Exclusivity as a "Toehold" in Auctions*

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Abstract

Satellite platforms often distribute both exclusive and non-exclusive TV-channels, and this paper analyse the effects of a channel going from non-exclusive to exclusive distribution, and subsequent effects of bidding on premium broadcasting rights. When a channel is distributed exclusively, consumer surplus always decrease while TV-channels utility increase. The satellite platforms may however experience both loss and gain from the exclusivity, depending on the value of the channel and the lump sum payment needed to get the channel exclusively.

When bidding for premium broadcasting rights, TV channels can form bidding consortia with each other or with platforms. The paper show that while consumers always prefer joint bidding between channels, the rights owner will benefit substantially from vertical bidding consortia. The broadcasting rights for Norwegian football serves as a motivation for the paper.

Keywords: Exclusive dealing, auctions, toehold, football, media.

JEL codes: D44, L13, L42, L82

*work very much in progress.

1 Introduction

During the last 15 years, the price for sport broadcasting rights increased substantially, and so also in Norway.[1] In 2005 The Norwegian Football Association (NFF) netted NOK 1 billion (£85/$164 millions) when they sold the broadcasting rights for Norwegian football for the period 2006-2008. The price increase compared to the former contract was 700 millions. Previously the two major TV channels in Norway, NRK and TV2 had shared the rights, but this time around they broke their collaboration and instead formed bidding consortia with each of the two satellite platforms in Norway, Viasat and Canal Digital. NRK are distributed by both platforms, while TV2 is exclusively distributed on Canal Digital. TV2 and Canal Digital won the rights after topping NRK/Viasat bid in the last minute, and according to the media, one of the reasons that NRK/TV2 broke their collaboration was that the Norwegian Competition Authority would ban a horizontal price agreement.[2] However, the vertical agreement between a channel and a satellite platform was not sanctioned by the competition authority. TV2's exclusive distribution on Canal Digital has been challanged by Viasat both at the Norwegian Competition Authority and at the EFTA Surveillance Authority. The case has been running since 2001 and a decision is still not reached.[3]

[1] See Hoehn and Lancefield (2003) and Cave and Crandall (2001) for data on the price increase for sport in the US and EU (especially UK).

[2] There was one more serious contender (SBS/TVNorge) but since the commercial sponsors of NFF more or less insisted that football should remain on nationwide channels, their bid would probably need to be substantially higher then the present winner, and they lost out.

[3] The competition rules of the European Economic Area Agreement (broadly equivalent to those of the EC Treaty) are enforced across the European Economic Area by the EFTA Surveillance Authority and the European Commission.

The EFTA Surveillance Authority focuses on market conditions in the EFTA pillar, i.e. Iceland, Liechtenstein and Norway. Undertakings active in those EFTA States must comply with the EEA competition rules, notably the prohibition on restrictive business practices and of the abuse of a dominant market position. [...] The EFTA Surveillance Authority's Competition and State Aid Directorate is entrusted with a range of tasks in the field of competition that closely match those of the European Commission Directorate-General for Competition (DG Comp). (http://www.eftasurv.int/fieldsofwork/fieldcompetition/)

The Norwegian case serves as a motivation for this paper, and discuss exclusivity in two stages of the TV market.[4] First, what are the effects on satellite platform competition and consumer surplus of a channel being distributed exclusively? Second, how does this exclusivity influence bidding for premium broadcasting rights? The first results show the effects of a channel deciding to be distributed exclusively; In exchange for the exclusivity the channel receives a positive revenue, compensating for the loss of viewers. If the channel decides to be distributed exclusively, it has a positive utility effect on both TV channels, since the non-exclusive channel have less competition in the market, while the other is compensated by its exclusive platform. In the platform market; the winning platform's profit may increase or decrease depending on the structure of the market, while the losing platform's profit always decreases. Consumer welfare decrease since the distribution of one channel is limited.[5]

The next sets of results discuss the effect of different bidding consortia when exclusive broadcasting rights are sold. Four cases are considered: Horizontal joint bidding (TV Channels collaborating) when there is full distribution or exclusivity, and vertical joint bidding (TV channel and platform collaborating) when there is full distribution or exclusivity. The results show that horizontal bidding is always better than vertical bidding for the consumers, and consumer surplus is always higher when there is no exclusivity. The price for the rights is the opposite: If there is horizontal joint bidding, the prices are low since this does not affect the competition between channels. If there are vertical joint bidding the price is high because both the platforms and the channels are competing and this drives the price up. The price reaches its peak when there are vertical joint bidding and exclusive distribution of

[4]I stress that the Norwegian case serves as a motivation and the article should not be viewed as a precise explanation of what happened in Norway.

[5]It is not uncommon in either the cable TV market or in the satellite TV market that platforms has an exclusive right to offer a specific channel. Some channels are distributed exclusively on one platform, while others are distributed on several platforms. There can be various reasons for this; financial, ownership or legal reasons, i.e. public funded channels cannot distribute themselves exclusively if other platforms want to distribute them.

one channel. (However the profit for the winning consortium can be substantial since only one platform has a positive externality from the other consortium winning the right.)

The model in this paper builds on Armstrong (1999), with the extension that instead of programming "in house" the satellite platforms bundles channels. This makes it possible to discuss the effects of a channel being distributed exclusively, and the effects of different bidding consortia for premium rights. The exclusivity in the channel market and vertical joint bidding results in situations that resembles the "toehold effect" discussed inBulow, Huang, and Klemperer (1999) and Klemperer (1998). A toehold refers to the fact that having a small private value advantages in an otherwise symmetric auction can substantially affect the outcome. However, the present model does not model neither the exclusive channel nor the premium rights as a common value object in the typical sense; The rights are worth the same for every bidder, but there are no uncertainty ex ante of the objects value. One could of course use a common value setup, and the results would probably be affected in respect to the price for premium broadcasting rights (which could be lower since the agents without toeholds would bid more cautionally).

The discussion of exclusivity, toeholds and football is of course not new. In the UK this was a major issue when BSkyB tried to acquire Manchester United but sanctioned by the Department of Trade & Industry (see Binmore and Harbord (2000) and Klemperer (2002)). These papers do however not discuss the difference between horizontal and vertical joint bidding. Jehiel and Moldovanu (2000) study auctions where the outcome affects interaction among agents, but do not discuss bidding consortia.

I do not discuss competition between satellite reception and cable TV in this paper, as one could imagine that if consumers can choose between these delivery formats this will affect the prices in the relevant market and for exclusive channels and premium broadcasting rights, see Goolsbee and A. (2004) and Wise and Duwadi (2005) for empirical studies of this.

Another topic not encountered in this paper is the effects of vertical integration between channels and satellite platforms. Such integration may result in market foreclosure, Chipty (2001) find that in US vertical integration in the cable TV market leads to foreclosure, but the efficiency gain associated with the integration may raise consumer surplus.[6]

The paper is organized as follows: The next section gives a brief overview of the Norwegian TV market. Section 3 outlines the basic setup in the platform market and the competition between TV channels. Section 4 analyzes the effects of one channel going exclusive, while section 5 analyzes different cases when exclusive rights are sold. Section 6 discusses the Norwegian case in greater detail, while the last section concludes.

2 The Norwegian TV market.

There is one public funded (through a licence fee) TV company in Norway, broadcasting two TV channels: NRK1 and NRK2, with NRK1 being by far the largest with respect to audience. In addition there is one advertised funded channel TV2 with exclusive right to terrestrial broadcasting. These three channels has a market share that in the past ten years never has dropped below 70%. In addition there are several minor channel where only one (TVNorge) is available through the analogue terrestrial network through deals with regional broadcasters. TVNorge and TV3 (only available through cable or satellite) each has a market share of 6-10%. The residual channels have a market share between 11 and 14% (The Ministry of Culture and Church Affairs, 2002-2003).

The reception of TV signals in Norway is served by different platforms. The analogue terrestrial network serves close to 100% of the market (NRK1 99,8%, TV2 90%, NRK2 52%). Cable networks cover around 65% of Norwegian households, and in 2006 around 47% of the population subscribed to cable. Satellite network cover 85-90% of the population, and in 2006 around 32% of households subscribed to a satellite platform (Statistics Norway, 2007).

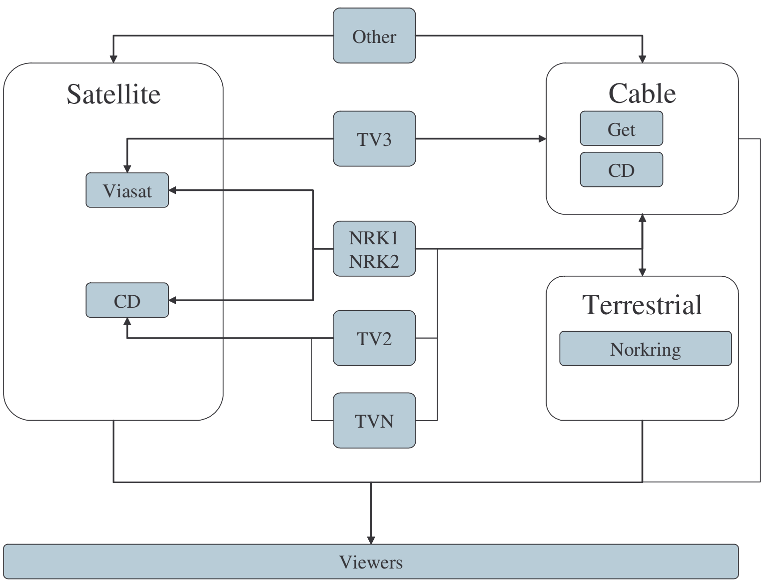
The cable market is dominated by two companies; Canal Digital and Get. These are about the same size and accounts for 85% of the subscribers to cable TV. There

[6] For more about vertical integration, and market foreclosure, see Rey and Tirole (2006).

are two companies that offer satellite reception in Norway; Canal Digital and Viasat. Both has exclusive deals with channels; Canal Digital with TV2/TVNorge, and Viasat with TV3/ZTV. In addition they each have exclusive premium channels for sport and movies. In 2007 the analogue network starts to be replaced by a digital network, and the analogue network is planned to be shut down during 2009.[7]

Note that even though a household subscribe to either cable or satellite they will in most cases also be served by the terrestrial analogue network. By the time the football broadcasting rights were sold, the Norwegian TV market looked roughly like this:

Figure 1 *The Norwegian TV market*



In earlier years NRK and TV2 has bought the exclusive rights to broadcast football from the Norwegian premier division jointly, where the last contract amounted to NOK 300 mill (£25 mill, \$50 mill). However, when the rights were auctioned again in 2005, NRK and TV2 broke their long-term collaboration and instead bid jointly with the two satellite platforms, ending with TV2 winning the rights jointly with their platform Canal Digital, with NRK and Viasat losing out on the right. The reason for the ending of the collaboration between NRK and TV2 was reportedly that they misunderstood a statement from the Norwegian Competition Authority

[7]See Motta, Polo, Rey, and Röller (1997) for a discussion of the future of the TV market.

which they thought banned them from bidding jointly. A prime motivation for this paper is therefore if vertical joint bidding is less problematic than horizontal joint bidding.

I stress that the Norwegian case serves as a motivation and the article should not be viewed as a precise explanation of what happened in Norway. On one hand NRK and TV2 are major channels, with a combined market share of 70% and there is a duopoly in the satellite platform market so this fits well into a model framework. However, both channels are available through other means than satellite, so there are ways of substitution for consumers other than switching platforms, weakening the relevance of the model's results on applicability to the Norwegian case. But since the two serious contenders for the rights were exactly the two major channels and the two satellite platforms, the model should have some predictive power on the resulting outcome.

Chipty (2001) finds that vertical integration between programming and distributer may increase consumer welfare due to efficiency gains and less foreclosure (mer her). See (Rey and Tirole 2006) for more about TV and foreclosure.

3 Basic model[8]

Assume that there are two satellite platforms, A, B that offers a bundle of channels to a population of consumers, which are uniformly distributed along the unit interval. A consumer located at $0 \leq x \leq 1$ obtain net utility of $v_A - tx$ if he subscribe to the A platform and $v_B - t(1-x)$ if he subscribe to B. The marginal consumer is given by:

$$v_A - tx = v_B - t(1-x) \tag{1}$$

and Platform A's market share is thus:

$$x = \frac{1}{2} + \frac{v_A - v_B}{2t} \tag{2}$$

[8]This model relies heavily on Armstrong (1999). The first part of the model, where I describe the platforms, is identical to Armstrong. The second step, where I introduce TV-channels is however novel as Armstrong does not discuss channels separately from platforms.

Consumer surplus is:

$$V = \int_0^x (v_A - tx)\,dx + \int_x^1 (v_B - t(1-x))\,dx$$
$$= \frac{(v_A + v_B)}{2} + \frac{(v_A - v_B)^2}{4t} - \frac{t}{4} \quad (3)$$

Gross utility is exogenously given by $u_i, (i = A, B)$ and net utility is $v_i = u_i - p_i$, which is gross utility minus the platform charge. $s_i = u_i - c_i$. is the gross surplus available to platform i, where c_i is the marginal cost of platform i. I assume as Armstrong (1999) that platform A has a competitive advantage, so $s_A \geq s_B$. Rewriting $v_i = u_i - p_i$ yields $u_i = v_i + p_i$, and insertion of this expression in gross surplus yields:

$$s_i = u_i - c_i$$
$$s_i = v_i + p_i - c_i$$
$$p_i - c_i \equiv s_i - v_i$$

where the last line is marginal profit per subscriber for platform i. The platforms profit is then be written as:

$$\pi_A = (s_A - v_A)\left(\frac{1}{2} + \frac{v_A - v_B}{2t}\right)$$
$$\pi_B = (s_B - v_B)\left(\frac{1}{2} + \frac{v_B - v_A}{2t}\right)$$

Optimizing with respect to v_A and v_B yields equilibrium market share, x^*, and profit for the platforms:

$$x^* = \frac{1}{2} + \frac{s_A - s_B}{6t} \quad (4)$$

$$\pi_A^* = \frac{1}{2t}\left(\frac{s_A - s_B}{3} + t\right)^2 \quad (5)$$
$$\pi_B^* = \frac{1}{2t}\left(\frac{s_B - s_A}{3} + t\right)^2$$

Total profit is given by:

$$\Pi^* = t + \frac{(s_A - s_B)^2}{9t} \tag{6}$$

Insertion of the optimal values for v_A and v_B in (3) yields the following consumer surplus:

$$V^* = \frac{1}{2}(s_A + s_B) + \frac{(s_A - s_B)^2}{36t} - \frac{5}{4}t \tag{7}$$

Parameters is such that $x^* < 1$, so that market is not cornered. In addition the market must be covered (so that the analysis is valid). For the market to be covered, the marginal consumers of A and B must have non-negative utility in equilibrium, so

$$\begin{aligned} v_A - tx &\geq 0 \\ v_B - t(1-x) &\geq 0 \end{aligned}$$

Which means that:

$$\frac{s_A + s_B}{3} \geq t$$

Market coverage then set an upper limit for the size of t. For the market not to be cornered ($x^* < 1$) we need:

$$\frac{s_A - s_B}{3} < t$$

which sets a lower limit on the size of t. So the restriction on t is that:

$$\frac{s_A - s_B}{3} < t \leq \frac{s_A + s_B}{3} \tag{8}$$

There are two dominating TV channels $j = 1, 2$ contributing to the net utility for the consumers of the platforms. Assume that the competition between platforms is such that if a channel is available on both platforms the willingness to pay for the channel is zero since that channel then does not offer any competition advantage for the platforms.[9] The channels on the other hand will secure viewers so they are

[9] This is of course a bit restrictive, as this could be modelled as a two-sided market. It is unclear what channels that will have to pay to be distributed and which who would receive revenue from being on a platform, and that idea is not followed here. For a discussion on two-sided markets, see Armstrong (2005) and Armstrong and Wright (2005).

willing to be distributed for zero. The channels are equal in the respect that they have half the viewers each on platform A and B.[10] TV channels utility γ_j is given by the number of viewers, so their utility is given by

$$\begin{aligned}\gamma_j &= \frac{1}{2}\left(\frac{1}{2}+\frac{s_A-s_B}{6t}\right)+\frac{1}{2}\left(1-\left(\frac{1}{2}+\frac{s_A-s_B}{6t}\right)\right) \\ \gamma_j &= \frac{1}{2} \qquad (9)\end{aligned}$$

The utility on being on each platform is thus given by:

$$\begin{aligned}\gamma_j^A &= \frac{1}{4}+\frac{s_A-s_B}{12t} \\ \gamma_j^B &= \frac{1}{4}+\frac{s_B-s_A}{12t} \qquad (10)\end{aligned}$$

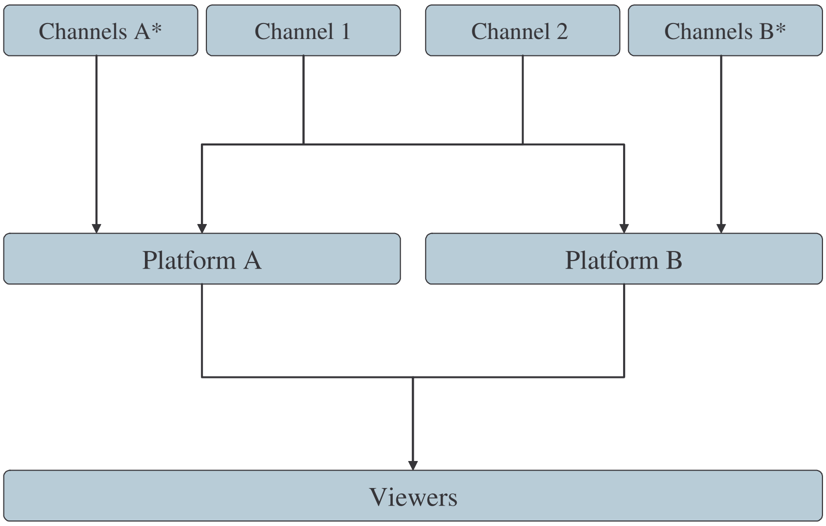
and their combined utility, Γ^*, will be equal to 1. Total surplus is then:

$$\begin{aligned}W^* &= V^*+\Pi^*+\Gamma^* \\ &= \frac{1}{2}\left(s_A+s_B\right)+\frac{5\left(s_A-s_B\right)^2}{36t}-\frac{t}{4}+1 \qquad (11)\end{aligned}$$

Just using the share of viewers as the utility for the TV channels may seem like an oversimplification. However it is not improbable that both public funded broadcasters (give support to the licence fee) and advertised funded broadcasters (better for advertisers) has this as an objective. This also makes the analysis more tractable as we are focusing on the competition between the channels. The market can be illustrated as follows:

Figure 2 *The TV market*

[10] Alternatively, the total number of viewers are $1+q$ and the two channels share all the viewers minus q.



where Channels A^* and B^* is the vector of exclusive channels on Platform A and B respectively.

4 Exclusive distribution of a TV channel

Now assume that channel 1 offer exclusive distribution to the platforms. An English ascending auction is held, and the winner will then sustain the same utility for its subscribers as before, while the loser will be imposed by a utility loss of α, which is the net utility of watching the channel. I.e. the gross utility for the winner's subscribers remain u_i, while the loser's subscribers has utility $u_i - \alpha$.[11]. Assume that $\alpha < v_i$, $i = A, B$. Since the platforms are symmetric, assume that Platform A win the auction. The marginal consumer and platform A's market share is then given by:

$$\begin{aligned} v_A - tx &= v_B - \alpha - t(1 - x) \\ x &= \frac{1}{2} + \frac{v_A - v_B + \alpha}{2t} \end{aligned}$$

Note that there is a loss in willingness to pay among consumers due to the exclusive dealing, so the effect of reduced distribution on consumer surplus is caused both

[11]The utility loss could be described by the transport cost parameter, t, as well, given that this parameter could be because of different programming on the platforms. I will however interpret t as different preferences over the technology on the platforms. Typically they offer different recievers with different attributes, i.e. an harddrive for recording of programs, EPG etc.

by the exclusivity but also by the loss of willingness to pay. Solving as in the last section, we find the platforms gross profit and market share to be:

$$\begin{aligned} \pi_A^* &= \frac{1}{2t}\left(\frac{s_A - s_B + \alpha}{3} + t\right)^2 \\ \pi_B^* &= \frac{1}{2t}\left(\frac{s_B - s_A - \alpha}{3} + t\right)^2 \\ x^* &= \frac{1}{2} + \frac{s_A - s_B + \alpha}{6t} \end{aligned} \tag{12}$$

We can see directly from the expressions the effects of the exclusive channel on platform profit and market share. Platform A's profit and market share will increase, while platform B will have a symmetric decrease, and the relevant interval for t to secure coverage and no cornering is:[12]

$$\frac{s_A - s_B + \alpha}{3} < t \leq \frac{s_A + s_B - \alpha}{3} \tag{13}$$

The profit above is however only computed with respect to gross profit, the channel may not go exclusive for free; Thus we need to compute the platforms willingness to pay for the channel. Using symmetry, a platforms benefit will be the increase in profit from winning the right compared to profit in the basic setup. Likewise, it's loss will be the profit in the basic setup compared to the decrease in profit from losing the auction. His total willingness to pay is the sum of this benefit, b_i, and loss, l_i.

$$\begin{aligned} b_A &= \frac{1}{2t}\left(\frac{2\alpha}{3}\left(t + \frac{s_A - s_B}{3}\right) + \frac{\alpha^2}{9}\right) \\ l_A &= \frac{1}{2t}\left(\frac{2\alpha}{3}\left(t + \frac{s_A - s_B}{3}\right) - \frac{\alpha^2}{9}\right) \end{aligned}$$

Symmetric for Platform B:

$$\begin{aligned} b_B &= \frac{1}{2t}\left(\frac{2\alpha}{3}\left(t + \frac{s_B - s_A}{3}\right) + \frac{\alpha^2}{9}\right) \\ l_B &= \frac{1}{2t}\left(\frac{2\alpha}{3}\left(t + \frac{s_B - s_A}{3}\right) - \frac{\alpha^2}{9}\right) \end{aligned}$$

[12] From this we can also see that $s_B > \alpha$. Note that the restriction on t is tougher than in the original setup. On the one hand t has to be smaller due to the utility loss of subscribers to platform B, and since Platform A increases his market share, t has to be larger for both platforms to be active.

The platforms' willingness to pay is then:

$$b_A + l_A = \frac{2\alpha}{3t}\left(t + \frac{s_A - s_B}{3}\right) \quad (14)$$

$$b_B + l_B = \frac{2\alpha}{3t}\left(t + \frac{s_B - s_A}{3}\right) \quad (15)$$

Assuming that platform A has the competitive advantage over B, $(s_A \geq s_B)$ the English auction will result in platform A winning, and the auction revenue, R, will be platform A's payment (which is Platform B's willingness to pay):

$$R = b_B + l_B = \frac{2\alpha}{3t}\left(t + \frac{s_B - s_A}{3}\right) \quad (16)$$

The net profit in the market is then:

$$\pi^*_{A_{exl}} = \frac{1}{2t}\left(\frac{s_A - s_B + \alpha}{3} + t\right)^2 - \frac{2\alpha}{3t}\left(t + \frac{s_B - s_A}{3}\right) \quad (17)$$

$$\pi^*_{B_{exl}} = \frac{1}{2t}\left(\frac{s_B - s_A - \alpha}{3} + t\right)^2 \quad (18)$$

The new market share for platform A is now:

$$x^*_{exl} = \frac{1}{2} + \frac{s_A - s_B + \alpha}{6t} \quad (19)$$

and total profit is given by:

$$\Pi^*_{exl} = t + \frac{(s_A - s_B + \alpha)^2}{9t} - \frac{2\alpha}{3t}\left(t + \frac{s_B - s_A}{3}\right) \quad (20)$$

The change in profit for the platforms are then given the benefit and loss they incur by the exclusive distribution, and the change is given by:

$$\begin{aligned}
\delta\pi_A &= b_A - (b_B + l_B) = \pi^*_{A_{exl}} - \pi^*_A \\
&= \frac{\alpha}{3t}\left(s_A - s_B - t + \frac{\alpha}{6}\right) \\
\delta\pi_B &= -l_B = \pi^*_{B_{exl}} - \pi^*_B \\
&= \frac{\alpha}{3t}\left(\frac{s_A - s_B}{3} + \frac{\alpha}{6} - t\right)
\end{aligned}$$

Difference in total profit is then:

$$\delta\Pi = \frac{\alpha}{9t}\left(2\left(s_A - s_B\right) + \alpha\right) - \frac{2\alpha}{3t}\left(t + \frac{s_B - s_A}{3}\right)$$

Based on the solution in the platform market, we find the new consumer surplus given by:

$$
\begin{aligned}
V_{exl}^{*} &= \int_{0}^{x} (v_A - tx)\, dx + \int_{x}^{1} (v_B - \alpha - t(1-x))\, dx \\
&= \frac{1}{2}(s_A + s_B) + \frac{(s_A - s_B)^2}{36t} - \frac{5}{4}t + \frac{\alpha}{36t}(2(s_A - s_B) + \alpha - 18t) \qquad (21)
\end{aligned}
$$

The difference in consumer surplus from the situation with no exclusivity is:

$$
\delta V = \frac{\alpha}{36t}(2(s_A - s_B) + \alpha - 18t)
$$

We can then state the following proposition:

Proposition 1 *If a channel decides to be distributed exclusively, the platform winning the exclusive right increases his profit if* $s_A - s_B + \frac{\alpha}{6} > t$. *If* $\frac{s_A + s_B - \alpha}{3} \geq t > s_A - s_B + \frac{\alpha}{6}$ *the winning platform's profit decreases. The losing platform always has a loss in profit from the exclusive arrangement, and the loss will always be larger than the loss of the winning platform. This means that trade will take place if one channel decides to go exclusive. If* $s_A - s_B > \frac{\alpha}{2}$ *total profit will increase in the platform market. The consumer surplus always decreases when one channel goes exclusive.*

Proof See appendix 7.

So the exclusivity may harm both the platform market and the consumer surplus. In the platform market, the loss of not securing the right will always be greater than not obtaining the right, so trade will take place, even though it may reduce profit for both operators. Consumer surplus will decrease since the value of one platform decreases without any utility increase on the other.

However, for such an situation to materialize, the channel considering to go exclusive will need an incentive to do so, meaning that the channel needs a revenue large enough to compesate for the loss of viewers by only being offered on one platform. If Channel 1 decides to be distributed exclusively, his utility will be:

$$
\begin{aligned}
\gamma_1^{exl} &= \frac{1}{2}x + R \qquad (22) \\
&= \frac{1}{2}\left(\frac{1}{2} + \frac{s_A - s_B + \alpha}{6t}\right) + \frac{2\alpha}{3t}\left(t + \frac{s_B - s_A}{3}\right)
\end{aligned}
$$

So to go exclusive the channel needs:

$$\gamma_1^{exl} > \frac{1}{2}$$

The critical t for this to be the case, is given by:

$$\frac{(s_A - s_B)}{3} + \frac{\alpha}{(3 - 8\alpha)} > t$$

So for channel 1 to be willing to offer itself as an exclusive channel, t, needs to be in the following interval:

$$\frac{s_A - s_B}{3} + \frac{\alpha}{(3 - 8\alpha)} \geq t > \frac{s_A - s_B + \alpha}{3} \tag{23}$$

For this to be the case, $0 \leq \alpha \leq \frac{3}{8}$. If the utility loss for consumers on Platform B is larger than $\frac{3}{8}$, channel 1 will prefer to be distributed on both platforms rather than being offered exclusively on platform A, since the auction revenue will be lower than utility loss from not being distributed on Platform B. Note that if platform A is able to corner the market by offering channel 1 exclusively if $\alpha = \frac{3}{8}$, so the willingness to pay would be different in that setting and this analysis would not be valid. So the relevant interval for this analysis is:

$$\frac{(s_A - s_B)}{3} + \frac{\alpha}{(3 - 8\alpha)} > t > \frac{s_A - s_B + \alpha}{3}$$

which is the interval where channel 1 will offer itself exclusively. Note that this interval for some values of α is more restrictive than the above one.[13] The utility effect for Channel 2 of Channel 1 being offered exclusively is that it now recieves all the viewers on platform B in addition to half the viewers on platform A:

[13] The restriction on t in the platform market is that:

$$\frac{s_A + s_B - \alpha}{3} \geq t > \frac{s_A - s_B + \alpha}{3}$$

The restriction on t in the channel market is that:

$$\frac{(s_A - s_B)}{3} + \frac{\alpha}{(3 - 8\alpha)} > t > \frac{s_A - s_B + \alpha}{3}$$

So if $\alpha \to 0$ the relevant interval will be the one from the channel market, while if $\alpha \to \frac{3}{8}$ the platform market will be the binding one.

$$\gamma_2^{exl} = \frac{1}{2}x + (1-x) = 1 - \frac{1}{2}x \tag{24}$$
$$= \frac{3}{4} + \frac{s_B - s_A - \alpha}{12t}$$

Combined utility for the TV channels are:

$$\Gamma^*_{exl} = \gamma_1^{exl} + \gamma_2^{exl} = 1 + \frac{2\alpha}{3t}\left(t + \frac{s_B - s_A}{3}\right) \tag{25}$$

So as long the payment for the exclusivity is positive, combined channel utility will increase.

Proposition 2 *Channel 1 will offer itself exclusively if* $\alpha < \frac{3}{8}$*, and increase it's utility from the full distribution regime and Channel 2 always increase it's utility if the other channel goes exclusive as long as both platforms remain active. Channel 1 will never receive the full social value of the channel if the buying procedure is run as an English auction, but the price will always be positive.*

Proof see appendix 7

Total surplus is given by:

$$W^* = V^* + \Pi^* + \Gamma^* \tag{26}$$
$$= \frac{1}{2}(s_A + s_B) + \frac{5(s_A - s_B)^2}{36t} - \frac{t}{4} + 1 + \frac{\alpha}{36t}(5(\alpha + 2(s_A - s_B)) - 18t)$$

Compared to (11), the total welfare increase if

$$\frac{\alpha}{36t}(5(\alpha + 2(s_A - s_B)) - 18t) > 0$$

This is the case if

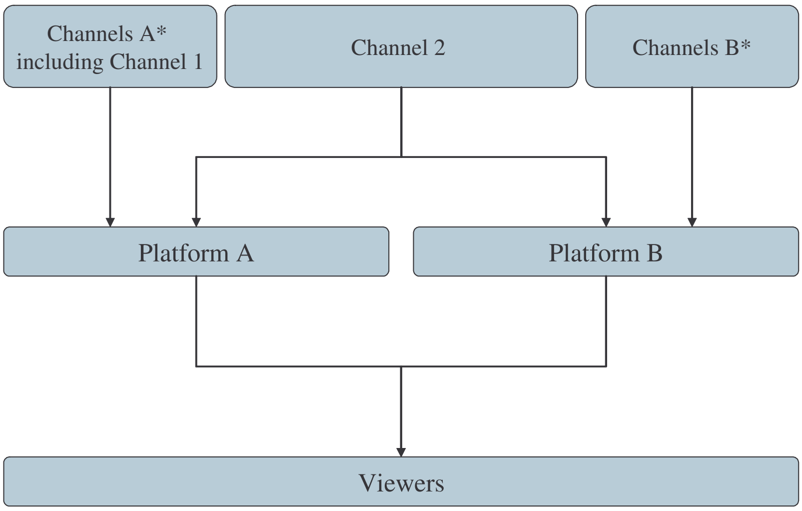
$$\frac{5(\alpha + 2(s_A - s_B))}{18} > t$$

and the change in total welfare is:

$$\delta W = \frac{1}{36t}(s_A - s_B)(10\alpha + 3) + \frac{\alpha}{36t}(5\alpha - 18t + 3) - \frac{1}{4}$$

The market situation can be illustrated as follows:

Figure 3 *Exclusivity of Channel 1*



5 Exclusive rights to football

In recent years the rights to broadcast football has received much attention and prices has increased substantially. In the following assume that exclusive broadcasting rights is being auctioned using an English auction. It is of course a bit restrictive to only consider an English auction format here, but this is done on the basis that the TV rights serving as a motivation for this paper was done in this way. There are problems with this symmetric procedure in an asymmetric market as here, but I refer to Armstrong (1999) for a discussion of other selling procedures better suited for asymmetric situations.

Let the value of the broadcasting right be given by β; this is a common value for all bidders. In a typical common value auction, we assume that this value is uncertain but the same for every bidder ex post. It should now be clear that we will meet the toehold effect in some of the auction setting discussed below. Here β is modelled as known information so the outcome cannot be interpreted as a toehold effect as such, but it illustrates that some consortia will have a higher value of winning. Modelled with uncertain β this would mean that the bidder with an exclusive right, face a lower winner's curse should they win, and this can greatly affected the outcome (Bulow, Huang, and Klemperer 1999) and (Klemperer 1998).

Modelled with pure common values we should suspect that prices would be lower since the winner's curse for the disadvantaged firm is amplified, but this is not explicitly modelled here. Assume that if a channel wins the rights, he increases his market share from $\frac{1}{2}$ to $\frac{1}{2}+\beta$, with a corresponding reduction for the other channel.

In the following assume that β is known and the question now is how competition will turn out if there is an exclusive distribution of one of the supplying channel. Four settings are relevant to discuss here:

1. There is no exclusivity in the platform market, so both A and B distribute channel 1 and 2. Assume that channel 1 and 2 decides to buy the right jointly and broadcasting $\frac{1}{2}$ the matches each. (I assume that one channel does not have the financial capacity to buy the rights on their own). If one should buy it on their own, since channel are homogenous, it would be a lottery for which one to win, since the would have the same willingness to pay.

2. There is no exclusivity in the platform market, and channel 1 bids with platform A and channel 2 bids with platform B.

3. There is exclusivity in the platform market, as described above. Channel 1 and 2 again decides to buy the rights jointly and broadcasting half the matches each. Alternatively they can decide the splitting based on willingness to pay.

4. There is exclusivity in the platform market, as described above. Channel 1 bid jointly with platform A and channel 2 bid jointly with platform B. I will not discuss the situation where channel 1 bids jointly with platform B and channel 2 with platform A since B does not distribute 1.

Case 1. No exclusivity, channel 1 and channel 2 bid jointly.

Since both channels are active on both platforms, the marginal consumer and Platform A's market share will be given by:

$$\begin{aligned} v_A + \beta - tx &= v_B + \beta - t(1-x) \\ x &= \frac{1}{2} + \frac{v_A - v_B}{2t} \end{aligned}$$

which is the same as in the original setup. This means that there will be no gain for any of the platforms and the utility of the TV-channels will be unchanged since the only possible outcome they can agree upon is to broadcast half the matches each. If not, one would increase his utility on the expense of the other and no such agreement is possible in this framework. So the whole utility gain from watching football will be passed on to the viewers, since consumer surplus now is given by:

$$\begin{aligned} V &= \int_0^x (v_A + \beta - tx)\, dx + \int_x^1 (v_B + \beta - t(1-x))\, dx \\ &= \frac{(s_A + s_B)}{2} + \frac{(s_A - s_B)^2}{36t} - \frac{5}{4}t + \beta \end{aligned} \tag{27}$$

and since there is no change in v_A and v_B consumer surplus increases by β and the channels willingness to pay for the right is zero. Or if we assume that they already holds the right, they are just willing to pay value of the right so that their consumers continue to watch the platform and receives the same utility.

Case 2. No exclusivity, channel 1 and platform A bids jointly as do channel 2 and platform B.

So when there is no exclusivity and horizontal joint bidding, the willingness to pay for the right is low and the whole value of the right is passed on to consumers, now we look at what happens if there is vertical joint bidding instead. Assume as before that there is full distribution in the platform market so we can solve symmetrically the consortia of Platform A and Channel 1 and Platform B and Channel 2. Assume that the consortium A+1 wins, and that a fraction, $\beta - \theta$, of the games will be broadcasted exclusively, so the consumers on the losing platform only receives an utility increase by $\theta < \beta$ I.e. some matches will be broadcasted through a minor channel or pay-per-view channel exclusive for the winning platform. This is needed for the platforms to be willing to enter in joint bidding. The marginal consumer is then given by:

$$\begin{aligned} v_A + \beta - tx &= v_B + \theta - t(1-x) \\ x &= \frac{1}{2} + \frac{v_A - v_B + \beta - \theta}{2t} \end{aligned}$$

Calculating platform profits and market share as before, yields:

$$x^* = \frac{1}{2} + \frac{s_A - s_B + \beta - \theta}{6t}$$

$$\begin{aligned} \pi_A^* &= \frac{1}{2t}\left(\frac{s_A - s_B + \beta - \theta}{3} + t\right)^2 \\ \pi_B^* &= \frac{1}{2t}\left(\frac{s_B - s_A - \beta + \theta}{3} + t\right)^2 \end{aligned}$$

When there is vertical joint bidding, both the Platform and the Channel has willingness to pay since this affect the competition in their markets. The platforms willingness to pay is then (using symmetry):

$$b_A + l_A = \frac{2(\beta - \theta)}{3t}\left(\frac{s_A - s_B}{3} + t\right) \tag{28}$$

$$b_B + l_B = \frac{2(\beta - \theta)}{3t}\left(\frac{s_B - s_A}{3} + t\right) \tag{29}$$

The TV channels willingness to pay is given by the new market shares they receive. The winner get increased market share $\frac{1}{2} + \theta$ and hence his utility increases by θ, while the other gets reduced market share and his utility decreases by θ. So TV channels willingness to pay is given as: $b_i = \theta$ and $l_i = -\theta$. So the willingness to pay is 2θ for each channel. Since the channels has the same willingness to pay, the consortium A+1 will win since we assume that $s_A \geq s_B$. The auction revenue will be given by:

$$\kappa_{A1} = \frac{2(\beta - \theta)}{3t}\left(\frac{s_B - s_A}{3} + t\right) + 2\theta$$

So the rightsholder will get paid substantially more than if there is horizontal joint bidding. The reason for this is that the TV-channels compete hard to increase their market shares, as do the platforms (through the size of $\beta - \theta$).

To secure that the market is covered and not cornered, t must be in the following interval:

$$\frac{s_A - s_B + \beta - \theta}{3} < t < \frac{s_A + s_B - \beta + \theta}{3} \tag{30}$$

The corresponding consumer surplus is given by:

$$\begin{aligned} V &= \int_0^x (v_A + \beta - tx)\, dx + \int_x^1 (v_B + \theta - t(1-x))\, dx \\ &= \frac{(s_A + s_B)}{2} + \frac{(s_A - s_B)^2}{36t} - \frac{5}{4}t + \frac{(\beta - \theta)}{18t}\left(s_A - s_B + \frac{\beta - \theta}{2}\right) + \frac{(\beta + \theta)}{2} \quad (31) \end{aligned}$$

Based on this we can state the following:

Proposition 3 *In a market with no exclusive channels, consumer welfare is lower if it is joint bidding vertically compared to the situation where channels bid jointly (horizontal joint bidding). The holder of the exclusive right receives a higher price if it is vertical bidding instead of horizontal bidding.*

Since the vertical arrangement introduce competition between both platforms and channels, the price for the rights will increase. Since there is now only one channel broadcasting the football, and some of the football is broadcasted on a minor channel only available on the winning the platform the consumer surplus will be lower.

Case 3. Exclusivity in the platform market. Channel 1 and 2 bids on the rights jointly.

Now turn to the situation discussed in Section 3, where Channel 1 is distributed exclusively by Platform A. First we consider the case where Channel 1 and Channel 2 bids jointly and let θ be the value of matches shown by channel 2, and let β be the full value of the rights. The marginal consumer will then be given by:

$$\begin{aligned} v_A + \beta - tx &= v_B - \alpha + \theta - t(1-x) \\ x &= \frac{1}{2} + \frac{v_A - v_B + \alpha + \beta - \theta}{2t} \end{aligned}$$

The market share for Platform A will be:

$$x = \frac{1}{2} + \frac{s_A - s_B + \alpha + \beta - \theta}{6t} \quad (32)$$

Given that the utility of Channel 2's matches is given by θ, we assume that the value of Channel 1's matches is λ. So $\beta = \theta + \lambda$. Earlier the channels had $\frac{1}{2}$ the audience on active platforms. Now let this share for channel 1 be given by: $\frac{1}{2} + (\lambda - \theta)$. Likewise Channel 2 will have a share of $\frac{1}{2} + (\theta - \lambda)$. Since $\lambda = \beta - \theta$, we can write the viewing shares as $\frac{1}{2} + (\beta - 2\theta)$, and $\frac{1}{2} + (2\theta - \beta)$ It is clear from this that the channel that broadcast the majority of matches will increase its market share and the other will lose some viewers. Channel 1 and 2's utility is now:

$$\gamma_1 = \left(\frac{1}{2} + (\beta - 2\theta)\right)\left(\frac{1}{2} + \frac{s_A - s_B + \alpha + \beta - \theta}{6t}\right) \tag{33}$$

$$\gamma_2 = \frac{1}{12t}(4\theta - 2\beta - 1)(s_A - s_B + \alpha - \theta + \beta) + \theta + \frac{3}{4} - \frac{1}{2}\beta$$

Their change in utility from before the right came up for offer, which is the maximal willingness to pay for the right, is:

$$\delta\gamma_1 = (\beta - 2\theta)\left(\frac{1}{2} + \frac{s_A - s_B + \alpha + \beta - \theta}{6t} + \frac{(\beta - \theta)}{12t(\beta - 2\theta)}\right)$$

$$\delta\gamma_2 = -(\beta - 2\theta)\left(\frac{1}{2} + \frac{s_A - s_B + \alpha + \beta - \theta}{6t} + \frac{(\beta - \theta)}{12t(\beta - 2\theta)}\right)$$

For the channels to be willing to enter this joint bidding, they have to increase their utility, ($\delta\gamma_i \geq 0$), which implies that:

$$(\beta - 2\theta)\left(\frac{1}{2} + \frac{s_A - s_B + \alpha + \beta - \theta}{6t} + \frac{(\beta - \theta)}{12t(\beta - 2\theta)}\right) = 0$$

There are many solutions to this problem, one being $\theta = \frac{\beta}{2}$ so that each channel broadcast half the matches, and there is no change in their utility, thus their willingness to pay is also zero. This solution will however involve side payments between the channels, as Channel 1 must compensate Channel 2 for the loss of audience on Platform B. If they share the matches 50/50, i.e. $\theta = \frac{\beta}{2}$, Channel 1 has to pay Channel 2 $\frac{\beta}{24t}$, and their net utility change is zero. However there will be a change in the platforms' profit since the arrangement involves a greater market share for platform A.

Their profit is now given by:

$$\pi_A^* = \frac{1}{2t}\left(\frac{s_A - s_B + \alpha + \beta - \theta}{3} + t\right)^2 \quad (34)$$

$$\pi_B^* = \frac{1}{2t}\left(\frac{s_B - s_A - \alpha - \beta + \theta}{3} + t\right)^2 \quad (35)$$

Since $\beta > \theta$ Platform A's profit will increase and Platform B's profit will decrease when Channel 1 and Channel 2 bids jointly. The consumer surplus is with this arrangement given by:

$$\begin{aligned} V &= \int_0^x (v_A + \beta - tx)\, dx + \int_x^1 \left(v_B - \alpha + \frac{\beta}{2} - t(1-x)\right) dx \\ &= \frac{(s_A + s_B)}{2} + \frac{(s_A - s_B)^2}{36t} - \frac{5}{4}t + \frac{(2\alpha + \beta)}{18t}\left(\frac{(s_A - s_B)}{2} + \frac{\alpha}{4} + \frac{\beta}{8}\right) - \frac{(2\alpha - 3\beta)}{4} \end{aligned}$$

The change in consumer surplus from the situation with channel exclusivity (section 2) is:

$$\delta V = \frac{\beta}{36t}\left(s_A - s_B + \alpha + \frac{\beta}{4} + 27t\right)$$

Based on this we can state the following proposition:

Proposition 4 *If channel 1 is exclusive and channel 2 has full distribution, their willingness to pay for the right is zero. If they share the matches 50/50, Channel 1 has to compensate Channel 2. Platform A's profit increase with this arrangement since it is the only platform broadcasting all matches, while Platform B's profit is reduced. The welfare for consumers increases less from horizontal joint bidding with exclusivity than when horizontal joint bidding is done when there are no exclusivity.*

So when the channels bid jointly, even though one channel is exclusive, the price for the premium broadcasting right will be low, as when there are no exclusive distribution of channels. Again this is because the broadcasting right does not alter the competition between the channels, the change in utility is symmetric for the channel, so one has to compensate the other his whole utility gain. Since Platform A is the only platform that broadcast all matches, the competition in the platform market is affected, leading to an increased market share of Platform A and thus higher profit, while Platform B's profit will decrease. For the same reason the consumer surplus increases less compared to the situation where there is full distribution, since the subscribers to Platform B only get access to half of the matches.

Case 4. Exclusivity, channel 1 and platform A bids jointly as do channel 2 and platform B.

Now assume that Channel 1 is distributed exclusively by Platform A and that they bid jointly as do Platform B and Channel 2. First we find the willingness to pay for the right, by looking at the potential benefit and losses of the participants. If the consortium of A and 1 wins, the marginal consumer is given by:

$$\begin{aligned} v_A + \beta - tx &= v_B - \alpha - t(1-x) \\ x &= \frac{1}{2} + \frac{v_A - v_B + \alpha + \beta}{2t} \end{aligned}$$

Equilibrium profit and market share is then:

$$\pi_A^* = \frac{1}{2t}\left(\frac{s_A - s_B + \alpha + \beta}{3} + t\right)^2 - \frac{2\alpha}{3t}\left(t + \frac{s_B - s_A}{3}\right) \tag{36}$$

$$\pi_B^* = \frac{1}{2t}\left(\frac{s_B - s_A - \alpha - \beta}{3} + t\right)^2 \tag{37}$$

$$x^* = \frac{1}{2} + \frac{s_A - s_B + \alpha + \beta}{6t} \tag{38}$$

Assume instead that the consortium of Platform B and Channel 2 wins. Since Channel 2 is distributed on both platforms, Platform A's subscribers will benefit by this, let this be given by θ. Again as in case 2, assume some matches are broadcasted using an minor exclusive channel, only offered on Platform B, so $\beta > \theta$. So the marginal consumer is given by:

$$\begin{aligned} v_A + \theta - tx &= v_B - \alpha + \beta - t(1-x) \\ x &= \frac{1}{2} + \frac{v_A - v_B + \alpha - (\beta - \theta)}{2t} \end{aligned}$$

With this solution, equilibrium profit and market share is:

$$\pi_A^* = \frac{1}{2t}\left(\frac{s_A - s_B + \alpha - (\beta - \theta)}{3} + t\right)^2 - \frac{2\alpha}{3t}\left(t + \frac{s_B - s_A}{3}\right) \quad (39)$$

$$\pi_B^* = \frac{1}{2t}\left(\frac{s_B - s_A - \alpha + (\beta - \theta)}{3} + t\right)^2 \quad (40)$$

$$x^* = \frac{1}{2} + \frac{s_A - s_B + \alpha - (\beta - \theta)}{6t} \quad (41)$$

Based on these solution, we can compute the platforms willingness to pay for the exclusive right. Their potensial benefit and loss is given by:

$$b_A = \frac{\beta}{3t}\left(\frac{s_A - s_B + \alpha + \frac{\beta}{2}}{3} + t\right)$$

$$l_A = \frac{(\beta - \theta)}{3t}\left(\frac{s_A - s_B + \alpha - \frac{(\beta-\theta)}{2}}{3} + t\right)$$

$$b_B = \frac{(\beta - \theta)}{3t}\left(\frac{s_B - s_A - \alpha + \frac{(\beta-\theta)}{2}}{3} + t\right)$$

$$l_B = \frac{\beta}{3t}\left(\frac{s_B - s_A - \alpha - \frac{\beta}{2}}{3} + t\right)$$

So the willingness to pay for each platform is given by:

$$b_A + l_A = \frac{(2\beta - \theta)}{3t}\left(\frac{s_A - s_B + \alpha + \frac{\theta}{2}}{3} + t\right) \quad (42)$$

$$b_B + l_B = \frac{(2\beta - \theta)}{3t}\left(\frac{s_B - s_A - \alpha - \frac{\theta}{2}}{3} + t\right) \quad (43)$$

Since $s_A \geq s_B$ it is evident that Platform A's willingness to pay is higher than Platform B. The relevant t-interval to secure no cornering and coverage is now:

$$\frac{s_A + s_B - \alpha + \beta}{3} > t > \frac{s_A - s_B + \alpha + \beta}{3} \quad (44)$$

To compute the channels willingness to pay, the same reasoning apply, and assume that of dividing the viewers evenly, the winner gets a market share of $\left(\frac{1}{2} + \theta\right)$ and the other $\left(\frac{1}{2} - \theta\right)$. If the consortium of PlatformA and Channel 1 wins, channel 1's utility is:

$$\gamma_1 = \left(\frac{1}{2} + \theta\right)\left(\frac{1}{2} + \frac{s_A - s_B + \alpha + \beta}{6t}\right) + \frac{2\alpha}{3t}\left(t + \frac{s_B - s_A}{3}\right)$$

and Channel 2's utility:

$$\gamma_2 = \left(\frac{1}{2} - \theta\right)\left(\frac{1}{2} + \frac{s_A - s_B + \alpha + \beta}{6t}\right) + \left(1 - \left(\frac{1}{2} + \frac{s_A - s_B + \alpha + \beta}{6t}\right)\right)$$

If Platform B and Channel 2 wins the exclusive broadcasting right, channel 1's utility is:

$$\gamma_1 = \left(\frac{1}{2} - \theta\right)\left(\frac{1}{2} + \frac{s_A - s_B + \alpha - (\beta - \theta)}{6t}\right) + \frac{2\alpha}{3t}\left(t + \frac{s_B - s_A}{3}\right)$$

Channel 2s utility is now half the viewers on platform A and all the viewers on platform B:

$$\gamma_2 = \left(\frac{1}{2} + \theta\right)\left(\frac{1}{2} + \frac{s_A - s_B + \alpha - (\beta - \theta)}{6t}\right) + \left(1 - \left(\frac{1}{2} + \frac{s_A - s_B + \alpha - (\beta - \theta)}{6t}\right)\right)$$

We can then compute the benefit and loss of Channel 1 and 2:

$$\begin{aligned}
b_1 &= \frac{\beta}{12t} + \frac{\theta}{6t}(s_A - s_B + \alpha + \beta + 3t) \\
l_1 &= \frac{\beta - \theta}{12t} + \frac{\theta}{6t}((s_A - s_B + \alpha - \beta + \theta + 3t)) \\
b_2 &= \frac{\beta - \theta}{12t} + \frac{\theta}{6t}((s_A - s_B + \alpha - \beta + \theta + 3t)) \\
l_2 &= \frac{\beta}{12t} + \frac{\theta}{6t}(s_A - s_B + \alpha + \beta + 3t)
\end{aligned}$$

The Channels willingness to pay is then:

$$b_1 + l_1 = \frac{1}{6t}\left(\beta - \frac{\theta}{2}\right) + \frac{\theta}{3t}\left(s_A - s_B + \alpha + \frac{\theta}{2} + 3t\right) \tag{45}$$

$$b_2 + l_2 = \frac{1}{6t}\left(\beta - \frac{\theta}{2}\right) + \frac{\theta}{3t}\left(s_A - s_B + \alpha + \frac{\theta}{2} + 3t\right) \tag{46}$$

So we can see that the willingness to pay is the same for channel 1 and 2. The consortia joint willingness to pay is then:

$$\kappa_{A1}^{exl} = \frac{\left(\beta - \frac{\theta}{2}\right)}{6t} + \frac{2\left(\beta + \theta\right)}{9t}\left(s_A - s_B + \alpha + \frac{\theta}{2} + 3t\right) \quad (47)$$

$$\kappa_{B2}^{exl} = \frac{\left(\beta - \frac{\theta}{2}\right)}{6t} + \frac{2\left(\beta - 2\theta\right)}{9t}\left(s_B - s_A - \alpha - \frac{\theta}{2}\right) + \frac{2}{3}\left(\beta + \theta\right) \quad (48)$$

Since the channels has the same willingness to pay, and Platform A has higher willingness to pay than Platform B, the consortium of Channel 1 and Platform A will win the English auction and secure the right. The payment will be given by:

$$R_{auc} = \frac{\left(\beta - \frac{\theta}{2}\right)}{6t} + \frac{2\left(\beta - 2\theta\right)}{9t}\left(s_B - s_A - \alpha - \frac{\theta}{2}\right) + \frac{2}{3}\left(\beta + \theta\right) \quad (49)$$

The difference between the two consortia's willingness to pay is given by:

$$\delta\kappa = \frac{2\left(2\beta - \theta\right)}{9t}\left(s_A - s_B + \alpha + \frac{\theta}{2}\right)$$

The difference in willingness to pay decreases when θ increases:

$$\frac{\partial \delta\kappa}{\partial \theta} = -\frac{2}{9t}\left(s_A - s_B + \alpha - \beta + \theta\right) < 0$$

This means that if Platform B should win, the more that is available through the full distribution channel, the more even the platforms get, and thus they get more equal in their willingness to pay. When the value of the exclusive channel increases, α, the difference in willingness to pay increases.

$$\frac{\partial \delta\kappa}{\partial \alpha} = \frac{2}{9t}\left(2\beta - \theta\right) > 0$$

There are two effects, while Platform A's willingness to pay increases from an increase in α, Platform B's willingness to pay decreases. This resembles the toehold effect, an exclusive channel makes the bidding market asymmetric. From the outcomes above we can state the following:

Proposition 5 *The price for an exclusive right is higher when there is vertical joint bidding with exclusive distribution compared to when there is no such exclusive distribution. The price with horizontal joint bidding always lower than with vertical joint bidding. If there is exclusivity, the channel has pay more than half the price.*

If Platform A and Channel 1 wins the right, the consumer surplus is given by:

$$
\begin{aligned}
V &= \int_0^x (v_A + \beta - tx)\, dx + \int_x^1 (v_B - \alpha - t(1-x))\, dx \qquad (50)\\
&= \frac{(s_A + s_B)}{2} + \frac{(s_A - s_B)^2}{36t} - \frac{5}{4}t + \frac{(\alpha+\beta)}{18t}\left(s_A - s_B + \frac{\alpha+\beta}{2}\right) - \frac{(\alpha-\beta)}{2}
\end{aligned}
$$

We can then state:

Proposition 6 *The consumer surplus is lower when there are vertical joint bidding and exclusivity in the platform market compared to no exclusivity. The consumer surplus is lower when there is vertical bidding compared to the case where there are horizontal bidding.*

The model than shows that when there is horizontal bidding much of the gain from the exclusive rights are passed on to consumers, since the channels cannot alter the competiton among themselves when they bid jointly. This affect the price for the exclusive right since the channels willingness to pay will be low when there is no gain in the competition between them. On the other hand, when there is vertical joint bidding, the results are the opposite; the consumer surplus increase less than it did when there was horizontal bidding, and the price for the right is higher. This results from competition both in the platform market and in the channel market, where firms use the exclusive right to distance themselves from each other.

6 The Norwegian Case

In Norway there were two serious contenders bidding for the exclusive right of Norwegian football. The platform Canal Digital (CD) bid jointly with the TV Channel TV2, which is distributed exclusively on CD. The other contender was the public funded channel NRK who bid jointly with the platform Viasat. While CD distributes both NRK and TV2, Viasat only distribute NRK. After a public (!) bidding process, CD and TV2 won the exclusive right. Newspapers later reported that TV2 had to pay $\frac{2}{3}$ of the price. Earlier NRK and TV2 had bought these rights together to a lower price.

Canal Digital is a larger platform than Viasat, and in addition they are active in the cable TV industry opposed to Viasat which are only active in the satellite market. So it is possible to claim that CD has a competitive advantage over Viasat.

This seems to fit in well with the model outlined above, vertical bidding drives the price up and the exclusivity of TV2 for CD is driving the competition in that consortium's favour.

Note that NRK and TV2 are available through other means than satellite so the satellite market is a minor factor when broadcasting. CD pays around 100 mill NOK for the exclusive right to TV2 per year. But even so the effect is not ineligible since it was only CD and Viasat that competed in the auction with the channels.

7 Conclusion

This paper analyses exclusivity in the TV market and the effect on bidding for exclusive rights. The option to go exclusive gives a TV channel a lot of power if he can put two competing platforms up against each other. If the channel choose to go exclusive it will need to be compensated for the loss of viewers, and this compensation can be so high that even the winning platform gets a reduced profit from winning the competition. However, the losing platform always sustains a greater loss, so the platforms have an incentive to win. Maybe not surprising, the competing channel raises his utility by the other going exclusive since he now receives more viewers than before, but the consumer surplus is lowered by the exclusivity since the distribution of channel 1 diminishes.

Next, the paper shows that when different consortia are bidding for exclusive rights, the exclusive arrangement has profound effects. Horizontal bidding consortia are always better for consumer surplus, but worse for the seller of the exclusive rights. Vertical bidding consortia are bad for consumer surplus when there is no exclusivity and even worse when there is exclusivity in the channel market. Again the results are exactly the opposite for the seller of the exclusive rights; the seller benefits from the exclusivity.

Finally the paper uses the model to give some spotlight to what happened when

NFF sold the exclusive rights to Norwegian premier football. It seems like the Competition Authority should pay at least the same attention (if not more) to vertical agreements as to the horizontal agreement that they did. Even though the platform market can be minor in the total TV market in Norway, the effect of exclusivity can be substantial when the bidding market is exactly the satellite platform market.

References

Armstrong, M. (1999): "Competition in the Pay-TV Market," *Journal of the Japanese and International Economies*, 13, 257–280.

——— (2005): "Competition in Two-Sided Markets," *Industrial Organization 0505009, EconWPA*.

Armstrong, M., and J. Wright (2005): "Two-Sided Markets, Competitive Bottlenecks and Exclusive Contracts," *mimeo, University College London*.

Binmore, K., and D. Harbord (2000): "Toeholds, Takeovers and Football," *European Competition Law Review*, 21(2).

Bulow, J., M. Huang, and P. Klemperer (1999): "Toeholds and Takeovers," *Journal of Political Economy*, 107(3), 427–454.

Cave, M., and R. W. Crandall (2001): "Sports Rights and the Broadcasting Industry," *The Economic Journal*, 111(469), 4–26.

Chipty, T. (2001): "Vertical Integration, Market Foreclosure, and Consumer Welfare in the Cable Television Industry," *The American Economic Review*, 91(3), 428–453.

Goolsbee, A., and P. A. (2004): "The Consumer Gains from Direct Broadcast Satellites and the Competition with Cable TV," *Econometrica*, 72(2), 351–381.

Hoehn, T., and D. Lancefield (2003): "Broadcasting and Sport," *Oxford Review of Economic Policy*, 19(4), 552–568.

Jehiel, P., and B. Moldovanu (2000): "Auctions with Downstream Interaction among Buyers," *The RAND Journal of Economics*, 31(4), 768–791.

Klemperer, P. (1998): "Auctions with Almost Common Values," *European Economic Review*, 42, 757–769.

——— (2002): "What Really Matters in Auction Design," *Journal of Economic Perspectives*, 16, 169–189.

Motta, M., M. Polo, P. Rey, and L.-H. Röller (1997): "Concentration and Public Policies in the Broadcasting Industry: The Future of Television," *Economic Policy*, 12(25), 293–334.

Rey, P., and J. Tirole (2006): ""A Primer on Foreclosure" Forthcoming in," in *Handbook of Industrial Organization III*, ed. by M. Armstrong, and R. Porter. North Holland, Amsterdam.

Statistics Norway, (2007): "Norwegian Media Barometer 2006," *Statistical Analyses.*

The Ministry of Culture and Church Affairs, (2002-2003): "About Norwegian Digital Terrestrial Television," *Report to the Storting*, 44, Norwegian title: "Om digitalt bakkenett for fjernsyn".

Wise, A. S., and K. Duwadi (2005): "Competition between Cable Television and Direct Broadcast Satelitte: the Importance of Switching Costs and Regional Sports Network," *Journal of Competition Law and Economics*, 1(4), 679–705.

Proofs

Proof of proposition 1 The critical t for Platform B's profit to be positive is:

$$\begin{aligned} \frac{\alpha}{3t}\left(\frac{s_A - s_B}{3} + \frac{\alpha}{6} - t\right) &> 0 \\ \frac{s_A - s_B}{3} + \frac{\alpha}{6} &> t \end{aligned}$$

but since the condition for t states that $t > \frac{s_A - s_B + \alpha}{3}$, this is impossible and Platform B's profit always decrease from the exclusivity of Channel 1. The critical value of t for Platform A's profit to increase is given by:

$$\begin{aligned} \frac{\alpha}{3t}\left(s_A - s_B - t + \frac{\alpha}{6}\right) &> 0 \\ s_A - s_B + \frac{\alpha}{6} &> t \end{aligned}$$

The restriction on t is that

$$\frac{s_A + s_B - \alpha}{3} \geq t > \frac{s_A - s_B + \alpha}{3}$$

So Platform A's profit will increase if:

$$s_A - s_B + \frac{\alpha}{6} > t > \frac{s_A - s_B + \alpha}{3}$$

The size of α is in this case:

$$\begin{aligned} s_A - s_B + \frac{\alpha}{6} &> \frac{s_A - s_B + \alpha}{3} \\ (s_A - s_B) &> \frac{\alpha}{4} \end{aligned}$$

So when $\frac{s_A + s_B - \alpha}{3} \geq t > s_A - s_B + \frac{\alpha}{6}$, $\frac{\alpha}{4} > s_A - s_B$, Platform A' profit will decrease from securing the right. Platform A's profit in the new market will however be larger than B's since:

$$\begin{aligned} \frac{1}{2t}\left(\frac{s_A - (s_B - \alpha)}{3} + t\right)^2 - \frac{2\alpha}{3t}\left(t + \frac{s_B - s_A}{3}\right) &> \frac{1}{2t}\left(\frac{(s_B - \alpha) - s_A}{3} + t\right)^2 \\ \frac{2}{9t}(3t + \alpha)(s_A - s_B) &> 0 \end{aligned}$$

which is true since $s_A > s_B, \alpha > 0$, $t > 0$. So A will want to secure the exclusive distribution right. Total profit increases if:

$$\begin{aligned}\frac{\alpha}{9t}\left(2\left(s_A - s_B\right) + \alpha\right) &> \frac{2\alpha}{3t}\left(t + \frac{s_B - s_A}{3}\right)\\ \frac{4\left(s_A - s_B\right)}{3} + \frac{\alpha}{2} &> t\end{aligned}$$

So the total profit will increase in the interval:

$$\frac{4\left(s_A - s_B\right)}{3} + \frac{\alpha}{2} > t > \frac{s_A - s_B + \alpha}{3}$$

The consumer surplus increase if:

$$\begin{aligned}\frac{\alpha}{36t}\left(2\left(s_A - s_B\right) + \alpha - 18t\right) &> 0\\ \frac{s_A - s_B + \frac{\alpha}{2}}{9} &> t\end{aligned}$$

This is smaller than the lowest possible t, so consumer surplus will always decrease■

Proof of proposition 2 The first part of the proposition is shown in the text above. For Channel 1to receive the full social value, α, the following must hold:

$$\begin{aligned}\frac{2\alpha}{3t}\left(t + \frac{s_B - s_A}{3}\right) &> \alpha\\ \frac{2\left(s_B - s_A\right)}{3} &> t\end{aligned}$$

which is impossible since $t > 0$, and $s_B \leq s_A$. The condition for the price to be positive is that:

$$\begin{aligned}t + \frac{s_B - s_A}{3} &> 0\\ t &> \frac{s_A - s_B}{3}\end{aligned}$$

which is fulfilled since $t > \frac{s_A - s_B + \alpha}{3}$[14]

[14] Should the Channel have better negotiating power than he has in an English auction, the price could get larger than α. Platform A's maximal willingness to pay is:

$$\frac{2\alpha}{3t}\left(t + \frac{s_A - s_B}{3}\right)$$

Assuming that channel 1 is offered exclusively, channel 2's utility increases if:

$$\begin{aligned}\frac{3}{4}+\frac{s_B-s_A-\alpha}{12t} &> \frac{1}{2}\\ t &> \frac{s_A-s_B+\alpha}{3}\end{aligned}$$

which is the lower limit for the t-interval, so channel 2's utility always increase as long as Platform B remains active. This is because he now gets all the viewers on platform B in addition to half the viewers on Platform A.■

Proof of proposition 3 The difference in consumer surplus in case 2 and case one is given by:

$$\delta V_{(2-1)} = \frac{(\beta-\theta)}{6t}\left(\frac{s_A-s_B}{3}+\frac{\beta}{6}-\frac{\theta}{6}-3t\right)$$

This is positive if:

$$\frac{1}{3}\left(\frac{s_A-s_B+\frac{(\beta-\theta)}{2}}{3}\right) > t$$

But we know that $t > \frac{s_A-s_B+\beta-\theta}{3} > \frac{1}{3}\left(\frac{s_A-s_B+\frac{(\beta-\theta)}{2}}{3}\right)$ so this will never be the case.

If $\frac{2(\beta-\theta)}{3t}\left(\frac{s_B-s_A}{3}+t\right)+2\theta > 0$ the price increases compared to case 1. This is (definitely) true if:

$$t > \frac{s_B-s_A}{3}$$

We know that $t > \frac{s_A-s_B+\beta-\theta}{3} > \frac{s_B-s_A}{3}$ so the price will increase■

Proof of proposition 4 The change in consumer surplus from the situation with channel exclusivity is:

For this to be bigger than α, it is needed that:

$$\begin{aligned}\frac{2\alpha}{3t}\left(t+\frac{s_A-s_B}{3}\right) &> \alpha\\ \frac{2\left(s_A-s_B\right)}{3} &> t\end{aligned}$$

Insertion of $t > \frac{s_A-s_B+\alpha}{3}$, we find that the condition is that $s_A-s_B > \alpha$.

$$\delta V = \frac{\beta}{36t}\left(s_A - s_B + \alpha + \frac{\beta}{4} + 27t\right)$$

Since $s_A > s_B$ the consumer welfare increases. Welfare increases by more than β if:

$$\begin{aligned} \frac{\beta}{36t}\left(s_A - s_B + \alpha + \frac{\beta}{4} + 27t\right) &> \beta \\ \frac{s_A - s_B + \alpha}{9} + \frac{\beta}{36} &> t \end{aligned}$$

Since $\frac{s_A - s_B + \alpha}{3} + \frac{\beta}{6} < t$ to secure that the market is not cornered, the welfare increase is less then β.

Proof of proposition 5 Platform A and Channel 1 bid jointly, but they do not share the price 50/50. The Channel pay more than the Platform if:

$$\begin{aligned} \frac{1}{6t}\left(\beta - \frac{\theta}{2}\right) + \frac{\theta}{3t}\left(s_A - s_B + \alpha + \frac{\theta}{2} + 3t\right) &> \frac{(2\beta - \theta)}{3t}\left(\frac{s_B - s_A - \alpha - \frac{\theta}{2}}{3} + t\right) \\ \frac{(2\beta - \theta)}{12t} + \frac{2(\theta + \beta)}{9t}\left(s_A - s_B + \alpha + \frac{\theta}{2}\right) - \frac{2}{3}(\beta - 2\theta) &> 0 \end{aligned}$$

This is positive, so the Channel pays more than the Platform. Platform A knows that the channels are willing to pay the same amount and thus he can offer to pay platform B's willingness to pay when negotiating with the Channel in the consortium.

The price is higher when there is exclusivity and vertical joint bidding compared to full distribution if:

$$\frac{(\beta + \theta)}{9t}\left(s_A - s_B + \alpha + \frac{\theta}{2}\right) + \frac{1}{12t}(2\beta - \theta) + \frac{1}{3}(5\beta - \theta) > \frac{2(\beta - \theta)}{3t}\left(\frac{s_B - s_A}{3} + t\right) + 2(\beta - \theta)$$

$$\frac{7}{3}\theta - \beta + \frac{(2\beta - \theta)}{12t} + \frac{(\beta + \theta)}{9t}\left(\alpha + \frac{\theta}{2}\right) + \frac{(3\beta - \theta)}{9t}(s_A - s_B) > 0$$

What is the difference in price compared to the situation with no exclusivity and vertical joint bidding? The price when there was no exclusivity was:

$$\kappa_{A1} = \frac{2\theta}{3t}\left(t + \frac{s_B - s_A}{3}\right) + 2\beta$$

With exclusivity the price is:

$$= \frac{(5\beta - \theta)}{3t}\left(\frac{s_A - s_B + \alpha + \frac{\theta}{2}}{3} + t\right) + \frac{1}{12t}(2\beta - \theta)$$

The difference in price is then:

$$\frac{(\theta + 5\beta)}{9t}(s_A - s_B) + \frac{(5\beta - 3\theta)}{3} + \frac{(5\beta - \theta)}{18t}(\theta + 2\alpha) > 0$$

since all terms are positive the price will raise when there is exclusivity.

Who pays for the right? Platform A and Channel 1 bid jointly, but they do not share the price 50/50. The difference in their willingness to pay is given by:

$$\frac{\beta}{3t}\left(\frac{1}{2} + s_A - s_B + \alpha + \frac{\theta}{2} + 3t\right) - \frac{\theta}{12t} \quad > \quad \frac{(2\beta - \theta)}{3t}\left(\frac{s_A - s_B + \alpha + \frac{\theta}{2}}{3} + t\right)$$

$$\frac{(\theta + \beta)}{3t}\left(\frac{s_A - s_B + \alpha + \frac{\theta}{2}}{3} + t\right) + \frac{1}{12t}(2\beta - \theta) \quad > \quad 0$$

So the Channel pays more than the Platform. Platform A knows that the channels are willing to pay the same amount and thus he can offer to pay platform B's willingness to pay when negotiating with the Channel in the consortium

What is the difference in price compared to the situation with no exclusivity and vertical joint bidding? The price when there was no exclusivity was:

$$\kappa_{A1} = \frac{2\theta}{3t}\left(t + \frac{s_B - s_A}{3}\right) + 2\beta$$

With exclusivity the price is:

$$\frac{(5\beta - \theta)}{3t}\left(\frac{s_A - s_B + \alpha + \frac{\theta}{2}}{3}\right) + \frac{1}{12t}(2\beta - \theta) + \frac{1}{3}(5\beta - \theta)$$
$$= \frac{(5\beta - \theta)}{3t}\left(\frac{s_A - s_B + \alpha + \frac{\theta}{2}}{3} + t\right) + \frac{1}{12t}(2\beta - \theta)$$

The difference in price is then:

$$\frac{(\theta + 5\beta)}{9t}(s_A - s_B) + \frac{(5\beta - 3\theta)}{3} + \frac{(5\beta - \theta)}{18t}(\theta + 2\alpha) > 0$$

since all terms are positive, we can state:

Proof of proposition 6 The difference in consumer surplus from case 2 is given by (Case 4 - Case 2):

$$\delta V_{(4-2)} = \frac{(\theta+\alpha)}{36t}\left(2s_A - 2s_B + \alpha + 2\beta - \theta - 18t\right)$$

For the consumer surplus to increase compared to case 2 (since the fraction is positive), we need:

$$\begin{aligned} 2s_A - 2s_B + \alpha + 2\beta - \theta - 18t &> 0 \\ 2s_A - 2s_B + \alpha + 2\beta - \theta &> 18t \\ \frac{2s_A - 2s_B + \alpha + 2\beta - \theta}{18} &> t \end{aligned}$$

But $t > \frac{s_A - s_B + \alpha + \beta}{3}$, so we need $\frac{2s_A - 2s_B + \alpha + 2\beta - \theta}{18} > \frac{s_A - s_B + \alpha + \beta}{3}$, Which implies

$$\begin{aligned} \frac{2}{9}s_B - \frac{5}{18}\alpha - \frac{2}{9}\beta - \frac{2}{9}s_A - \frac{1}{18}\theta &> 0 \\ -\frac{1}{4}\left(\theta + 5\alpha + 4\beta\right) &> s_A - s_B \end{aligned}$$

The right hand side is positive, while the left hand side is negative, so we can conclude that the consumer surplus decreases. The difference in consumer surplus from case 3 is given by (Case 4 - Case 3):

$$\frac{\beta}{144t}\left(4s_A - 4s_B + 4\alpha + 3\beta - 36t\right)$$

For the consumer surplus to increase we need:

$$\frac{4s_A - 4s_B + 4\alpha + 3\beta}{36} > t$$

Knowing that $t > \frac{s_A - s_B + \alpha + \beta}{3}$, we need:

$$-\frac{1}{4}\beta - \frac{2}{9}\alpha > \frac{2}{9}s_A - \frac{2}{9}s_B$$

Again the right hand side is positive and the left hand side is negative.