ANTI-COMPETITIVE AGREEMENTS BETWEEN FIRMS IN THE PAY-TV MARKET

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Abstract
This paper discusses competition in the rapidly developing pay-TV market. I provide a description of the economic characteristics of the market, followed by a summary of the state of the industry in the UK. I then discuss the potential for anti-competitive agreements between firms in the industry largely from a theoretical perspective, although the issues are in some cases based on recent events and worries in the UK. The main possibilities discussed are (i) the danger of two TV retailers agreeing to charges for rights to supply each other’s programmes which induce a collusive outcome in the retail market; (ii) the danger of a TV-only and a telecom-only firm co-ordinating to damage a common rival jointly supplying both TV and telecom services, and (iii) the incentive which a large firm may have to enter into an agreement with one rival with the aim of keeping remaining rivals “small” when bidding for exclusive programming rights.

Keywords: broadcasting, pay TV, Article 85, collusion.
1 INTRODUCTION: THE PAY-TV INDUSTRY

Over the past 10 years pay-TV has played an increasingly important part in the broadcasting industry.¹ Recent advances in digital technology will mean an acceleration of this process, and consumers will shortly have a choice of watching several hundred channels as well as participating in various interactive services. But as the market grows, the potential for anti-competitive conduct grows with it, and care needs to be taken that the full benefits of the revolution are realised.

1.1 A Description of the Industry

Over-simplifying somewhat, there are three layers in the pay-TV industry: (i) the production of programming, (ii) the retailing of programming to consumers (together with the possible wholesaling of programming to rival retailers), and (iii) the delivery (or distribution) of programming to consumers. For simplicity, we include within the programme production sector various monopolised inputs such as sports rights and movie rights (these scarce resources being termed “premium” programming). The retailing sector buys programming from producers, and possibly from rival retailers at the wholesale level, and packages these in various ways for sale to consumers (possibly including advertising). Naturally there may be vertical integration between production and retailing, and a retailer may make some of its programmes “in-house” (most likely the “basic” programmes).

The delivery sector provides the transmission system through which retailers supply their services to consumers. Broadband cable and encrypted satellite and terrestrial broadcast are the three current delivery systems.² Naturally, there may also be vertical integration between retailing and delivery. A central ingredient to the industry, which is probably best regarded as being part of the retailing sector, is the encryption system together with the “set-top box” used by consumers to decode the scrambled signal. There are several different encryption systems currently in use throughout Europe, and it is possible that a set-top box designed for one system will not be compatible with another. For convenience we refer to the encryption/set-top box technology as “conditional access technology”. As well as the basic encryption software and hardware, associated functions of the conditional access provider might include subscriber billing systems and the electronic programme guide (the latter will be of increasing importance as the multitude of channels grows).

Digital terrestrial television will shortly be launched in parts of Europe, and this will include many of the basic free-to-air services currently broadcast using analogue technology together with new subscription channels. Both types of services will require a set-top box (or a new integrated digital television), but the former will not require conditional access technology (since viewers make no payment).

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¹ Viewers always pay for TV services in some form, whether by an annual licence fee, by watching advertising, by monthly subscription or by “pay-per-view”. In this paper the term “pay TV” means the situation where TV services can only be viewed in return for money payment.
² A major difference between satellite and the other delivery technologies is that, roughly speaking, satellite can only delivery a nationwide service whereas cable and terrestrial can tailor programme delivery to local areas.
1.2 Economic Features of the Industry

Of most relevance for policy towards the industry are the areas where there are actual or potential bottlenecks. Obvious examples in the production sector include premium programme production (e.g. the football Premier League in the UK, or a newly released film). If these premium programmes are sold using exclusive contracts to retailers, then the bottleneck is extended into the retailing sector.

Unless subscribers are extremely fluid between retailers (unlikely for the reasons given below), current market shares are an important indicator of future market shares. Therefore, retailers with a high current market share will in general be able to bid more for exclusive premium programming in any auction, which will further consolidate their position. However, it is an open question whether an exclusive contract is really the most profitable strategy for premium programme producers (especially for pay-per-view retailing), and it may be that as competition in retailing becomes more entrenched a producer will prefer to offer a programme to all retailers at a fixed price per viewer. 3

In the delivery sector there are important resource constraints for each of the three main transmission media. Economies of density mean that it is probably unlikely, at least in the UK, for there to be more than one new cable operator in any local area (although BT may choose to upgrade its telecom network to provide broadcast services when it is permitted by Government to do so). Radio spectrum and transponder capacity on suitable satellites is limited, which puts a ceiling on the number of channels that may be delivered by satellite. Finally, spectrum for terrestrial broadcasting is also limited. However, it is one of the main impacts of the new digital technology that spectrum and transponder constraints are now much less of an issue than they were 10 years ago, and a country like the UK will shortly have hundreds of channels.

A more subtle potential bottleneck is the conditional access technology. Given that the decoding equipment (set-top box) will continue to be a costly item (although retailers may choose to subsidise these to consumers), it seems unlikely and undesirable for a consumer to possess more than one such device. Therefore, if a consumer’s retailer controls whether the box is also used to access other retailers’ services then the retailer may - if free to do so - choose to forbid rival retailers access to its consumers. The extreme case of this would be if each consumer decided to get all pay-TV services from a single retailer and there was no joint supply. In this case a retailer has a monopoly over the supply of programmes to its consumers.

Closely related to the above point is the existence of consumer switching costs and the resulting advantages for the first movers in the industry. Thus if one proprietary conditional access technology is established by an incumbent firm, then new entrants - unless allowed access to the incumbent’s set-top boxes - will have to persuade consumers to invest in a new and costly set-top box if they are to switch retailer. This

3 To take an extreme example, when Hollywood studies make deals with video rental retailers, they do not sign exclusive contracts (e.g. of the form whereby the latest Disney film will be only be available through the Blockbuster chain of video stores). Similarly, while some internet service providers such as Microsoft and America Online have offered exclusive content for their subscribers, this is an insignificant part of the market.
will give the incumbent firm much leeway in setting its retail charges. Another major first-mover advantage is the possibility that an incumbent firm has in place long term exclusive contracts for much of the premium programming, which makes effective entry difficult for new retailers.

1.3 Questions for Policy

Important questions for policy include:

1. The profitability and desirability of exclusive dealing arrangements between premium programme producers and retailers (e.g. exclusive sports rights), and the danger that long term exclusive contracts might be used as an entry-deterring strategy by incumbent retailers. For instance, should there be an upper bound placed on contract length, or even should exclusive contracts be permitted at all? (A subsidiary question is whether it is really practical to ban exclusive contracts by programme producers.)

2. To what extent is it profitable to extend market power in one retailing sector (e.g. for premium programming) to others (e.g. “basic” programming) which might potentially be more competitive? (One method of doing this, if desired, would be for a retailer to tie the supply of premium programming to that of its own basic programming, at either the retail or wholesale level.)

3. What are the incentives for a dominant conditional access provider (should the market develop in this way) to set desirable charges for access to its set-top box to rival retailers, and is public policy needed to bring about desirable outcomes?

4. If there are several conditional access providers, what are the incentives to offer each other access to their set-top boxes. In particular, is there scope for “collusion” in the retail market (for instance by charging each other a high, reciprocal charge for conditional access).

5. Is there an incentive for a dominant retailer to form an alliance with one of its rivals in order, for instance, to weaken the remaining rivals? For instance, if a minimum number of subscribers in needed to fund a rival bid for premium programming, could the dominant firm try to “buy off” one rival—maybe by offering it favourable wholesale rates for its premium programmes—in order to keep rival subscriber numbers down, and so to maintain its monopoly of premium programming?

6. Could a powerful telecommunications firm, not willing or able to participate in the TV market, have an incentive to form an alliance or joint venture with a powerful pay-TV retailer? A natural example might be when there are some firms active in both the telecoms and pay-TV sectors. In this case a telecom-only company might wish to “help” a TV-only company because this will damage the joint telecom/TV firms, and hence damage the competition to the telecom-only firm.

Questions 1, 2 and 3 are Article 86-type issues, and such issues to do with the getting and preservation of market power are not discussed in this paper. The remaining questions are discussed in turn in sections 3, 4 and 5 below.
2. THE INDUSTRY AROUND THE WORLD

2.1 The Industry in Britain

The pay-TV industry in Britain started in 1989 when two satellite-based networks, Sky and British Satellite Broadcasting (BSB), were licensed. The two companies used different satellites, and hence a separate satellite dish was needed to receive the two signals. Sky managed to launch its initial four channels more than a year earlier than BSB, the latter having a series of delays and not fully launching until mid-1990. Cable TV companies also started in earnest in 1990, these being companies granted regional monopoly franchises, and they provided the early outlet for BSB’s programmes while the satellite service was waiting to be launched. In the event, BSB did not manage to make up its lost ground against Sky, and Sky bought up BSB in late 1990, renaming the combined operation BSkyB. Therefore, by 1991 there were just two providers of pay-TV, BSkyB and the regional cable companies.

There are, of course, important interactions with telephony. Since 1991, the cable companies have been permitted to offer telephony services over their cable TV networks, and virtually all companies do so. BT, on the other hand, is at present not allowed to offer TV services over its telephone network, although it is permitted to own cable TV companies (and does so in a few instances). However, the Government has recently announced that it plans to allow BT to offer TV services over its main network from early in the new millennium. This asymmetric treatment of BT and the cable companies, at least in the short term, is explored in more detail below.

The following table gives basic statistics for the UK pay-TV industry. We see that the number of households taking pay-TV has increased dramatically over eight years, that the market share of satellite has gradually fallen - though still very substantial - as cable networks have expanded their networks, and that cable penetration as a fraction of homes passed has stayed quite constant.

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<td>Market share of satellite in pay-TV homes (%)</td>
<td>86.4</td>
<td>79.5</td>
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Notes and references:

4 Figures are taken from NERA, An Analysis of the ITC Report into Channel Bundling, 1998, Table 3.1. Note that ‘penetration’ means percentage of all households with any form of television. Also, the cable companies have only ‘passed’ (i.e. can feasibly deliver service to) a fraction of households in the country, so we include figures on penetration here.
BSkyB is the main provider of programmes in the pay-TV market, and sells its programmes to cable operators as well as broadcasting these itself. BSkyB owns the UK non-terrestrial rights for the output of major Hollywood studios and many key sporting events such as the football Premier League. Wholly owned BSkyB channels (Sky 1, Sky News, film and sports channels, and so on) account for 43% of total cable and satellite viewing hours, and all independent channels have a tiny market share.\(^5\) However, the share of viewing hours is not necessarily an accurate measure of power, and there is evidence that premium programming, of which BSkyB has at least a short run monopoly, is the major driver of subscription. Indeed, a recent survey reported that 79% of subscribers cited premium programming as their original reason for joining.\(^6\)

Throughout 1995-7 there were controversies over the wholesale terms at which BSkyB offered its programmes to its rival cable networks. For instance, BSkyB required cable companies to supply the former’s own basic programming to any cable subscriber that wished to have its premium programmes - see Question 2 in section 1.3 above. It was decided that there should not be a reference to the MMC, and that BSkyB should be permitted to pursue its bundling (and other discounting) strategies for the time being.\(^7\) Also, in 1998 BSkyB announced that it wished to move further upstream and to purchase Manchester United, probably the most successful Premier League football team. This has now been referred to the MMC to investigate any possible anti-competitive impact of such vertical integration.

Another area of controversy has been recent cooperation between BSkyB and CWC, the main cable operator.\(^8\) In 1997, cable companies had been showing signs of increasing independence from BSkyB, and been planning to substitute the BBC’s 24-hour news service in place of Sky News, and also to launch an independent movie channel. However, in August 1997, CWC signed a deal with BSkyB which meant that it would only offer programmes supplied by BSkyB (and at terms which were more generous than those offered to other cable companies).\(^9\) As a result, it appears that the attempt to negotiate terms with Hollywood for a new movie channel by the remaining cable operators has fallen through for the time being. Clearly, this move on the part of BSkyB could be motivated by the issue covered in Question 5 in section 1.3 above, and this is discussed further at the end of the paper.

New digital television services were offered at the end of 1998 (in the case of BSkyB and the newly-formed OnDigital) and will be offered in 1999 (in the case of cable). In 1997 the Independent Television Commission (ITC) awarded licences to provide terrestrial digital television. The main pay-TV licence, which was for three-quarters of the available new channels, was bid for by British Digital Broadcasting (a consortium of BSkyB and two existing terrestrial companies, Carlton and Granada) and DTN (wholly owned by the cable company NTL). The main worry with the former bid was the major involvement of BSkyB, and the concern that this would

\(^{5}\) See NERA (supra, Table 3.4) for more detail.
\(^{8}\) According to NERA (supra, table 3.3), CWC has over one third of all homes passed by cable.
\(^{9}\) See the *Financial Times*, August 30 and September 1, 1997.
mean that the consortium would not compete effectively against BSkyB for premium programming, for instance. In the end, the ITC preferred the bid offered by BDB over that of DTN, but insisted on the removal of BSkyB from the consortium. The resulting entity has been given the brand name “OnDigital”.10

Another major controversy - maybe the major controversy - has been the possible future dominance of BSkyB in setting standards for the “set-top box” once digital TV becomes established, together with the possible need to regulate the terms on which other retailers (for instance, the BBC) can gain access to BSkyB's box (see Question 3 in section 1.3 above). For instance, it would probably be desirable for competition if a BSkyB subscriber who wishes to move to, say, BDB's service was able to continue to use the same set-top box to receive the new service. The issue is complicated by BSkyB's plan to subsidise the cost of such boxes, at least in the initial stages, and so public policy needs to ascertain just how much contribution others should make to this access subsidy if they use the box.11

The entity that will be concerned with BSkyB's conditional access technology, the selling (and subsidy) of the set-top box, together with subsequent interactive services, is British Interactive Broadcasting (BIB), a consortium involving BSkyB, BT, Matsushita and Midland Bank. Both BSkyB and BT each have a 32.5% stake in the joint venture. Concerns were expressed about the involvement of two powerful players in the UK telecom and pay-TV industries, but the joint venture has been cleared both in the UK and recently in Europe. It is highly likely that the consortium will run at a loss in its initial stage, mainly because of the substantial subsidy involved in the marketing of the set-top box, which apparently will cost about £400 each to produce but will retail for £200, and so one effect of the joint venture will be for BT to contribute to the subsidisation of access to BSkyB's digital TV network.12 This issue (which was Question 6 in section 1.3 above) has obvious concerns for BSkyB's rivals, most notably the cable operators, and this is discussed further in section 4 below.

2.2 The Industry in the United States

The industry in the United States is perhaps unique in the world for the prevalence of pay-TV subscription in its population.13 Thus in 1997 only 23% of television households received television programming entirely from over-the-air broadcast reception. Of the remaining households, 87% receive service from their local franchised cable operator, and the great majority of the remaining 13% take their service from satellite providers. The number of households able to obtain cable TV services (i.e. whose homes are “passed”) is very high, at about 97%. However, much of the reason for this high take-up of pay-TV is the often low quality of over-the-air reception, and many people use cable to receive the main over-the-air broadcast

10 For more detail see Oftel, Oftel Submission to the ITC on Competition Issues Arising from the Award of Digital Terrestrial Multiplex Licences, London, Oftel (1997).
11 In Britain it is the telecoms regulator, Oftel, which has responsibility for setting policy in this area - see Oftel, Conditional Access Charges for Digital Television: A Statement, London, Oftel (1998) and earlier documents for more detail.
television stations. (In 1997 these television stations accounted for 67% of total viewing hours, delivered both over the air and via cable. The largest four broadcast networks, ABC, CBS, Fox and NBC accounted for 59% of all prime time viewing hours.)

Most cable companies operate as local monopolies, and because of their importance in the overall television market, have their non-premium subscription rates regulated (in contrast to virtually all other countries). However, since the 1996 Telecom Act, which permitted cable companies to offer telephony and telephony companies to enter TV markets, there has been a degree of competition for TV subscribers within cable franchise areas, and by 1997 about 5 million people in the United States had a choice of cable operator.\textsuperscript{14} Provided the FCC determines there is “effective competition” in these areas, price regulation on incumbent cable companies is lifted. (Premium and pay-per-view programming are not regulated in any event.)

There is a mixed pattern of vertical integration between pay-TV delivery companies and programme suppliers. Thus, in 1997, of the 172 cable channels, 40% were vertically integrated with - i.e. had an ownership stake held by - at least one cable delivery company. (This compares with 53% in 1994.) In particular, TCI, the largest cable delivery company, holds ownership interests in 23% of all national cable programming services.

3 COLLUSION BETWEEN RIVAL RETAILERS

In this section we consider a drastically simplified model of the pay-TV industry, designed to shed some light on question 4 in section 1.3.\textsuperscript{15} Specifically, we suppose that TV networks each produce programmes “in house”, which they may sell to each other, and there is no outside market for programmes (such as sports rights and so on). Thus the model is one of complete vertical integration between programme supply and production. (An alternative interpretation might be that of a short-run model where exclusive contracts to premium programming have already been secured.)

There are two broadcasters, A and B, who each produce a set of programmes and who deliver programmes to their subscribers. There is a fixed per-subscriber cost $k$ comprising the cost of digital decoders, satellite dishes, cables to the home, and so on. Once programmes have been produced the marginal cost of supplying them to a subscriber is zero (provided that the per-subscriber cost has been incurred). All subscribers have the same tastes for the programmes, and once a subscriber has access to one firm’s programmes she has a positive, but decreasing, incremental utility from viewing the second set of programmes. (This implies that the two sets of programmes are imperfect substitutes for each other.) Both firms are symmetric, in the sense that connection costs are the same and consumers derive the same utility from both sets of programmes.

\textsuperscript{14} The somewhat pejorative term “overbuilding” is used by the FCC and others for when there is more than one cable network laid in a given local area. See FCC (\textit{supra}, paragraphs 178-204) for some case studies concerning cable competition.

\textsuperscript{15} A formal description of this model, including the assumptions needed to ensure that the following arguments are valid, is contained in Mark Armstrong, “Competition and Collusion in the Pay-TV Industry”, \textit{Journal of Japanese and International Economics}, forthcoming.
There are three natural kinds of regime: one where firms supply only their own programmes to subscribers (termed *no interconnection*), and the other two where networks are ‘interconnected’ in some sense. The two kinds of interconnection considered are *wholesale interconnection*, in which firms supply each other with their programmes at the wholesale level (so that each firm retains control over retail pricing decision to customers), and *customer interconnection*, in which firms are granted access to each other’s customers (so that the firm which produces the relevant programmes retain retail pricing control on these programmes to the rival network’s customers). In the two cases of interconnection we refer to the charge that one firm makes to the other for (i) rights to its programmes (in the case of wholesale interconnection) or (ii) rights to its customers (in the case of customer interconnection) as the “access charge”.

Before we discuss these various configurations, however, we note the collusive, joint-maximising outcome, which is for each consumer to be connected to a single firm but to watch both sets of programmes. Subscribers have their entire surplus extracted by the tariff. Because in this simple model all subscribers are identical, this also maximises total welfare (even though consumers are left with none of the gains from trade).

*No Interconnection:* This simple situation is illustrated in Figure 1 below. Here, depending upon parameter values, each subscriber (i) obtains services from only one firm, or (ii) chooses to buy from both firms. In either event, though, there is an inefficiency. In case (i) subscribers view only a single set of programmes even though they gain positive utility from a further set of programmes (which have a zero incremental cost of supply). In case (ii) subscribers watch both programmes but incur the fixed connection cost $k$ twice, which is not necessary.

**FIGURE 1: NO INTERCONNECTION**
Wholesale Interconnection: Suppose now that the two firms agree to supply each other with their own programmes – see Figure 2 below. Specifically, suppose that for an “access charge” of \( a \) per subscriber a firm may purchase the other firm’s programmes. (Note that we assume that the interconnection contract takes the form of a per-subscriber charge, rather than say a lump-sum payment for the rights to programmes.) Given the symmetry of the industry, it makes sense to suppose that firms agree that the access charge is the same in each direction, i.e. the charge is “reciprocal”. Given a particular choice of access charge we assume that prices in the retail sector are chosen non-cooperatively.

![FIGURE 2: WHOLESALE INTERCONNECTION](image)

Then it can be shown that, as long as the access charge is not too high, firms will choose to offer both sets of programmes to subscribers (and subscribers choose to watch both programmes). Moreover, there is a one-to-one relationship between the access charge and the final retail price (for watching both programmes): a higher access charge feeds through into a higher retail price (and higher profits for the two firms).\(^{16}\) By charging a high (but not too high) reciprocal access charge each firm is willing to buy the rival firm’s programmes which increases its cost of supply from \( k \) to \( k + a \). In many cases - roughly speaking, the two sets of programmes cannot be too close substitutes - an access charge can be chosen that sustains the collusive retail price, and all consumer surplus is extracted. Because firms offer identical services at the retail level they make no profits in the retailing sector, and all profits are generated by the wholesaling of programmes to “rivals”. Note that it is important for the access charge to be levied on a per-subscriber basis, since that affects the marginal cost of

\(^{16}\) We cannot make the access charge too high, for in that case a firm would do better to serve only its own programmes (i.e. to “bypass” the services of the rival).
serving subscribers - if firms just levied a lump-sum charge for the rights to screen each other’s programmes then marginal costs would not be affected and collusion could not be sustained.  

**Customer Interconnection:** Finally, suppose that the two firms agree to grant each other access to their own subscribers. Specifically, suppose that for an access charge of $a$ per subscriber one firm may use the other’s delivery system to deliver its own programmes to the rival’s customers – see Figure 3 below. Again, given symmetry it makes sense to suppose that this charge is the same in each direction. Now, each firm chooses two retail prices: the price for watching its programmes if the customer connects to its own network, and the price for watching its programmes if the customer is connected to the rival network. Again, we assume that for a given access charge the (four) retail prices are chosen non-cooperatively.

Then it can be shown that, for a broad range of parameters (and again provided that $a$ is not too large), equilibrium in the retail market ensures that consumers are indifferent between connecting to either firm and choose to buy both sets of programmes. The access charge affects the balance between a firm’s two retail prices but not the sum; since consumers buy both sets of programmes (for a total charge equal to the sum of retail prices) this implies that the effective retail charge faced by consumers (and the profits generated by each firm) is not affected by $a$. This total

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charge is actually the collusive level. In particular, an access charge of zero sustains collusion! Thus collusion occurs even if there is marginal cost pricing of access (which is zero in the model). The access charge affects the balance of prices for directly and indirectly supplied programmes, but this has no impact on profits since the sum of the prices is all that matters. The collusive mechanism is quite different with customer interconnection than with wholesale interconnection. Here, there is no effect in terms of raising marginal cost of supply: even \( a = 0 \) induces collusion. Rather, by controlling the prices of obtaining its programmes both for its own (directly connected) customers and for its rival’s customers a firm can raise its prices without putting itself at a competitive disadvantage. For instance, if a firm raises both its prices by the same amount it does not affect the relative attraction of connecting to one firm over another - both firms appear less attractive.

**Discussion:** The model ignores the crucial issue of how programmes are produced or otherwise obtained by firms. For instance, one could extend the model by introducing an initial stage of production where firms could choose the quality of programming at some cost. Once programmes are produced, this cost would then be sunk and the subsequent interactions could be modeled as above, and firms would choose their respective programme qualities taking the resulting returns into account. A more ambition extension would be to introduce an outside market for premium programming, where the suppliers of premium programmes would sign contracts - exclusive or otherwise - with the networks, again taking into account the subsequent interactions between the two firms.

Secondly, the model is symmetric which may be appropriate for analysing the market in the “long run”, but it ignores important asymmetries in the early stages. For instance, if one firm is able to enter the market before other firms then it may have an incentive to refuse to serve firms considering entry with its programmes in order to attract subscribers to its own service (who are then “locked in” to some extent due to the sunk cost nature of the delivery technology).

Thirdly, the fact that all subscribers were assumed to have identical tastes is unduly strong (and unrealistic). This assumption had the impact that welfare could not be discussed adequately in the model: the collusive outcome also maximised welfare. However, if subscribers differed in their tastes then setting retail prices above costs causes deadweight welfare losses. The same mechanisms described here should carry over to the case of differing tastes, and even if full joint profit maximisation is not quite achieved, prices substantially above costs will be induced by suitably chosen interconnection contracts.

These major limitations aside, however, I hope the above simple formal model serves to illustrate the potential dangers of pay-TV firms signing mutually advantageous reciprocal contracts to (i) supply each other with programmes or (ii) to give each other access to customers. Those concerned with public policy towards the industry should be prepared to invoke Article 85 or similar powers should such self-serving contracts be observed.
4 ANTI-COMPETITIVE ALLIANCES BETWEEN TELEPHONE-ONLY AND TV-ONLY FIRMS

In this short section we discuss further question 6 raised in section 1.3 above. Consider three firms, denoted $A$, $B$ and $C$. Firm $A$ is a telephony-only firm (such as BT in Britain), $B$ is a pay TV-only firm (such as BSkyB in Britain), and $C$ is a firm supplying both telephony and pay-TV services (such as the cable companies in Britain). All three firms incur fixed costs in connecting subscribers. Suppose that all consumers wish to purchase telephone services (over the relevant range of prices), so that that market size is fixed. Consumers who wish to purchase pay-TV services have the choice of either obtaining their joint telephony/TV services from $C$ alone or by combining the services of $A$ and $B$. (For simplicity we assume that tariffs are such that all telephone-only consumers go to firm $A$ for their service. Economies of scope between TV and telephone services for firm $C$ imply that the vast majority of its subscribers obtain both services from it, just as happens for the cable companies in the UK.)

Suppose that firm $A$’s price is fixed by regulation, and that prohibitions on “undue discrimination” or similar prevent $A$ from charging a different telecoms price to pay-TV and non-pay-TV subscribers (as is roughly the case in Britain). Given this price, the remaining two firms compete for subscribers. If competition is quite intense it is plausible that firm $A$ would like to reduce its price below the regulated level selectively to those subscribers interested in pay-TV services, since these are the only people attracted by $C$’s services. However, it is forbidden to do this, and so must search for another mechanism with which to achieve a similar aim.

One way to do this is to offer to subsidise $B$’s service. This if $A$ offers to pay $B$ some amount for each subscriber it signs up, this effectively reduces $B$’s fixed connection cost and causes it to compete more aggressively against its rival $C$. For instance, $A$ and $B$ could enter into a joint venture, the purpose of which is to subsidise access to $B$’s pay-TV network. If this happens, competition between $B$ and $C$ will result in more subscribers going to $B$ and fewer going to $C$. But fewer subscribers for $C$ implies that $A$ then has more subscribers (since the total number of telephone subscribers is fixed). Thus $A$ may have an incentive to subsidise $B$’s service. Whether or not it actually does have this incentive depends on how effective the subsidy is: for instance, if is costs firm $A$ a subsidy to $B$ of £$s$ to gain (or retain) one subscriber, this is worthwhile only if $s$ is less than the average profit it makes from its subscribers (or at least those subscribers attracted to pay-TV services).

But in any event, it is possible for $A$ to circumvent policy restrictions on selective discounts to pay-TV subscribers by means of such joint ventures. To the extent that

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18 In 1997 BT was prevented by OFTEL from entering into a marketing campaign with BSkyB to offer discounts to people who subscribed to both BT and BSkyB services as this was held to be “undue discrimination”.
19 As mentioned in section 2.1, in the UK BT and Sky have just such a joint venture. BT’s stake of 32.5% in the joint venture, which, at least in the short run, reportedly aims to subsidise set-top boxes by £200 could be interpreted as BT giving Sky about £65 per subscriber towards the fixed costs of connecting its subscribers. However, the presence of two other firms in the consortium, Matsushita and the Midland Bank, who do not have the same incentives as BT to damage the cable companies, suggests that other effects are also at work.
such selective discounts are judged to be undesirable – an open question – then policy makers should be alert to the dangers of such joint ventures.

5 KEEPING RIVALS SMALL

In this short section we discuss question 5 raised in section 1.3 above. To make sense of this issue, we need to use a somewhat ad hoc model, for reasons discussed at the end. Suppose there are three pay-TV firms bidding for some premium programming rights (such as the year’s output of a Hollywood studio), these being denoted \( A, B \) and \( C \). Firm \( A \) has the largest number of subscribers, but may be smaller or larger than the sum of subscribers of \( B \) and \( C \). All subscribers are prepared to pay up to \( v \) to have access to this premium programming.

We suppose that only exclusive contracts for this premium programming are used, and that the supplier of the programming gives it to the firm (or group of firms) that make it the highest offer. We also suppose that the number of subscribers is fixed in the short term (say, because of the sunk cost nature of the access technology used by each firm), and not affected by which of the three firms obtains rights to the premium programming. The number of subscribers of the three firms are \( a, b \) and \( c \) respectively (where \( a \) is the largest of these numbers). Because these numbers are fixed, firm \( A \) is prepared to pay up to \( av \) for the programming rights (since its subscribers are each prepared to pay \( v \) to watch), and similarly for the other firms.

There are two sets of alliances to consider: one where \( B \) and \( C \) bid against \( A \) for the rights, and one where \( A \) persuades \( B \) to join forces with it to bid against \( C \). Thus, for the purposes of illustration, we could think of \( A \) representing BSkyB in the UK and \( B \) and \( C \) representing the cable companies, with \( B \) representing CWC in the UK. (Recall from section 2.1 above that BSkyB persuaded CWC to cease participating in the cable companies’ bid to offer a new, cable-exclusive film channel in 1997.)

There are two situations to consider. First suppose that \( A \) has the majority of subscribers, so that \( a > b + c \). Then it will win the auction for the rights regardless of whether it has \( B \) on its side, but will make higher profits if it does persuade \( B \) to join forces. For if it acts alone \( A \) will win the rights if it pays \( (b + c)v \), since that is the most that \( B/C \) can afford to pay. Therefore, by making its subscribers pay \( v \) for these programmes, it makes a net profit of \( v(a - b - c) \) by winning the bid. The other firms make zero profit from this auction. But suppose now that \( A \) offers to combine forces with \( B \). Since \( B \) makes no profit without the alliance, \( A \) only has to offer it a tiny amount to be willing to participate. Therefore, suppose \( A \) offers \( B \) the deal whereby if \( A/B \) wins the auction it will offer it the rights for \( v \) per subscriber (or a bit less to induce it to join). \( B \) will then make a tiny profit from joining the alliance. But because its opposition is now diminished, \( A \) only has to pay \( cv \) for the rights (the most that \( C \) acting on its own can pay), and so its total profits, including profits made from selling on the rights to \( B \) is \( v(a + b - c) \). This is significantly greater than the case when \( A \) acted alone, and so the firm does have an incentive to “buy off” one of its rivals when bidding for programming rights. (This argument is not affected if \( B \) secures a more significant share of the proceeds of the deal.)
A similar argument works if A’s rivals together have the majority of subscribers, i.e. when \( a < b + c \). In this case the rivals win the auction when A acts alone, and pay \( av \) for the rights (the maximum \( A \) can pay on its own). If, as seems natural, B and C share the cost for the rights in proportion to their subscriber bases, then B’s net profits from the bid are \( bv(1 - a(b + c)) \). Naturally, firm A gets nothing in this situation. Now suppose A induces B to join it in the bid for the rights. A must compensate B for the profits it would have made if it had acted with C, so suppose A offers B the deal whereby if it wins the auction it will offer B the rights for a charge of \( av/(b + c) \) per subscriber. (Because B can sell on these programmes to its subscribers for \( v \) each, this gives it a total profit equal to that it received when acting with C.) A can then win the auction for \( cv \), the most that C can afford acting alone. Therefore, A’s net profit from the deal is \( (a - c)v + bv(1 - a(b + c)) \), which is certainly positive given that A is the largest firm. Therefore, again, A has an incentive to pursue this strategy.

While this simple model may help explain the behavior of BSkyB and CWC in 1997, and the subsequent collapse of a planned cable-exclusive film channel, it has a number of peculiar features which would need justifying in a fuller analysis. First, the assumption that subscriber numbers were fixed is extreme: subscribers are likely to switch supplier if another supplier obtains valuable exclusive rights. However, more puzzling is the behavior of the original supplier of the premium programming – why does he agree to offer exclusive contracts? By selling to a subset of subscribers he makes strictly less than if he offered the rights to all firms for a charge of \( v \) per subscriber! Until we have a satisfactory explanation for the presence of exclusive contracts in the industry, it is hard to evaluate the pros and cons of a large firm attempting to keep its rivals small when bidding for programme rights.