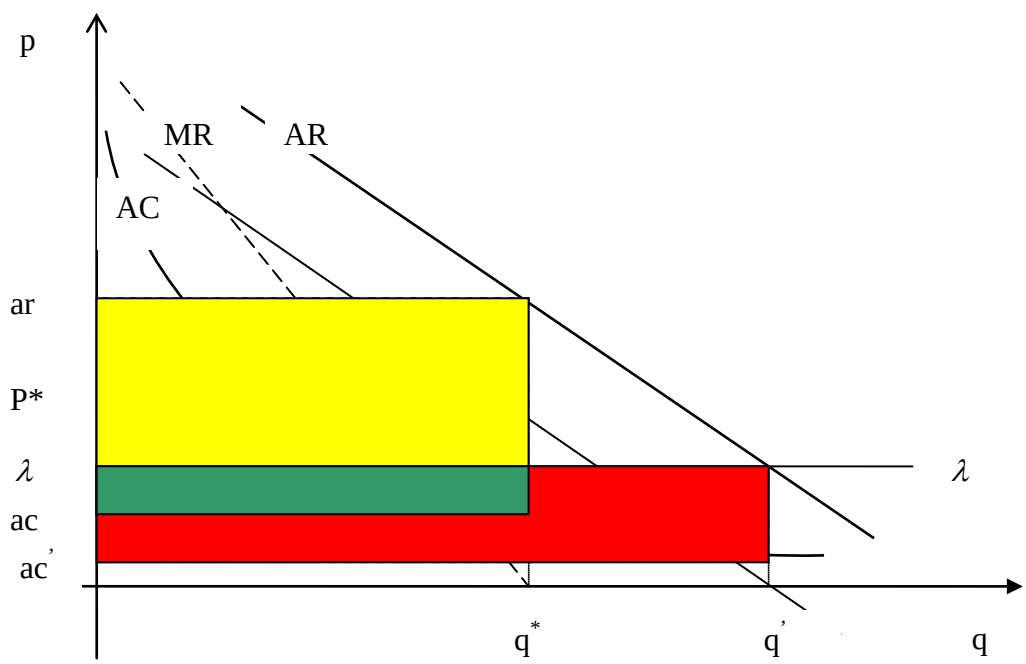
The difference between the profits in both cases can then be calculated as:

$$\pi_p^* - \pi_f^* = \frac{(\alpha+\lambda)^2}{4\beta} - \frac{\alpha\lambda}{\beta} = \frac{(\alpha-\lambda)^2}{4\beta} > 0 \qquad (5)$$

Because the difference is always positive, we can conclude that, for whatever values of the parameters α, β *and* λ , pay-TV is more profitable.

In Figure 1, the profit maximizing number of spectators is found at the point of intersection of the MR and the zero MC, which is q*, and the optimal price is p*. Average profits can be found as the difference between ar and ac and total profits is measured by the rectangular area which is the product of (ar-ac) and q*.

Figure 2. Comparing profits of pay-TV and free-TV



In the free-to air scenario with the price equal to zero, the number of spectators can be seen to equal q'. Average revenue, which now only consists of advertising receipts, is

given by λ. Average profits is the difference between λ and ac', and total profits can be measured by the rectangular area which is the product of (λ - ac') and q'.

The difference in profits will be larger, the higher the demand level (α), the more elastic the demand curve ($1/\beta$). The more advertisers are willing to pay for TV-adds (λ), the lower will be the difference in profits.

This difference can also be seen in figure 2, where figure 1 is reproduced and where total profits with pay-TV is indicated by the sum of the light shaded and the overlapping grey shaded area, which is clearly higher than total profits with free-TV, indicated by the sum of the dark and the overlapping grey rectangular area.

4. The impact of board and shirt advertising

However, the result in the previous section is not the end of story. If the games are broadcast free-to-air, more spectators are watching, which makes it more interesting for businesses to advertise on player shirts and field boards, which is an additional revenue to the organiser, the league or the club. Under these circumstances, the organiser would be willing to sell the broadcast rights at a lower price. The price reduction is affected by the extra spectators that can be expected by free-TV compared with pay-TV, which is:

$$\Delta q = \frac{\alpha}{\beta} - \frac{\alpha + \lambda}{2\beta} = \frac{\alpha - \lambda}{2\beta} \qquad (6)$$

If these shirt and board advertisers are willing to pay the same amount of λ per viewer as done by the TV-advertiser, the reduced cost of the broadcaster will be:

$$C = C_0 - \lambda \frac{\alpha - \lambda}{2\beta} \qquad (7)$$

With this new cost function, with again a zero marginal cost, the difference between profits in the pay-TV and the free-TV case becomes:

$$\pi_p - \pi_f = \frac{(\alpha-\lambda)^2}{4\beta} - \lambda\frac{(\alpha-\lambda)}{2\beta} = \frac{(\alpha-\lambda)}{4\beta}(\alpha-3\lambda) \qquad (8)$$

As can be seen now: $\pi_p < \pi_f$ if $\alpha < 3\lambda$. So, it is not generally true that pay-TV is more profitable than free-TV. Free-to-air broadcasting can be more profitable than pay-TV, depending on the values of the parameters α and λ, that is: depending on the level of demand and the price that advertisers are willing to pay per TV-viewer. The lower the demand for televised sport and the more advertisers are willing to pay, the more profitable free-TV will be.

In the figures 1 and 2, the impact of shirt and board advertising can be introduced by a downward shift of the average cost curve in the case of free-TV, so that it is possible that free-TV profits can be higher than pay-TV profits.

A good illustration of this impact is what happened to the broadcasting of the classic bike-race: the Primavera Milano-San Remo. The TV-rights of this race had always been sold to a free-to-air European network, with the exception of one year in the late nineties when the organizer decided to sell the rights to a pay-TV network. However, the number of TV-spectators of the race dropped so dramatically by the pay-per-view price that the sponsors of the racing teams and the board advertisers threatened to withdraw from sponsoring the race. The next year and ever since, the organiser decided to sell the rights of the Primavera again to a free-to air network.

5. Discussion and Conclusion

In this contribution we have tried to show, using a simple theoretical model, that pay-TV is not always more profitable than free-TV for a profit-maximizing broadcaster. The main reason is that one also has to take into account the relationship between the sports organiser and the broadcaster, because the broadcaster is a platform in a two-sided market.

Can this result shed some light as to why in the US major league sports, free-TV prevails, while in European soccer, pay-TV is more dominant? Apart from historical, structural and institutional differences on both side of the Atlantic (see Hoehn and Lancefield, 2003; Szymanski, 2003), an important factor is the scale effect in the US, with its large market compared to the smaller national markets in European soccer. However, in the US, four major leagues, with partly overlapping seasons, have to compete for the TV-spectators interest, whereas in most European countries, soccer is so dominant that there is hardly any competition from other televised sports. Moreover, Dietl and Hasan (2007) argue that the average season appeal for games in Europe might be higher because of the promotion and relegation system, as well as the fight to qualify for the European championships (UEFA Champions League and Europe League), which provide an additional contest to the national championships, possibly leading to a high demand for televised soccer in Europe. In our model above, the demand level is given by the size of the parameter α. We can only think of one reason why the value of λ, that is the price advertisers are willing to pay per TV-viewer, should be higher in the US than in Europe. Soccer in Europe goes on uninterrupted for two times 45 minutes. The major league

sports in the US, such as basketball, football and baseball are interrupted more often, by time-outs and by their segmentation into thirds, quarters or ninths, which allows networks to run more commercials. The relative size of these parameters might be part of the explanation why the major league sports in the US are broadcasted free–to–air and Europe has to pay to watch soccer on TV.

References

- Andreff, W. and P. Staudohar, (2000), The Evolving European Model of Professional Sports Finance, *Journal of Sports Economics*, 1(3), 257-276

- Deloitte, (2004), *Annual Review of Football Finance*, Manchester, 68 p + Appendices

- Dietl, H. and T. Hasan (2007), Pay-TV versus free-TV: a model of sports broadcasting rights sales, *Eastern Economic Journal*, 33(3), 1-24.

- Evans, D. and R. Schmalensee (2007) The Industrial Organisation of Markets with Two-Sided platforms, *Competition Policy International*, 3(1).

- Hoehn, T. and D.Lancefield, (2003), Broadcasting in Sport, O*xford Review of Economic Policy 19(4).*

- Kesenne S., (2007), *The Economic Theory of Professional Team Sports, an analytical treatment*, Edward Elgar, Northampton, MA, USA.

- Szymanski, S., (2003), The Economic Design of Sporting Contests, *Journal of Economic Literature*, 41(4), 1137-1187.

- Van der Burg, T. (1996), Het voetbal-monopolie, *ESB* 81, 710-711