TV-Distribution in Sweden

- Is It Competitive?[1]

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Mats Bergman
Södertörn University College[2]

Johan Stennek
Gothenburg University, IFN and CEPR

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[1] The conclusions of this report are our own. They are not necessarily shared by any of the institutions to which we are affiliated. We are grateful to Bo Andersson, Lars Hultkrantz, Peter Schierbeck and Kristian Viidas for comments on draft versions of this report.

[2] Mats Bergman was the chief economist of the Swedish Competition Authority until September 15, 2007, and will begin at Uppsala University on November 1, 2007.

Preface

The number of TV channels available to a typical consumer has increased and the TV market has become more dynamic and at the same time more complex. Content producers, channels and the firms that distribute the TV signals are all key players, engaged in a complex competition to attract viewers and to secure a profitable position in the market.

In accordance with a number of EU directives, the TV market is regulated by legislation that covers all forms of electronic communication. TV broadcasting has much in common with telephony and data communication services, but there are also a number of distinguishing features. Among other things, the same content is distributed to a large number of receivers, communication is one-way, free-to-air commercial TV comes at a price of zero for viewers and public-service TV has many special characteristics.

This makes the TV market challenging to analyze. Which firms compete with which? In the technical jargon of competition law and the electronic communications act: which are the relevant markets? And how should competition in those markets be analyzed? Good answers to these and to other related questions are fundamental for successful regulatory interventions in the market. At the same time, EU's legal framework for electronic communication is under review and some aspects of Sweden's national regulation of the TV market has been criticised by the European Commission.

This is the background to the Swedish Competition Authority´s request to Mats Bergman and Johan Stennek to put together a report on tv-distribution in Sweden.

The authors themselves are responsible for the conclusions and the analysis in the report. Thus the conclusions need not necessarily reflect the Swedish Competition Authority´s findings.

Stockholm, September 2007

Claes Norgren

Director-General

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1 Introduction and summary

The purpose of this report is to investigate how well the competition in the Swedish TV-market works, primarily focusing on distribution. Specifically, we analyze whether access regulation of the terrestrial broadcasting network via the E-com Act is justified or not. We also discuss the requirement to contract with Boxer that is imposed on pay-TV channels that whish to be broadcasted in the terrestrial network, as well as the proposed legislative changes in response to EU's critique of this requirement. Finally, we comment on competition in the cable-TV market, since we identify this as the platform with the least effective competition.

Even if our focus will be distribution services, we will need to paint a broader picture, including contents providers, channels, pay-TV operators, advertisers, viewers and other market participants. While our assessment is primarily based on economic analysis of the market, we also aim to integrate the economic analysis with the traditional methodology of competition law. We will therefore go into some details of how the relevant markets should be defined.

To help answer our questions we have interviewed a number of people working at various companies in the industry. The people we have met are listed at the end of the report.

Our main findings on the competitive situation in the market for TV distribution can be summarized as follows:

1. Distribution can be divided into two main segments. In areas of high population density cable distribution dominates. In areas of low population density terrestrial and satellite distribution dominate. There is little competition between the cable and the terrestrial/satellites platforms.

2. There is little competition between the cable distributors. Especially Com Hem has a strong position, partly deriving from normal competitive advantages, but which is in part also upheld by Com Hem's own contracting practices.

3. There is some – mainly vertical – differentiation between terrestrial distribution and satellite distribution. Receiving satellite TV requires some extra effort but provides the household with more channels. Boxer has a de facto monopoly as a pay-TV operator in the terrestrial net, which is based on a legal monopoly on encryption services. The competition between the satellites is, on the other hand, intense and we consider it likely that they also impose considerable competitive constraints on terrestrial distribution.

4. IPTV is still immature but will in the future very likely be an important competitor to all other platforms. This development is especially important in cable areas due to the current lack of competition.

5. The four main program companies SVT, TV4, MTG and SBS compete intensely for the viewers. It appears that TV4 is strengthening its position especially vis-à-vis the other commercial companies. Simultaneously, more and more households subscribe to pay-TV services.

6. The interaction between program companies and distributors is characterized by mutual dependence. SVT and TV4, but also MTG and SBS, have considerable bargaining power vis-à-vis the distributors since the channels are important brand names in the eyes of the viewers. Not carrying one of the "big five" channels is an important competitive disadvantage for a distributor. Among the distributors, especially Com Hem has considerable buyer power by reason of its size and lack of competition. Any channel not present in Com Hem's offer would automatically loose almost half of its potential market. The satellite distributors probably have relatively little buyer power by reason of small size and intense competition between themselves.

7. The relation between SVT and Teracom is characterized by exceptional lock-in since SVT is required to be available to essentially the whole population via the terrestrial net. The relation between the two does not appear to be based on a normal commercial negotiation. One may assume that there is no room for disagreement due to a political pressure in the background.

Based on this picture of the competitive situation, our main policy conclusions are as follows:

8. It is far from clear to us that regulating access to the terrestrial distribution net is warranted, since terrestrial distribution is under competition from satellite distribution. Teracom does have a monopoly-like situation vis-à-vis SVT. But the main reason for this appears to be the platform-specific coverage obligation that SVT must be available to essentially the whole population via the terrestrial net.

9. The current regulation of terrestrial distribution (via PTS's application of the E-com Act) is phrased as an access regulation but, as far as free-to-air channels are concerned, is in fact much more like a price regulation of Teracom's end-services. Access is supposed to be granted in such a way that Teracom will be responsible for almost the whole value-chain anyway. As we see it, the regulation should be phrased as a price regulation. Since the E-com Act is less articulate on this point, the regulatory decision should probably discuss the legal basis in some more detail. Depending on future development on a European level of the regulatory framework for electronic communication, it is also possible that such a regulation would be better placed in the Radio and TV Act.

10. As far as pay-TV is concerned, the current regulation is ineffective, since Boxer has a monopoly over SAS services. If there should be any *access* regulation, the point of access should be chosen to encourage competition in terrestrial pay-TV services. This might require that the production of SAS services is transferred from Boxer to Teracom, and possibly that Teracom is bound to non-discriminatory pricing.

11. However, it is not clear that breaking Boxer's monopoly as a pay-TV operator in the terrestrial net would be an improvement for the viewers, since there is platform competition with the satellites. The main advantage of breaking the monopoly may be the creation of multi-platform distributors offering hybrid boxes combining terrestrial and satellite or terrestrial and cable reception. This would give the viewers both high capacity and easy portability. The main disadvantage may be a weakening of the terrestrial net. We believe that actors with an interest in other distribution platform will have a willingness to invest in the terrestrial platform, to reap the specific benefits of the technology. The problem is rather that the actors may fail to coordinate sufficiently on technical matters. Another disadvantage may be the introduction of exclusive distribution agreements in the terrestrial net.

12. The choice of access or price regulation – or no regulation – of terrestrial broadcasting services should be consistent with the choice of the competitive structure for terrestrial pay-TV. If competition is chosen, access regulation via the Radio and TV Act may be necessary. If a monopolistic structure is preferred, it may be sufficient to transfer SAS services from Boxer to Teracom and to allow, in principle, competition in terrestrial broadcasting. Because of the high entry barriers that potential entrants into terrestrial broadcasting face, competition is unlikely to occur in practice. However, the latter solution is perhaps not consistent with EU's Competition Directive.

13. We recommend the competition authority to initiate an investigation of whether Com Hem abuses a dominant position by making it impossible for households to avoid paying for their basic analogue package which offers the main 15 channels. This practice reduces competition and may be especially problematic for the introduction of the emerging IPTV platform.

14. If it is found that this practice does not violate competition law, we recommend that the finding that Com Hem does not have significant market power according to the E-com Act is reconsidered.

15. IPTV will enable the viewers to watch programs closer to their own preferences. IPTV will also increase competition in TV-distribution, especially in the cable segment. The main entry barrier appears to be various contractual practices. It has proved difficult for IPTV operators to obtain distribution rights from the program companies and sometimes it is difficult for them to access the city networks. We

recommend the relevant authorities to further investigate the nature of these entry barriers.

16. TV4's future financial strength is highly dependent on political decisions concerning its annual franchise fee and the regulation of the airtime for advertising. Increased financial strength provides TV4 with a better position in the competition for contents and thereby a better position in the competition for the viewers. From a purely economic point of view, it is unclear what franchise level or what restrictions on advertising airtime would result in the most effective competition and the highest level of consumer welfare. An investigation into these competitive effects may therefore be warranted.

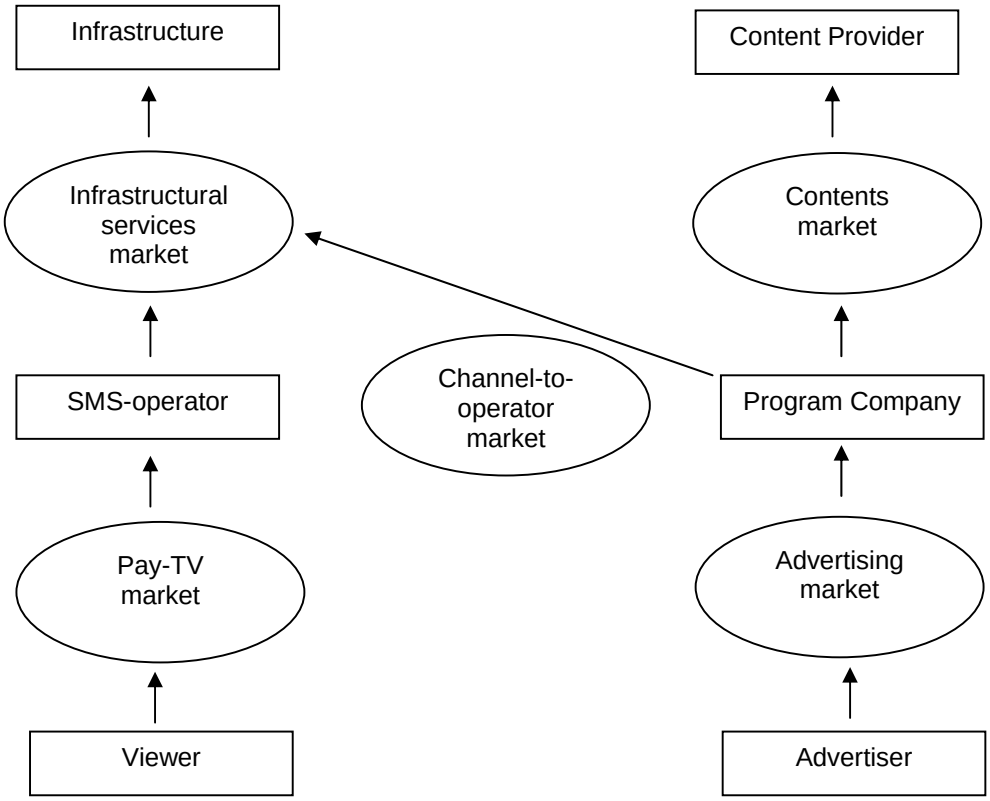
2 A Framework for Analyzing Competition in TV-markets

Activities

Producing television services to the viewers requires a host of different activities. The contents – whether it be movies, sports events, news or soap operas – must first be produced. The contents are then "aggregated" into channels by program companies, such as SVT and TV4 in Sweden. The program companies both produce their own contents in-house and buy it from independent production companies. Next the channels are bundled into different packages or offered à la carte to the viewers. These retailing (or Subscriber Management System) activities are done by the so-called Pay-TV operators (or pay-TV operator) in the case of pay-TV. Swedish examples include Boxer and Viasat. Finally there is the physical transmission of the signal via the terrestrial net, satellites, cable networks or broadband. The pay-TV operators are often vertically integrated with physical infrastructure for broadcasting. We will therefore often refer to them simply as distributors.

One cannot see any market in isolation. One of our key points is instead to describe how the different activities in the TV industry interact to determine the competitive conditions in each and every market – a systemic framework for analyzing the TV industry. As a starter, Figure 1 gives a broad but highly stylized overview of the industry.

Figure 1. A framework for analyzing the TV market



The boxes indicate firms or activities within firms as well as markets. Generally, money flow in the direction indicated by the arrows, while services are provided in the opposite direction. The black arrows correspond to money flows in free-to-air TV markets and the grey arrows represent pay-TV money flows.

Markets

This picture leads us to distinguish between five different types of markets.

1. In the *content market*, the program companies procure some of their contents from contents providers, such as film studios and sport-events organizers.

2. In the *advertising market*, commercial channels sell airtime to advertisers.

3. In the *viewer (or retail) market*, households subscribe to bundles of channels from pay-TV operators. There exists, of course, no explicit viewer market for free-to-air TV, but we will think of them as part of the viewer market anyway, since both pay TV and free-to-air channels do compete for the viewers. The number of viewers will influence advertising revenues for commercial free-to-air channels. Also for public-service TV, the number of viewers is important, even if the revenues from the compulsory TV-license fees are not directly dependent on the number of viewers.

4. In the *infrastructural services market*, pay-TV operators and free-to-air channels acquire distribution services from the owners of broadcasting infrastructure, i.e., firms owning satellites, cable networks or terrestrial broadcasting facilities. Often, broadcasting services and SMS services are provided by vertically integrated firms.

5. Finally, in the *channel-to-operator market*, contracts between pay-TV operators and program companies determine which channels should be included in which pay-TV packages – and the associated payment from the operator to the program company or, possibly, vice versa.

Possibly, these five markets are too broad to represent relevant markets under competition law or under the e-com framework. For example, it is possible that the infrastructural services market should be subdivided according to the distribution technology – satellite, cable and terrestrial broadcasting and perhaps also broadcasting via the internet. Similarly, there can be many different content markets; the viewer market can be subdivided into basic and premium content and so forth. The issue of legal market definitions will be analyzed in some more detail below.

Commercial free-to-air, pay-TV and public service

There are two different business models for commercial TV. In the pay-TV segment the channels are encrypted so that only those who pay will be able to watch. The program

companies sell the rights to pay-TV operators who, in turn, sell them to the viewers. The pay-TV operators either buy distribution services or organize them in-house. In this segment of the market, there is a traditional vertical relationship between the viewers, pay-TV operators and program companies. Typical niche channels, like Discovery and CNN, belong to the third category. This is illustrated in Figure 2.C below.

In the free-to-air segment the viewers can receive the channels without any payments. Instead the program companies sell airtime to advertisers. In this case, the program companies have by-passed the pay-TV operators and buy distribution services themselves. In this case there is no "clean" vertical relationship. Instead we talk about a two-sided market, where both the viewers and the advertisers are the customers. Because each new viewer in principle brings additional advertising revenues, the price can be set to zero on the viewers' side of the market. On the other side of the market, however, the advertisers pay a positive price.[3] TV4's main channel and TV6 are examples of this model (in terrestrial distribution). This is illustrated in Figure 2.B below.

Public service, SVT, is of course free-to-air, receiving its revenues from the license fee imposed on TV-sets.

Some channels mix the two pure commercial models. They are pay-TV channels and receive revenues from the pay-TV operators but they also have advertising revenues. TV3 and Kanal 5 are examples of this model. This is illustrated in Figure 2A below, which replicates Figure 1, except that markets are not explicitly indicated in the figure. Thinking about the commercial program companies, rather then the individual commercial channels, this mixed model may even be seen as the norm since the program companies often have both pay-TV channels and advertising channels.

Defining a "virtual market"

Even if the program companies do not receive any payments directly from the viewers, one may still think of a "virtual market" where the program companies compete for the viewers' attention and time. The more attractive channels they have in comparison with other program companies, the higher profits they will earn. In the case of pay-TV, the popular channels will have a better bargaining situation vis-à-vis the pay-TV operators. In case of free-to-air, the popular channels will have a better position in the advertising market. Also public service is active on this virtual market, even if its reason to compete for the viewers' attention and time may be different.

It is not clear if this "virtual market," or parts of it, could be a relevant antitrust market.

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[3] See, e.g., Evans and Schmalensee (2007) and other articles in Competition Policy International's special issue on two-sided markets and multi-sided platform competition.

Figure 2a. Activities and flow of money – both advertising revenues and pay-TV revenues

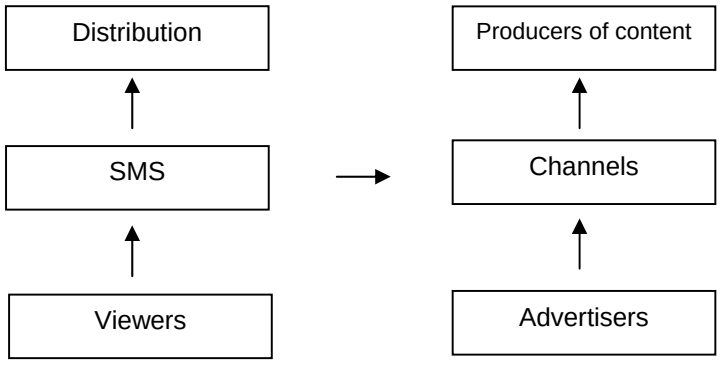


Figure 2b. Activities and flow of money – advertising revenues only

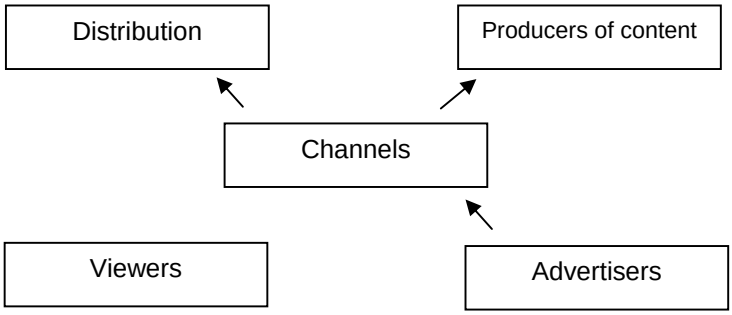
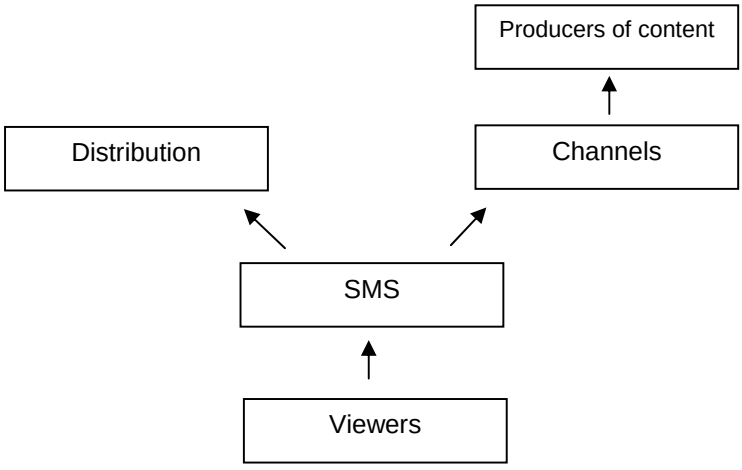


Figure 2c. Activities and flow of money – pay-TV revenues only



Competition for viewers

The competition for viewers occurs at several levels. The pay-TV operators compete with each other for subscribers, by assembling attractive bundles of channels and by offering convenient solutions for receiving the signals. The program companies compete with each other for viewers by assembling attractive contents. The free-to-air channels, including public service, also compete directly with the pay-TV operators for the viewers. Large free-to-air channels can offer a broad mix of general content, while a pay-TV operator can provide variety by bundling a large number of different niche channels.

The free channels have a combined view-time share of slightly more than 60 per cent, of which public-service accounts for close to 40 percentage points. On the other hand, around 85 per cent of the population subscribe to pay-TV (including Com Hem's analogue basic package).[4] Hence, for most of the viewing time allocated to free-to-air channels, the signal has actually been distributed by a pay-TV operator.

A "systemic" approach

To understand e.g. the channel-to-operator market and the relation between program companies and pay-TV operators, it is essential to first understand how competition works among the program companies on the "virtual market" and among the pay-TV operators on the pay-TV market. The bargaining strength between program companies and the pay-TV operators in the channel-to-operator market is to a large extent determined by their relative strength among the viewers (i.e., on the pay-TV and virtual markets respectively).

If the viewers have very strong preference for watching a certain TV-channel and consider other channels as poor substitutes, they will have strong preferences for a distributor carrying that channel. If a certain distributor fails to reach an agreement with the program company, while other distributors do offer the channel, the distributor will start loosing customers to its competitors. At the same time the program company may not loose many viewers since the viewers rapidly move to a competitor offering their channel. In this case, the program company will have much bargaining power over the distributors.

On the other hand, if the customers have little opportunity to switch between different distributors, the program companies must reach an agreement with the distributors to reach out to their viewers. In this case the distributors will have much bargaining power over the program companies

[4] According to the EU case Providence/Carlyle/UPC Sweden. The Swedish Radio and TV Authority, 2007, reports slightly different figures, suggesting a lower fraction of pay-TV subscribers.

But the influence also goes the other way, from the upstream to the downstream. A distributor which can secure low prices for distributing the TV-channels will have the competitive advantage of a low cost in the retail market. Similarly, a program company receiving a high price for its channels will have more money to spend on good programs, reinforcing its strength on the "virtual market."

And there are other important linkages as well. A channel with many viewers will attract more advertising revenues, thereby enabling it to acquire better contents which, in turn, make it even more attractive among the viewers. But relying on advertising revenues will weaken the program company in its negotiations with a pay-TV operator. And so on.

The point is that the TV-industry must be considered a communicating system.

Outline

In the following chapters, we will follow the structure of Figure 1 when we discuss competition in the TV industry more in detail. As we have already pointed out, we identify five main types of markets.

In the viewer market, pay-TV operators sell services to viewers and free-to-air channels provide their services for free. This is discussed in Chapters 3 and 4. We will also discuss0020the virtual market where the program companies compete for viewers.

In the channel-to-operator market, program companies and pay-TV operators contract on broadcasting rights. This is discussed in Section 5.1. In the infrastructural services market, pay-TV operators and free-to-air channels purchase services from the owners and operators of networks and equipment for TV broadcasting. This is discussed in Section 5.2.

In the content market, channels acquire content, such as films, series and broadcasting rights for sports events. In the advertising market, finally, the channels sell advertising slots. These two markets will not be discussed much in this report.

3 Distributors

Distribution can be thought of as consisting of two broad activities, infrastructure services and customer services, often referred to as SMS (Subscriber Management Systems). We will deal with them in two separate sections.

3.1 Infrastructures

Since the 1990s, TV has been distributed via three main platforms: terrestrial, satellite and cable. Historically, analogue distribution via a terrestrial network was the only way to distribute TV. In 1986, cable-TV services became, for the first time, subject to legislation in Sweden. Although small cable networks had existed prior to that date, the new act laid the ground for a large-scale commercial development. In 1986, around 100 000 households had cable TV, today the number is around 2.6 million households.[5]

The first satellite dedicated to broadcasting TV over Sweden and the Nordic region was launched in 1989. Although it had been possible to receive signals from other satellites previously, this had required bigger dishes and the channels that were available were not targeted for a Swedish audience. Today, around 1 million households receive TV signals from satellites, including SMATV networks. More than 700 000 of those are individual subscribers to either of the two satellite operators, while around 270 000 receive their TV signals via SMATV.[6]

In 1999 a process to migrate viewers from terrestrial analogue broadcasting to digital broadcasting began in Sweden. Since the autumn of 2005, analogue transmissions have gradually been discontinued throughout Sweden and before the end of 2007 there will only be digital broadcasting in the terrestrial network. Digital broadcasting uses the available spectrum more efficiently. This, in turn, has opened up for the possibility of multi-channel pay-TV operators based on terrestrial distribution.[7] Even more recently, IPTV has been introduced as a fourth possible platform for TV-distribution.

Terrestrial distribution

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[5] Wikipedia and the EU Commission's case Providence/Carlyle/UPC Sweden.

[6] The Swedish Radio and TV Authority, 2007; The Digital TV Commission, Annual report 2007; Wikipedia.

[7] Digital broadcasting is more efficient also for satellites and cable, but scarcity of broadcasting spectrum is a much smaller concern for these technologies.

Terrestrial distribution of TV signals requires a network of broadcasting transmitter stations. The transmitters are mounted on tall masts and they send what can be described as a powerful radio signal over a relatively broad range of the radio spectrum. Teracom has around 700 transmitter station, of which 54 are large and of those 28 are taller than 300 meters. The large stations cover most of Sweden's area and most of the population, while the many small stations are used to reach households that live behind mountains or in areas that for other reasons are not covered by the large stations.

With digital broadcasting, the signals for channels are multiplexed. This means that several channels are "mixed" (or multiplexed) into a single signal, in such a way that the individual channels can be retrieved in a demultiplexer (in the set-top box). This is done to use the available spectrum more efficiently. The Swedish terrestrial network has five multiplexes (or muxes), each of which carries five to seven channels. One of the muxes, the one that carries SVT's channels, reaches 99.8 per cent of the population, three muxes reach around 98 per cent of the population and the fifth mux can currently reach around 70 per cent of the population.[8]

Relative to analogue broadcasting, digital broadcasting uses the available spectrum more efficiently. Further efficiency gains can be achieved by digital compression techniques. Although there exists more efficient compression techniques than the one that currently is in use (i.a., MPEG-4 rather than MPEG-2), a shift to a new compression technique means that the existing population of set-top boxes must be replaced.

Terrestrial broadcasting uses a part of the radio spectrum that is valuable because of its ability to penetrate buildings and other obstacles. (In particular, this frequency range has good properties for mobile telephony.) However, since the frequency is relatively low, the signals carry relatively little information. Satellite broadcasting uses higher frequency, which has the advantage that it can carry much more information (and hence many more channels) but it has the disadvantage that a direct line of sight between the satellite and the parabolic dish is necessary.

From these physical properties it follows that the strength of terrestrial broadcasting is that the signal can easily be picked up by a relatively small antenna, while the strength of satellite broadcasting is that a very high number of channels can be broadcasted within the available spectrum, even if they are broadcasted in HDTV format.

Satellite distribution

[8] See Teracom's and Boxer's annual reports for 2006. These numbers are hypothetical calculations, based on the assumption that a fixed antenna is mounted on the roof, 10 meters above the ground. Hence, in city centres households that do not have access to such antennas may not be able to receive terrestrial broadcasting.

Satellite broadcasting services directly to consumers' homes, DTH, require an uplink, which sends the TV signals from the Earth to a geostationary satellite equipped with transponders that re-sends the signals back towards the ground. A geostationary satellite has the property that the satellite rotates around the Earth just as quickly as the Earth rotates.

Each satellite can be equipped with approximately 25 to 50 transponders and each of those can broadcast 6-10 digital channels. There is a limit to the number of geostationary satellites, since they have to be positioned some distance apart, but as far as we understand this will not be a binding constraint in the foreseeable future.

As mentioned previously, the satellite signal requires a free line of sight towards the satellite. A parabolic dish must therefore be mounted on the roof, on an exterior wall or on a balcony and it must be pointed towards the satellite. The consumer must also have a set-top box and a card for decryption of the signal. Control over the encryption technology and the decryption cards is essential to make exclusion of non-paying customers possible and, hence, to make pay TV via satellites viable.

Cable distribution

Distribution of cable TV requires access to a physical cable network that extends all the way to the households. There are four main levels of a large cable network: a national back-bone network, city networks, access networks and intra-building networks.

A national cable-based pay-TV operator will pick up a large number of TV signals, often via a satellite dish, and feed them into a back-bone network. The back-bone network can be proprietary or communication services can be procured from a relatively large number of sellers of such services.

A regional cable-TV operator will instead feed the signals into city networks. In the largest cities, there may be several such networks, while in many smaller cities a single network is owned by the municipality. A large cable company can have its own city networks or it can lease capacity, or a combination.

As far as we are aware, access to network at the national and city level is not a major issue, since this market is either competitive (the national level) or controlled by publicly owned utilities.[9]

[9] There may be competition problems when publicly owned utilities compete with private network owners. We ignore this problem in this report, since it has no direct impact on the TV market. We have, however, heard some comments suggesting that the capacity of city networks can be tied up by incumbent pay-TV operators in order to make entry more difficult for entering IPTV providers.

At the third level, an access network, typically owned by the cable company, connects the back-bone network and the city networks with the individual houses. This critical link corresponds to the "last mile" in telecom networks. Because of the high cost of laying down cable in cities, almost all areas have only a single cable-TV access network. Lack of access to this network is an important entry barrier for entrants that want to challenge an incumbent cable operator.

Finally, the intra-building networks are typically owned by the landlords.[10] However, landlords have historically signed long-term exclusive contracts with cable companies. The cable company typically got a long period of exclusivity in exchange for paying for investments in the intra-building networks.

IPTV

The Internet is the basis for emerging technologies for TV distribution. There are two alternative technologies: IPTV and TV via the Internet. IPTV is a broadcasting technique, which uses Internet Protocol (IP) to distribute TV signals in much the same way as traditional cable companies, except that the signals are distributed via the same physical network as are used for the Internet. That is, all channels are broadcasted continuously in the network and households with access to appropriate decryption devices can view the channels. TV via the Internet, in contrast, is accessed as other streaming internet content: each viewer has to access content from the web page of a program company. In this report, we will mainly discuss IPTV.

3.2 Customer services

The pay-TV operators – or Pay-TV operators as they are usually referred to in the industry –acquire the rights to send the TV-channels, package the channels into subscription bundles and market the bundles to the viewers. The pay-TV operators also often subsidize the boxes that the viewers need to receive the signals.

The pay-TV operators are to a very large extent integrated with broadcasting infrastructure. On the satellite segment Canal Digital is vertically integrated and Viasat has a long-term relation with the SES satellite operator. On the cable segment all the pay-TV operators own the key infrastructure, which is the local network (100 meters or so) between the municipal (or city) networks and the networks within the house. In terrestrial distribution Teracom (the sole network owner) has a large stake in Boxer (the sole pay-TV operator). When analyzing the retail market, we will only make a distinction between pay-TV operators and the network (infrastructure) where this is necessary. Otherwise we will refer to the combination as distributors or pay-TV operators. When we discuss the

[10] We use the term intra-building networks even though big landlords often have proprietary networks that connect more than one building.

upstream market, we will of course have to distinguish between infrastructural services and SMS-services.

The main pay-TV operators in Sweden are the following (the infrastructure owner within parenthesis):

- **Terrestrial:** Boxer (Teracom)
- **Cable:** Com Hem, Canal Digital, Tele2Vision, numerous local distributors, Svensk Programagentur
- **Satellites:** Viasat (SES), Canal Digital (Telenor)
- **IPTV:** Telia Digital-TV, FastTV, Bredbandsbolaget, Canal Digital

There is some competition within these platforms and also some competition between the platforms.

A special form of cable distribution is SMATV (Satellite Master Antenna Television), also called private or independent cable, which is a miniature cable system serving an apartment block or residential district. The signals are received via the terrestrial net and via satellite (pay-TV). SMATV operators are supplied by Canal Digital or Svensk Programagentur (partly owned by Viasat). The main difference to normal cable solutions appears to be that the owner of the net also operates it. The main difference to satellite distribution (DTH) and terrestrial distribution is that the several households are connected to the same central antenna.

Approximately 57 percent of the households receive TV via cable, 6 percent via SMATV, 17 percent via satellite and 33 percent via terrestrial distribution. These numbers add to more than 100 percent since some households use more than one technology.[11]

We estimate revenues in the pay-TV market in 2006 to have been around SEK 9 billion, of which around SEK 3.5 billion from satellite customers (including SMATV) and around 4 billion from cable customers. Boxer's revenues were around SEK 1.5 billion.[12] On a per-household basis, revenues are the highest for satellite household, intermediate for households that subscribe to Boxer's services and the lowest for cable customers.

[11] The Digital TV Commission, Annual report 2006.

[12] See the 2006 annual reports from Boxer, Com Hem, MTG and Telenor. We use average revenues per customer reported by MTG and multiply with 1 million households who receive their signals via a single-owned or shared parabolic dish, according to The Swedish Radio and TV Authority, 2007. We assume other cable operators have revenues per customer that are similar to Com Hem's.

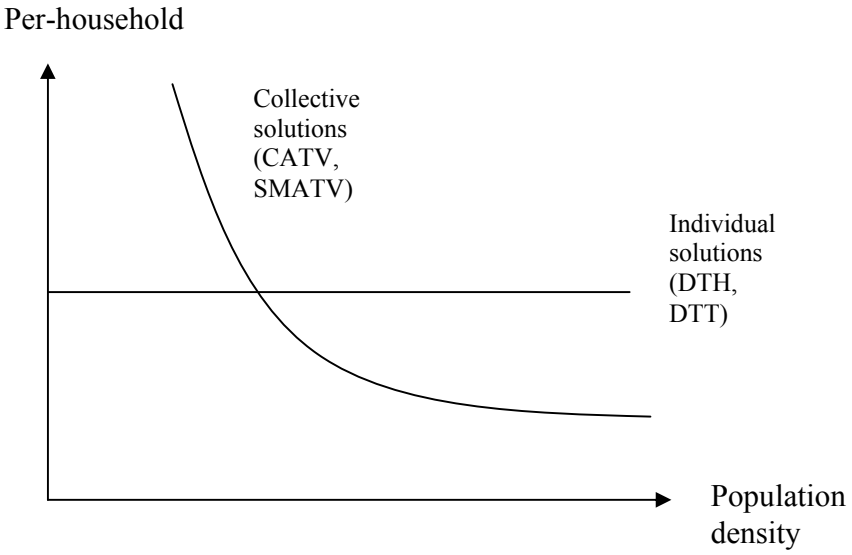
3.3 Market strength

We argue that the most important determinant of the distributors' market power in the retail market is their geographical coverage. Distributors based on all platforms offer relatively similar bundles of channels, at relatively similar prices: 30-40 channels at a monthly subscription rate of around SEK 200. (See the Appendix.) In their "medium" packages, all distributors offer between one and a handful of channels in all of the main niches: general entertainment, children's channels, sports, film, documentaries, nature, music and news. Smaller niches, such as food, science, crime, erotic film and "ethnic" channels are also included in the main bundles of some or all of the distributors.

The satellite-based operators tend to offer a somewhat higher number of channels in their "medium" or "typical" packages, while Boxer offers their customers more convenience. Boxer can also offer their customers all of the top five channels, while the satellite-based distributors provide the top three and then either the fourth (TV3) or the fifth (Kanal5) most popular channel. The cable operators (mainly Com Hem) differ slightly from this pattern in that a large number of their customers only pay for a basic package, comprised of 10-14 channels. For analogue customers (the majority of Com Hem's customers) the basic package includes both TV3 and Kanal5. The basic digital package includes neither of these two channels.

In the following, we will structure the analysis around the geographical dimension, focusing on the distinction between high-density and low-density areas, because we think that this parameter has a fundamental impact on the competition between distributors. In high-population-density (urban) areas, most people live in apartment blocks and collective distribution in the form of cable is relatively efficient. In lower-density areas, with mainly single-family houses, individual distribution via terrestrial or satellite networks are more cost effective. In some areas with intermediate population density, individual and collective solutions may be equally efficient. SMATV, which is a form of cable-TV, is often used in small agglomerations, such as relatively compact areas of single-family homes in the suburbs, but it can also be used in the denser parts of the cities. The importance of density is schematically illustrated in Figure 3.

Figure 3. Population density and per-household platform cost.



3.3.1 High-density areas

Competition for landlords

In Sweden families rarely own their apartments in a formal sense. They either rent or buy a membership in cooperative building societies which, in turn, owns the house in which they live. For most practical purposes, owning a membership is effectively similar to a formal ownership. For the purpose of receiving TV signals, however, the particular legal situation will probably lead to a bigger role for the cooperative and towards an emphasis on collective solutions. In the following, we will refer to the owner cooperatives as landlords.

Typically the TV-signals enter the building at one central point and are then distributed to the apartments via cable. The signal can be received via cable (the most common situation), via a central antenna or via a satellite dish mounted on the roof of the house. Although the landlords own the cables within the buildings, the cable networks typically take on parts of the investment costs for the physical network within the building and in return receive rights to distribute cable-TV. Even if the contracts are not formally exclusive, they are so de facto since most existing networks do not support multiple operators. The contracts have been very long in the past, but today the typical duration for new or renewed contracts is three years.

The cable operators typically own a piece of the network between the open infrastructure owned by the municipalities or the national network operators and the networks within the buildings. These local networks give the cable companies important market power over the landlords. When cable networks compete for contracts with the landlords the geographical proximity between the cable network's existing infrastructure and the buildings is crucial.

In principal the landlords could choose to receive the TV-signals to the building from one of the satellites via a central parabolic dish or through the terrestrial net via a central antenna on the roof. The signals are then distributed through the cable in the building to the different apartments. (Legally this would be considered cable TV.) The satellites have not developed business models to pursue such contracts, however. Their SMATV solutions require the landlords to operate the networks themselves. In effect, the landlords will typically receive better deals from contracting with one of the big cable companies.

There are over 70 cable companies, but the three biggest account for 85 per cent of the market. Com Hem distributes TV to around 1.75 million household out of a total cabled population of around 2.6 million.[13] Com Hem is the only cable distributor present in the

[13] According to the EU Commission's findings in the merger case Providence/Carlyle/UPC Sweden. The Swedish Radio and TV Authority, 2007, reports slightly different figures, suggesting an even higher concentration.

whole country. The other companies are active in different regions. As a result, there are typically just one or two sizable competitors that offer cable in any particular area, and often one of the two will have a substantial proximity advantage.

It appears the cable companies do not attempt to create much additional differentiation between them. Unlike the satellite market, the cable networks do not use exclusive rights to contents as a means of competition. They do differ, however, in how they bundle channels into packages and whether they offer channels à la carte.

The cable companies are obliged to carry the public service channels. (Today also TV4 has a must-carry status, but this will be revoked from 2008.) The cost of public service is paid by the landlords to the cable companies; it is a service to the tenants included in the rent.

At least the largest cable operator, Com Hem, typically sign agreements where several additional channels are included in the rent. We will discuss this practice in more detail below.

Competition for households

A cable company with (in effect) exclusive rights to offer cable TV within a building will have substantial market power over the households. The alternative for the household is to switch to some other form of distribution. For several reasons, this is often not very attractive, however.

One reason is that satellite and terrestrial signals are often too weak to receive with a household antenna. The conditions differ depending on which direction the apartment faces, if there is a balcony and how high up in the building the apartment is. Another reason is that the landlords are reluctant to accept parabolic dishes on the balconies. The reason is the risk of parts falling down and hurting people, the risk of damage to the façade and esthetic reasons. The landlords have the right to make this decision and tenants that put up a parabolic dish against the landlords' will may loose their contract to the apartment. Some landlords have created solutions that allow their tenants to install individual parabolic dishes but this in not common. In some suburbs with a high proportion of immigrants the apartments facing south are equipped with private parabolic dishes. According to our information these dishes are typically not used to receive the signals from the Swedish satellites but rather to pick up free channels in foreign languages.

Another reason why the households are reluctant to find alternatives to cable is that some TV channels are already included in the rent, and that this cost cannot be avoided by the household. The contracts with landlords and individual households are overlapping in time, which also makes it more difficult to switch. An additional factor that creates look-in is the use of triple-play bundling. Com Hem offers households TV, broadband and telephony for the price of only two components. Triple play also simplifies the

households' contacts with distributors of electronic communication. The households also acquire e-mail addresses with the distributor's name as part of the address.

The complementarity between buyer power and retail power

Com Hem has a particularly strong position on the Swedish cable market and is also the largest distributor in the country. One explanation for Com Hem's success is that they, due to the size of their customer base, will secure favorable terms from the program companies. As far as we understand, Com Hem pays less for the rights to distribute channels than other cable companies. These favorable terms will, in turn, give them a competitive advantage in the retail market – making it easier for them go grow big. In other words, Com Hem benefits from a favorable competitive loop.

It is not obvious whether asymmetric buyer power (and price discrimination) benefits or hurts the viewers. Com Hem's bargaining power does enable it to offer its customers attractive terms. Whether or not it will in fact do so, depends on the competitive conditions. Since competition seems to be rather lax in the cable segment, there is a clear risk that a substantial cost advantage will not translate into a substantial price reduction for the viewers. At the same time the cost advantage may deter other companies from direct competition with Com Hem. This issue will be discussed further in Chapter 7.

Open LAN and IPTV

IPTV is TV distributed over networks used for internet services. This form of distribution is developing rapidly, but it is still immature. One problem is that it is important that the different bits of information arrive on exactly the right time, which not all networks can handle. (It is not equally important that information bits arrive with such accuracy in time for most other applications on the Internet.) This is not only a matter of band width.

IPTV requires that the household has broadband access to the Internet, locally via ADSL, cable or local fiber network (LAN). In practice, the buildings' internal cable-TV network can be upgraded, a new LAN network can be laid out or the telephony access network (mainly owned by TeliaSonera) can be upgraded and used to provide IPTV via ADSL. Several companies today offer IPTV, notably TeliaSonera and FastTV.

The IPTV providers can either offer conventional TV-channels via their networks, much like cable-TV operators, or they can offer video-on-demand services. In the latter case, the viewer can select programs from a database, download the program and watch it anytime. Today, the most common business model appears to offer conventional TV programs, but the possibility of video-on-demand is seen as the main advantage of IPTV over other forms of distribution. Video-on-demand requires interactivity which can be provided over the Internet, but which is much more difficult to achieve via satellite or terrestrial networks. Some firms are already experimenting with video-on-demand, e.g., the "TV4 Anytime" service.

The landlord can opt for an "open" LAN, so that multiple IPTV providers can compete for individual customers. Alternatively, the landlord can contract with a particular provider, giving it a temporary exclusive right. Since an exclusive franchise has a value

for the pay-TV provider, which can be a traditional cable company or an IPTV provider, the franchise can be auctioned or the landlord can arrange a beauty contest, giving the franchise to the most attractive offer.

In part, the cable operators' market power over landlords and households may have derived from a better understanding of the new technology. There are signs that the customers are now mobilizing to get better deals. Hyresgästföreningen (Swedish Union of Tenants) are now working together with SABO (Swedish Association of Municipal Housing Companies), Fastighetsägarna (Swedish Property Federation) and Svenska stadsnätföreningen (Swedish Urban Network Association) aiming to create networks that are open for competition all the way to the household. There are experiments with open networks in Vällingby, Varberg and other places.

Today, Hyresgästföreningen does not accept that upgrades of monopolistic networks represent an increase of the users' value of the apartment and that, therefore, the landlords should not be able to increase the rent following such upgrades. Hyresgästföreningen may also start to oppose the ban on parabolic dishes if the cables are not opened up for competition.

The main obstacles against platform competition in high-density areas are not technical, but legal and commercial. It has proved difficult for IPTV operators to obtain distribution rights from the program companies and sometimes it is difficult for them to access the city networks. Long-term exclusive contracts with landlords represent another important obstacle against cable-to-cable competition and against entry from LAN-based IPTV operators. The fact that a basic package of channels is included in the rent erects an entry barrier for IPTV providers that want to use ADSL. The obstacles against competition between cable operators and SMATV and IPTV are discussed in Section 7.1.

3.3.2 Low-density areas

In many remote areas cable distribution is not viable due to the cost of building cable networks. Instead the main forms of distribution are satellite and terrestrial distribution.

Competition within satellite

The Swedish market has two satellite operators, with a combined subscriber base of 700 000 or a little more.[14] Viasat is part of MTG and therefore vertically integrated with a program company. The group also owns Tele2 which in turn owns a cable operator. Canal Digital which also runs cable distribution is owned by Telenor. The companies do

[14] See EU case Providence/Carlyle/UPC and The Swedish Radio and TV Authority, 2007.

not report the number of subscribers in Sweden, but we believe that Canal Digital has slightly more than half of the satellite customers.[15]

Viasat and Canal Digital appear to compete intensely in the retail market. They advertise prices and offers in media and they offer substantial subsidies of set-top boxes for subscribers that sign up for a minimum period. An additional sign of their competition is that they acquire exclusive distribution rights to some premium channels. In many other European countries, such as the UK and Italy, only one satellite operator has remained viable, possibly due to the intensity of competition in this segment.

One reason for the intensity of competition is that it is relatively easy for households to switch between Canal Digital and Viasat. The same parabolic dish can be used. The boxes are specific, however.

Competition within terrestrial

Terrestrial distribution is digital in most of the country at the moment (September 2007) and analog distribution will be completely discontinued in October 2007. We will therefore only focus on digital terrestrial distribution.

The conditions in the terrestrial market are, to a very large extent, determined by the Government. The Government or The Swedish Radio and TV Authority decides which channels that are allowed a license to send in the terrestrial net. The licenses stipulate that the program company must use the encryption services provided by the pay-TV operator Boxer. Boxer thus has a legal monopoly on SAS and, as a result, also on SMS in the terrestrial net. The Government owns Teracom which owns and operates the infrastructure. Teracom, in turn, owns 70 per cent of Boxer. The remaining 30 per cent are owned by the British private equity firm 3i. There is thus almost no competition within terrestrial distribution today.

The European Commission has complained about Boxer's legal monopoly on SAS as will be discussed below. PTS has decided that Teracom has SMP status in the market for terrestrial broadcasting services and that, consequently, it should provide access to the infrastructure at cost-based prices. Infrastructural services and PTS's decision will be discussed further in the next chapter.

Competition between satellite and terrestrial

Technically, it is feasible for almost all single-family houses to receive both satellite and terrestrial signals. The main difference between the two technologies is that satellites have a very high capacity and may broadcast a large set of channels in high quality

[15] SOU 2003:47.

(HDTV). The disadvantage of satellites is that many houses already are equipped with an antenna for terrestrial signals and that the satellites therefore require more installation.

The two segments are thus vertically segmented, with the satellites providing higher quality services. Households demanding a large number of channels and HDTV will consider it worth the extra effort to install a parabolic dish, while those who are content with a smaller number of channels will use terrestrial distribution. An exception to this picture is that both TV3 and Kanal5 are available on the terrestrial net, while satellite households need to choose unless they subscribe to both satellites.

So far the competition between satellites and terrestrial distribution for pay TV customers has primarily focused on the households previously using analog terrestrial distribution. Boxer has won most of these customers. This is not very surprising, however, since these customer already have revealed there preference for simple solutions but fewer channels.

We think that the satellites provide an important competitive constraint on Boxer. The cost of sending out a technician to install a parabolic dish is typically not huge. For this reason we believe that the competitive constraints on Boxer/Teracom should be sufficient not to consider them dominant. Because this is a key issue, we will discuss it further in the last section of this chapter.

Switching costs and set-top subsidies

The pay-TV market appears to be characterized by relatively large switching costs, also in low-density areas where consumers do not have to coordinate with their neighbours or landlords. Once a household has chosen a particular platform, it tends to be loyal to the operator for many years. However, when the initial choice is made – often in a consumer-electronics store – there appears to be intense competition.

Theory suggests that in markets with these characteristics, there will often be intense competition to attract the customer in the first place. One way to do this is to offer attractive entry deals, such as subsidies of set-top boxes and reduced monthly fees during an initial period. Similar practices are observed in the mobile telephony market, where operators regularly subsidize handsets. To get the subsidies, the consumer typically has to sign a minimum-term contract that stipulates, for example, a minimum subscription period of 12 months.

Relatively low churn (the fraction of consumers that terminates their subscription during a period of time) does not necessarily imply weak competition, for two reasons. First, there will typically be intense competition to attract consumers that have not yet signed up to someone or that actually do reconsider their current subscription. Second, if competition is strong, rivalling firms will be forced to offer packages that match each other quite closely, in terms of prices and channel variety. Then there will be little reason for must consumers to actually switch.

3.3.3 Medium-density areas

In some areas of intermediate density, cable networks and satellites may be more or less equally competitive. In particular, this appears to be the case in suburban areas with relatively small housing lots or in new residential areas where cable networks or LAN can be laid down together with other underground facilities. In such areas all three techniques are likely to be competitive.

In this type of areas, an additional possibility is to build SMATV networks, with a single parabolic dish or antenna that picks up the signals and distributes them in a small cable network. The network may be owned, e.g., by a group of single-family houses. In principle, SMATV can be used also in the city centers: then the landlord would mount a dish or an antenna on the roof and connect it with the building's TV network. In both cases, however, the owner of the SMATV must acquire the rights to distribute the signals in the network. Typically, this is done via a programming agency. The two dominant programming agencies in Sweden are owned by the two satellite operators.

Via SMATV cable networks, terrestrial and satellite pay-TV operators can, in principle, compete with cable-TV operators. However, SMATV appears to be concentrated to suburban areas. The reason for the lack of competition between cable operators and SMATV is discussed in the following section and in Section 7.1.

3.3.4 Is there indirect competition between platforms?

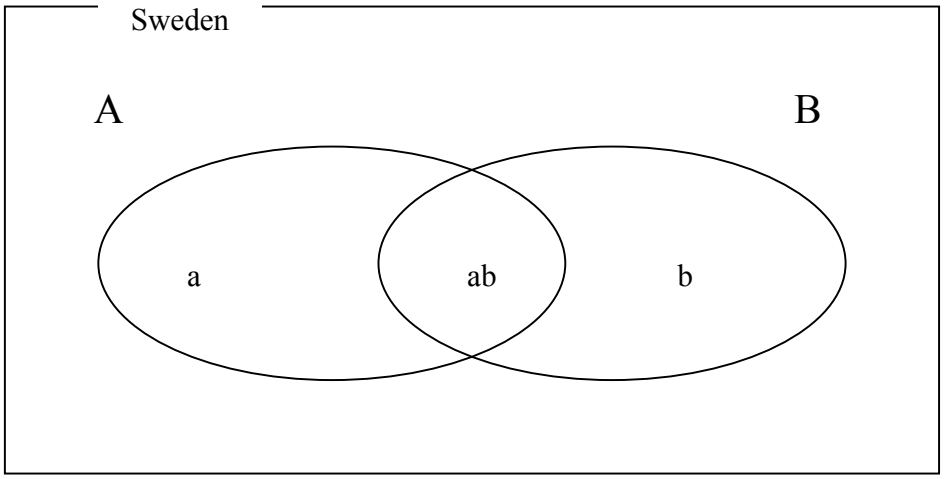
Even though cable-TV operators have their main strength in high-density areas and terrestrial and satellite-based operators are more competitive in low-density areas, the two technologies compete in suburban areas and, potentially, in some high-density areas via SMATV. Because of this overlap, there is a possibility that the overlap creates a link between the two main segments of the market. Possibly, this link could be strong enough for cable to be a competitive constraint on terrestrial and satellite-based distributors and vice versa.

In this section we argue that satellite/terrestrial distribution and cable distribution are relatively sheltered from competition with each other also when the possibility of substitution chains is considered.

The notion of substitution chains

Consider a market with two distributors/pay-TV operators called A and B, covering partially different geographical areas, as depicted in the Figure 4.

Figure 4. Partly overlapping distribution areas, two broadcasters.



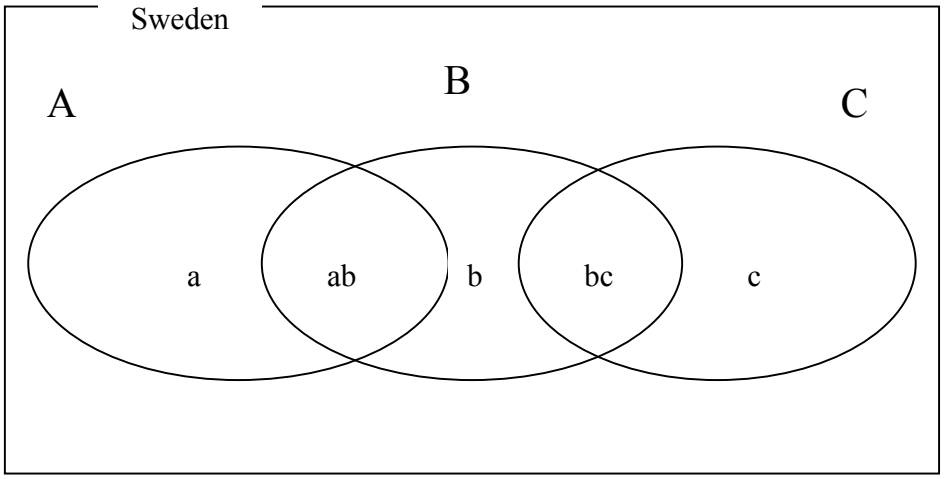
Assuming that the firms themselves do not make finer distinctions (e.g. in their pricing decisions), there are only three areas with potentially different competitive conditions: a, ab and b. If A is a satellite operator and B a cable operator, then a would be rural areas, ab would be suburban areas and b would be city-centers. Whether and where A and B compete depends on whether the firms can treat the areas as separate markets with different prices – i.e., whether the firms can price discriminate or not.

If the distributors/SMS can offer the viewers in the different areas different prices, every area could be viewed as a separate market. In this example, only those who live in ab can choose between the two distributors/SMS. Assume, for simplicity, that these viewers consider the distributors to be perfect substitutes. Then the price in the ab region will be competitive. In areas a and b, on the other hand, the monopoly price will prevail.

If the distributors/SMS cannot price discriminate between the viewers from different areas, if ab is relatively large in comparison to a and b and if the competitiveness of A and B are relatively similar in the ab area, then the country as a whole could be viewed as a single geographical market. There will be one price in the whole country. Presumably the price would be relatively low because of the competition for the ab-viewers.

The two distribution networks need not even compete directly with each other in order to be on the same market – indirect competition may suffice. In the example in Figure 5, A competes directly with B which, in turn, competes with C. A and C do not compete directly with each other, however.

Figure 5. Partly overlapping distribution areas, three broadcasters.



If the firms cannot price discriminate, the whole country is a single market. If C lowers its price, B must follow not to lose customers in area bc, but then A must follow not to lose customers in ab. Therefore, A's pricing is disciplined by C and vice versa, despite the fact that they do not compete directly for any customers.

Even if there is a partial overlap and even if the firms cannot price discriminate between the different regions, competition may still be weak for several reasons. If ab is small relative to a and b, it may not be profitable for the operators to undercut each other in order to attract ab customers (assuming A and B to be less than perfect substitutes). If ab is small it may also be relatively easy for A and B to collude in their pricing. Finally, if there are differences in costs between the two operators and if the monopoly prices in areas a and b differ, this would make it more likely that there will not be strong competition for ab customers.

The Swedish market

Our interpretation of the Swedish market is that the satellites and terrestrial distributors compete in areas of low population density (including many suburban areas). As far as we are informed, Boxer and the satellite operators do not price discriminate between geographic regions in their offers to individual consumers. The cable companies are active in areas of high population density. They make individual agreements with landlords, but do not price discriminate in their offers towards individual households (for the premium services).

The satellite/terrestrial and cable technologies overlap in some areas of intermediate population density. In these areas SMATV is strong. It is a middle form between satellite/terrestrial and cable technologies. On the one hand it is a collective solution (like cable) but on the other hand the big players do not engage in actually operating the local infrastructure (like satellite). When Viasat (via SPA) and Canal Digital compete for SMATV customers, they use a different pricing model and different prices compared to the offers they give directly to satellite households. Hence, in practice, they can discriminate between areas like a and ab.

Whether the satellites and the terrestrial broadcaster compete with cable operators or not is, in the end, en empirical matter. One piece of evidence that points in the direction of this competition being relatively weak is that satellite operators appear to be responding strongly to Boxer's entry, while the dominant cable operator appear not to be too much affected by Boxer. Since Boxer's entry, the satellite operators have introduced "medium" packages that match Boxer's main package, while previously they focused on premium packages. Also, Viasat is running campaigns with low prices during the first year, while Canal Digital has increased the number of channels in the medium package without raising the price.

4 Program companies

The program companies own the TV-channels. They produce and acquire contents and schedule programs. Their revenues come from three main sources: advertising revenues, revenues from pay-TV operators and, for public-service TV, from license fees. According to our interviews, sales of TV-ads for the Swedish market yield revenues of SEK 4.5 to 5 billion.[16] For illustrative purposes, we assume that around half of the pay-TV operators' total revenues of around SEK 9 billion (see the previous section) are used to acquire channels. This means that we estimate total revenues for commercial channels to be around SEK 9 billion, half from advertisements and half from pay-TV operators.

As an illustration of the program companies cost structure we consider SVT which admittedly may be quite different from the other companies. In 2006, SVT's distribution costs (i.e., payments to Teracom) were around SEK 500 million, staff costs were SEK 1.7 billion and "other external costs", presumably mainly costs for acquiring content, were around SEK 1.9 billion. During the 2002-2006 period, the average yearly cost of sports rights was around SEK 150 million. For comparison, the trade press reports that TV4 agreed to pay SEK 120 million annually to the Hollywood studio Fox for the rights to their movies and series. This was considered to be a "record" price.[17] Fox is considered to be one of the eight main studios.

4.1 The role of program companies

It is a mistake to believe that only the contents matter and that the program companies are easily replaceable intermediaries. The program companies' value derives from several sources. They have their own production capacity, and they sit on some long term contracts for contents with, for example, sports clubs. Most importantly, however, are probably the channels' roles as brand names in the eyes of the viewers. The channels guarantee certain qualities, such as trust-worthy news or fun series for a certain age group. The same contents may be noticed and watched by different people depending on which channel that carry it.

Watching TV is also a social activity. An example is that the chatting over the Internet increases dramatically at the end of certain programs. A popular TV-channel may thus provide the viewers with a guarantee that not only they are watching the program but also

[16] The media research institute estimates TV advertising in 2006 to SEK 4.5 billion, up 10 per cent from 2005. See www.irm-media.se.

[17] See Resumé, 18 April 2007.

most of their friends and this will typically increase the overall value of watching the program.[18]

One indication that the TV-channels' are important brand names, somewhat independently of the content, is that they have different strengths at different times of the week. It is, for instance, said that TV4 will have a huge audience on Sundays at 9 pm independently of the content they put on at that time. At some other times they have a much harder time to attract people.

The program companies with popular channels are also more attractive to the advertisers and, consequently, take a larger share of the revenues. Again there is a feedback loop since the greater advertising revenues enable the popular channels to acquire better contents, increasing their popularity among the viewers. On the other hand, relying on advertising weakens a program company in its relation with pay-TV operators.

Program companies with popular channels will obviously fetch higher prices when they sell distribution rights to distributors (pay-TV operators). If they grant exclusive rights these fees can be even higher. They may also use their bargaining power to bundle their channels, so as to squeeze their less popular channels into the distributors' packages. However, large advertising revenues will weaken the bargaining position of a channel, as mentioned above. This phenomenon will be discussed more thoroughly when the channel-to-operator market is analyzed in the next chapter.

4.2 Program companies in Sweden

There are four major program companies in Sweden.

SVT

SVT is the publicly owned public service company mainly financed through the mandatory license fee every owner of a TV-set must pay in Sweden. SVT runs several channels in addition to the main channels SVT1 and SVT2. (The classification is according to Wikipedia.)

- SVT1 (general)
- SVT2 (general)
- SVT24 (news, sports, reruns)
- Barnkanalen (children)
- Kunskapskanalen (educational)
- SVT HD (high-definition programming)
- SVT Extra (special events)

[18] Armstrong and Weeds, 2007, refer to this as "the water-cooler effect": if you can discuss the program with friends and colleagues that you meet at the water-cooler, this enhances the overall experience.

- SVT Europa (international)
- Utbildningsradion (educational).

TV4 Group

TV4 is owned by the family owned Bonnier media group. The main channel is the only commercial TV-channel in the analog terrestrial network. It is one of the few channels in Sweden mainly financed through advertising and it is also free-to-air in the digital network. TV4 has lately created a large number of more focused.

- TV4 (general)
- TV4 Plus (general entertainment)
- TV4 Film (movies)
- TV400 (entertainment)
- TV4 Fakta (documentaries)
- TV4 Sport-Expressen (sports)
- TV4 Guld ("classic" programming)
- TV4 Komedi (sitcoms)
- TV4 HD

Modern Times Group

The Modern Times Group MTG runs one of the five big channels, TV3 which is mainly financed through advertising, as well as TV6 and niche channels.

- TV3 (entertainment)
- TV6 (entertainment)
- TV8 (news and documentaries)
- ZTV (music)
- TV1000 (movies)
- TV1000 Action
- TV1000 Classic
- TV1000 Family
- TV1000 Nordic
- TV1000 Plus One
- Viasat Sport 1
- Viasat Sport 2
- Viasat Sport 3
- Viasat Golf
- Viasat Explorer (documentaries)
- Viasat History (documentaries)
- Viasat Nature/Crime (documentaries and crime series)

SBS Broadcasting

The media corporation SBS Broadcasting runs one of the five big channels Kanal 5 which is mainly financed through advertising, as well as Kanal 9 and some niche channels.

- Kanal 5 (entertainment)
- Kanal 9 (entertainment)
- The Voice TV Sweden (music)
- Canal+ Film 1 (movies)
- Canal+ Film 2
- Canal+ Film 3
- Canal+ Film HD
- Canal+ Sport 1 Sweden (sports)
- Canal+ Sport 2 (sports)
- Canal+ Sport HD
- Canal+ Mix

Others

In addition to the channels provided by the four big program companies, a large number of other channels are also available in Sweden.

Some of these channels are Swedish: Axess TV (culture and information), Canal 7, Discovery Channel Sweden (documentaries), DiTV (financial news), Fan TV, Kanal 10 (christian), MTV Sweden (music/entertainment), Aftonbladet TV7 (general entertainment), Kanal Lokal - Various regional channels.

Others belong to Time Warner (Cartoon Network Nordic, TCM Nordic), Disney (Disney Channel Scandinavia, Toon Disney Scandinavia, Playhouse Disney Scandinavia, Jetix Scandinavia), NonStop Television (Star! Scandinavia (entertainment news), Showtime Scandinavia (movies), Silver (movies), Voom HD International).

Examples of still others are Eurosport, Al Jazeera English, BBC Food, BBC Prime, BBC World, Bloomberg TV, Chelsea TV, CNN International, Deutsche Welle, Discovery Civilisation, Discovery HD Europe, Discovery Science, Discovery Travel & Living, E!, ESPN Classic Sports Europe.

4.3 Market strength

Time shares

A first rough approximation of a channel's importance is probably the number of minutes the average viewer watches the channel per day. The five largest channels (SVT1, SVT2, TV3, TV4, Kanal 5) account for about 75 per cent of the minutes. Similarly, a first rough approximation of a program company's importance is probably the sum of market shares of their channels. The four largest program companies account for more than 90 per cent

of the minutes: SVT is the largest with 38 per cent in 2006, followed by TV4 (around 25 per cent), MTG (17 per cent) and SBS Broadcasting (11 per cent).[19]

A common complementary measure of the channels' importance is their penetration which is defined by the share of the population that has watched the channel for at least five minutes during a week.

Table 1. Importance of TV-channels, 2006

	Minutes per day	Time share (%)	Penetration (%)
SVT1	34	22	70
SVT2	22	14	56
TV3	15	9	41
TV4	34	22	67
Kanal 5	14	9	37
TV6	5	3	20
MTV	2	1	7
Discovery	3	2	11
Eurosport	3	2	9
TV4+	4	2	17
Other	20	13	42
Total	154	100	88

Source: MMS. Annual report 2006

Type of contents

The market shares are only first approximations, however. At least in principle, also a big channel could be easily substitutable. Unfortunately, we do not have access to data on how the viewers consider the different channels as substitutes. Their contents probably reveal the broad picture of how they compete, however.

SVT1 and TV4 compete to be the most popular television channel in Sweden. They offer a mixture of sports, movies and ambitious news programs as well as, for instance, series with a general appeal. SVT2's programming is narrower with more focus on culture and minorities. These three channels are free-to-air in the terrestrial network.

[19] See MMS, 2006 annual report.

TV3 and TV6 as well as Kanal 5 and Kanal 9 are mostly for various entertainments. They aim for relatively broad audiences, but with slightly different focus on demographic groups. Except for TV6, they have chosen not to go free-to-air in the digital terrestrial network, however.

These general channels probably also compete directly with the niche channels. The niche channels, on the other hand, probably compete more heavily within their different segments, e.g., sports and movies. The list of channels in the Appendix gives a first idea of their contents.

Demographic groups

Additional information about how the channels compete with each other can be obtained from data on how different viewer groups spend their time watching different channels. In Sweden this sort of data is collected by MMS. MMS define viewer groups by demographic criteria such as age, gender, education and household type (singles, co-habitants, with children). MMS has also found that other factors are important in analyzing the channels market shares, such as mode of distribution (terrestrial vs. cable/satellite) and the number of hours watched.

It is beyond the scope of this report to acquire and analyze such data in detail, and we confine ourselves to illustrate how they can be used to assess competitive intensity. An example is the following table based on data from the MMS monthly report for July 2007, which is available on the Internet.[20]

Table 2 reports time share for men and women and different age groups. The data shows for instance that people aged 60+ spend 17% of their total time watching SVT2, which is much higher than the population in general which spends 10% of the time with SVT2.

[20] [Is it possible to get this data from MMS? Has anyone tried to estimate substitutability based on such data? Most demand analysis in economics is based on product characteristics and aggregate demand? How can consumer characteristics be used? Is this a research issue?]

Table 2. Time shares for different demographic groups

	Total	Men	Women	3-14	15-24	25-39	40-59	60+
SVT1	20%	19%	21%	20%	9%	13%	19%	28%
SVT2	10%	9%	11%	2%	5%	6%	9%	17%
TV3	9%	7%	11%	6%	14%	13%	9%	6%
TV4	20%	18%	22%	11%	15%	16%	23%	25%
Kanal 5	7%	7%	8%	6%	14%	13%	7%	3%
TV6	6%	7%	4%	6%	11%	8%	5%	2%
MTV	2%	2%	1%	2%	2%	2%	1%	1%
Discovery	2%	3%	2%	1%	6%	3%	3%	1%
Eurosport	2%	3%	1%	1%	1%	2%	2%	3%
TV4+	4%	2%	5%	1%	2%	4%	4%	4%
Other	20%	22%	17%	44%	21%	21%	19%	11%

To simplify the comparisons, the Table 3 displays the time shares of different demographic groups in relation to the time share of the general population. For instance, since the 15-24 age group spends 6% of its time on Discovery while the general population only spends 2% of its time on Discovery, the 15-24 year olds spend 3 times as large share (300%) on Discovery. A high "match" between a demographic group and a channel is indicated by bold, while a low match is indicated by italics.

Time shares for different demographic groups in relation to time shares for general pop.

	Men	Women	3-14	15-24	25-39	40-59	60+
SVT1	95%	105%	100%	*45%*	65%	95%	**140%**
SVT2	90%	110%	*20%*	*50%*	*60%*	90%	**170%**
TV3	*78%*	**122%**	*67%*	**156%**	**144%**	100%	*67%*
TV4	90%	110%	*55%*	*75%*	80%	115%	**125%**
Kanal 5	100%	114%	86%	**200%**	**186%**	100%	*43%*
TV6	117%	*67%*	100%	**183%**	**133%**	83%	*33%*
MTV	100%	*50%*	100%	100%	100%	*50%*	*50%*
Discovery	**150%**	100%	*50%*	**300%**	**150%**	**150%**	*50%*
Eurosport	**150%**	*50%*	*50%*	*50%*	100%	100%	**150%**
TV4+	*50%*	**125%**	*25%*	*50%*	100%	100%	100%
Other	110%	85%	**220%**	105%	105%	95%	*55%*

The table contains substantial rounding errors, but still suggests some immediate conclusions. SVT1 and TV4 appear to reach a relatively broad part of the population, reinforcing the conclusion that they are each other's main competitors. The main difference is that SVT1 is much more successful with children. SVT2's demographic

profile is highly skewed towards the higher age groups. All three are slightly skewed towards women, reinforcing the idea of their similarities.

Most general entertainment channels, TV3, TV6 and Kanal 5 appear to compete for the young adults, aged 15-39. TV3 appears to have some focus on women while the sister channel TV6 is stronger with men. Kanal 5 has a slight focus on women. Kanal 9 (not included in the table) focus on slightly older viewers, which it aims to attract by, i.a., showing re-runs of 5-25 year old popular series. We conclude that the two channel-pairs may be each others' most important competitors (in addition to the general interest channels SVT1 and TV4). The niche channels are, in aggregation, slightly more popular with men than with women and very important for children.

Revenues and prices

Besides viewer market shares, revenue market shares may be used as indicators of market strength. There is no publicly available data on advertising revenues or revenues from the sale of program rights to distributors. However, TV4's total revenues in 2006 were SEK 3 billion, of which we estimate that at least two thirds came from advertising.[21] As mentioned above, total TV advertising revenues in Sweden were estimated to be close to SEK 4.5 billion. A large part of the difference between total advertising revenues and TV4's advertising revenues were taken by TV3 and Kanal5, who had a combined viewing-time share of around 18 per cent, compared to 22 per cent for TV4.

According to our interviews, TV4's per-viewer advertisement price has a premium of around 25 per cent over the other two channels. This would be consistent with advertising revenues of SEK 2 to 2.5 billion for TV4 and SEK 650 to 800 million for each of TV3 and Kanal5. Since the other channels on the market have some advertising revenues, these numbers should probably be adjusted somewhat downwards. Advertising revenues will be discussed further in the section on advertising markets, while fees from distributors to program companies will be discussed in the section on the channel-to-operator markets.

[21] According to a press release from Bonner and SOU 2003.47.

5 Distribution meets content

Most commercial channels rely on pay-TV operators to distribute their product. They meet in what we call the channel-to-operator market. This market is briefly discussed in Section 5.1.

Most current competition issues are concerned with what we call the infrastructural service market. In this market pay-TV operators who do not own their own infrastructure acquire the actual distribution of the signals from the network owners. In Sweden this is mainly important in the terrestrial net today. Similarly, public service buys its own distribution directly in this market, as do some commercial channels. In the Swedish market, the largest commercial channel, TV4, has used this strategy, as well as a few smaller channels, including Kanal 6. The infrastructural services market is discussed in section 5.2.

Just as some channels can by-pass the pay-TV operators and buy broadcasting services directly, sometimes the pay-TV operator procure content directly from content providers, rather than via channels. The most notable example of this is direct procurement of broadcasting rights for sports series by pay-TV operators. We will not discuss this possibility, however.

5.1 Channel-to-operator market

In some respects, the channels' and the pay-TV operators' positions in the value chain are similar to those of manufacturers and retailers, respectively. If a channel makes a good product that is attractive to many viewers, it can charge a high price. And just as some manufacturer opt to set up their own distribution network (e.g., retail chains), some channels chose to be distributed independently, rather than to sell their product to pay-TV operators.

However, as discussed previously, there are some additional complications in the TV industry. A commercial channel that gets revenues from advertising operates on a two-sided market, where viewers pay nothing directly to the channels, while advertisers pay for airtime to be able to reach viewers with their commercial messages. A free-to-air commercial channel buys broadcasting services directly from the owners of broadcasting infrastructure, so it has no need to contract with pay-TV operators.

Most commercial channels, however, use a mix of these two models. They get some revenues from advertisements and some revenues from pay-TV operators. This makes the relation between the channel and the pay-TV operator more horizontal than vertical: the channel needs a distributor to reach its audience just as the distributor needs channels to attract subscribers.

Mutual dependence – both distributors and program companies have market power

The main program companies and the distributors are mutually dependent on each other. The distributors buy their contents from the program companies and the program companies buy their distribution from the distributors. In principal, the direction of payments could go either way.

Since the viewers have strong preferences for the different channels and do not consider them substitutable, it follows that the program companies have considerable bargaining power over the distributors. By not carrying a popular channel, a distributor will be at a competitive disadvantage. However, since it is cumbersome and takes time for consumers to switch distributor, the distributors also have considerable bargaining power over the program companies.

When meeting with the representatives of the industry, distributors often argue that they are in the hands of the program companies while people from the program companies argue that they are in the hands of the distributors. Our view is thus different in that we emphasize the mutual dependence between the two sides. It is probably more correct that the bargaining power varies between different companies on the same side. Some program companies have much bargaining power over the distributors while others have little bargaining power. Similarly, some distributors have more bargaining power over the program companies than other distributors.

Bargaining

The bargaining is bilateral between one program company and one distributor at a time, but it will concern all the different channels produced by the program company. The bargaining between the program companies and the distributors concern a host of different issues, including whether the distributor will carry the program company's channels, which package the channel will be included in and the terms of the arrangement.

Even if the bargaining is bilateral, the negotiations are interrelated. One example is that the satellite distributors acquire exclusive rights to some channels. For instance, Canal Digital has the exclusive right to distribute Kanal 5 over satellite.

Economic theory suggests that two parties will reach an agreement if their *combined* profit increases as a result of the agreement. There is a surplus to divide between the two parties that is available only if the they can make an agreement. However, there are several reasons why the combined profit might not be increased after all (i.e., there may be no surplus to divide). One reason is that program companies may be bound by exclusive agreement not to deal with certain distributors. A similar situation arises when the vertically integrated Viasat company does not allow the competing Canal Digital to distribute its channels over satellite. Other reasons why distributors and program

companies may not trade is a lack of capacity or, in case of terrestrial distribution, that the channels need a license.

The distribution of the surplus (the increase in the combined profit) depends on the bargaining strength of the parties. Bargaining strength derives in part from what the outcome would be absent an agreement between the parties. The worse a failure to reach an agreement would be for a party the less bargaining power will that party have. When a program company and a distributor meet to negotiate their contract, there are several factors affecting their relative bargaining strength:

- Distributor
    - Size
    - Competition with other distributors
- Program company
    - Size
    - Competition with other program companies
    - Mode of revenue collection
- Regulatory issues
    - Must carry obligations
    - Service obligations
    - Broadcasting rights

The size and competition factors have already been discussed. For instance, if a distributor has a large customer base (size), and if it is difficult for the viewers to switch to another distributor (competition), then this distributor will have much bargaining power. The reason is that if the program company cannot come to an agreement with this distributor, then it will lose many viewers and thus a large share of its revenues. A similar argument goes for the program companies.

Based on these factors only, we conclude that among the distributors the cable companies have much bargaining power vis-à-vis the program companies and that the satellites have little bargaining power. We also conclude that SVT and TV4 probably have most bargaining power among the program companies, and that the smaller niche channels probably have the weakest bargaining power.

But, then there are other factors complicating the picture.

Mode of revenue collection

The channels' bargaining strength is also affected by their way of collecting revenues. The public service channels SVT1 and SVT2 are probably weakened in their relations with the distributors by the fact that it is their obligation to be readily available to virtually every household in the country.

We believe that the three biggest commercial channels, TV3, TV4 and Kanal 5, account for most – 75 to 90 per cent – of the advertising revenues in the Swedish market. TV4 is free-to-air and also the other two channels receive only a small share of their revenues from subscriptions. Since TV4 reach some segments of the population that the other commercial channels do to reach, TV4 has additional market power in the advertising market. Anyone who wants to reach the entire population with their ads needs to talk to TV4. They can therefore charge a higher price per viewer than the other channels. TV4 might be especially weakened by the fact that they need to reach the whole population. (This difference can be noticed by the fact that TV4 today is available on both the satellites, in contrast to the other big commercial channels that sell exclusive rights.)

The advertising-intensive channels are probably weakened by the fact that they loose money from the first minute that they are not on the air. The distributors, on the other hand, will annoy their viewers by not offering the channels, but they do not actually start to loose money as quickly. In the longer run, however, one may suspect that the viewers would tend to switch distributor to follow their favorite channels.

The pay-TV channels do not have such a disadvantage in their relation to the distributors. This strengthens the small niche channels and explains why they can charge pay-TV operators relatively high fees.

5.2 Infrastructural-services markets

We will first discuss the possibility of pay-TV operators acquiring infrastructural services and then the possibility of (free-to-air) program companies acquiring infrastructural services. A brief technical overview of broadcasting infrastructure was given in Section 3.1; here we will focus on the economic aspects.

5.2.1 Pay-TV

Most infrastructural services are wholly or partially provided within vertically integrated firms. The cable-TV operators own strategically important parts of the cable networks. One of the satellite pay-TV operators is owned by Telenor, which also owns broadcasting satellites, and the other satellite-based pay-TV operator has, for practical purposes, a long-term exclusive contract with another satellite owner. Teracom owns and operates the infrastructure for terrestrial broadcasting and is the dominant owner of Boxer.

One reason for the high degree of vertical integration is probably the need for relation-specific investment in both infrastructures (e.g. the masts in terrestrial distribution) and in

customer relations (e.g., subsidies of set-top boxes). There is frequently no reason to invest or upgrade one of the two, without simultaneously investing or upgrading the other. If such interdependent investments are done by independent companies there is a risk of underinvestment. Conversely, a vertically integrated firms can coordinate the two types of investments better.

A result of the vertical integration is that much of the infrastructural-services market is foreclosed. This appears at least to be the case in the terrestrial and cable segments.[22] Such foreclosure may or may not pose a problem for competition, depending on whether or not there is sufficient competition for the viewers.

Terrestrial distribution

Terrestrial broadcasting services can be broken up into activities along a vertical product chain. The most upstream service that can be described as a broadcasting service is access to the physical structures, including masts and buildings at the mast sites, as well as access to electric power supply and to the cable network that links the masts. A firm that had access at this level could potentially mount their own equipment on the masts and begin supplying broadcasting services. Because the channels are multiplexed, access at this level would probably require that the access-based broadcaster operated at least a whole multiplex.[23]

However, since spectrum availability limits the number of muxes to five (and maybe up to seven in the future), it is not clear that this type of access-based entry would result in efficient competition. Also, there may be practical problems that prevent competing rival broadcasters from mounting equipment in the existing masts.

Moving down the value chain, access could be at the level of feeding signals to Teracom, who would then broadcast the signals via existing muxes. The signals could be delivered to Teracom after multiplexing, in which case the access-based broadcaster must sign up all channels in the multiplex, or multiplexing could be done by Teracom.

In either case, the access-based broadcaster could enter into commercial broadcasting agreements with free-to-air channels, including SVT, and with pay-TV operators, including Boxer. PTS has ordered Teracom to provide access at these levels.[24] Teracom

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[22] In addition to the vertically integrated infrastructure, pay-TV operators purchase additional infrastructural services. However, this would typically be infrastructural services procured in competitive markets, such as transmission services from back-bone network operators or cable companies' satellite access to TV content. This chapter will focus on the possible bottleneck infrastructural services and pay less attention to infrastructural services that can be bought in competitive markets.

[23] Access to the physical facilities would, in some respect, be analogous to LLUB (Local Loop Unbundling) in telecom markets.

[24] PTS decision 05-8675/23 on 15 December 2005.

is the only firm that is active as a terrestrial broadcaster. Its revenues from selling radio and TV broadcasting services were around SEK 1.2 billion in 2006, including revenues from analogue TV broadcasting. Broadcasting revenues are expected to fall substantially when analogue broadcastings are discontinued.

According to SVT's annual report for the same year, SVT paid around SEK 0.5 billion for broadcasting. We presume that this means that the charge for using the mux with the most extensive coverage is less than SEK 500 million, since SVT had to pay for analogue broadcasting during 2006. This leaves around SEK 700 million for the four other muxes and for analogue broadcasting of TV4.

Satellite distribution

Currently, two satellite operators broadcast satellite TV to the Nordic region: SES, via its satellite Sirius, and Telenor, via its satellite Thor. However, a satellite located over Europe can change its broadcasting focus between regions within Europe. In 1995, several European satellite broadcasters were active, providing a total of around 250 transponders with a total turnover estimated to be around EUR 625 million. The satellites that broadcasted over the Nordic region had 5-10 transponders each. The cost of purchasing and launching a satellite was estimated to be SEK 1-2 billion.[25] At that time, each transponder could broadcast a single channel, while today they can broadcast 6-10 channels. It is our understanding that modern satellites also have a higher number of transponders.

During 2007, SES will launch a new satellite, with 20 transponders for the Nordic region and an equal number for other European regions. The total cost is reported to be SEK 2-3 billion and each transponder will be able to broadcast three or four HDTV channels.[26]

As far as we can understand it would be possible for a pay-TV operator to buy satellite services from existing satellites. Such new entry into the satellite segment might not be profitable however, due to the intense competition between satellites and the need to acquire expensive exclusive distribution rights to premium contents. Nevertheless, we see the market as competitive.

Cable distribution

It appears unlikely that a cable operator would allow a rival pay-TV operator access to its infrastructure. One reason is that many infrastructures do not allow multiple operators for technical reasons. But even absent this restriction, it would most likely be unprofitable.

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[25] See the EU Commission's decision in M.490 - Nordic Satellite Distribution.

[26] Ny teknik, 21 December 2006.

This means that there exists an infrastructural bottleneck that is controlled by the vertically integrated cable operators (primarily Com Hem).

Two developments have, at least to some extent, begun to erode the entry barriers that protect the incumbent cable companies. First, the introduction of fast ADSL services via TeliaSonera's copper-based networks has resulted in a situation where there are, in many buildings, two networks that can potentially support pay-TV services. Second, the roll-out of high-speed city networks has shortened the average distance between the competitively provided back-bone network and the intra-building networks. Often, the city networks connect all the way to the intra-building networks. The city networks have been laid down both by private and public enterprises, in many cases with subsidies from the central government. Still, the cable companies' proprietary networks constitute a bottleneck.

5.2.2 Free-to-air

The Government's instructions (i.e., SVT's "anslagsvillkor" or "regleringsbrev") stipulates that SVT's channels must be accessible to the general public without any payments in addition to the TV-fee.[27] Today, SVT's channels are distributed in the terrestrial net as well as by both the satellites and essentially all the cable networks.

Terrestrial distribution

SVT's license ("sändningstillstånd") to broadcast its channels in the terrestrial net stipulates that at least 99.8 percent of the population should be able to receive SVT's channels through the terrestrial net (via a roof-mounted antenna ten meters above the ground). SVT thus has no possibility to substitute other forms of distribution for terrestrial distribution.

Since SVT's channels are sent free-to-air in the terrestrial net, there is no need for any SMS-function and SVT contracts directly with the network operator. Currently there is only one terrestrial net and only one operator, namely Teracom. Teracom is financed through the prices it can charge for distribution services.

Currently, Teracom has an exclusive right to broadcast analogue TV via a terrestrial network. The government has indicated that it wants Teracom to provide these services at cost, but this is not formally regulated in law or in Teracom's charter ["bolagsordning"]. According to the transparency directive, however, Teracom's accounting must separate the costs and revenues from these exclusive services from other services. In addition,

[27] We limit our discussion of the free-to-air channels' acquisition of distribution services to SVT.

PTS has ordered Teracom to provide access at cost-based prices to its infrastructure for TV broadcasting.[28]

SVT and Teracom are both publicly owned, but their contract is at least formally subject to a commercial negotiation. To understand this negotiation, it is essential to investigate what would happen if the two companies would not come to an agreement. This is usually referred to as the "threat point" in economic parlance.

It is SVT and not Teracom that owns the license to broadcast in the terrestrial net. SVT could then, in principle, contract with some other provider of terrestrial distribution. The problem is that currently only Teracom has the necessary infrastructure. In principal there are two alternatives for the competing company: to rent the necessary capacity from Teracom (we label this access) or to build new infrastructure (we label this bypass).

Access. Access to Teracom's network is guaranteed as a result of a regulatory decision by PTS, based on the E-com Act. Access should be provided at cost-oriented prices. PTS decision is based on the notion that it would not be economically viable to duplicate the necessary infrastructure for an entrant (i.e., that bypass is not a realistic alternative). Today, SVT expects that there exists at least one or two realistic alternatives to Teracom, based on access.

Since it is SVT that owns the license to broadcast, SVT does not need to compete with any other channels for a place in the distribution network. The negotiation between SVT and the potential distributors is, therefore, similar to an auction where the distributors will compete for the contract with SVT.

According to standard auction theory the terrestrial operators will offer a price equal to their cost of providing the service. The entrant will thus offer a price equal to the wholesale price it has to pay Teracom for access to the network plus its own "retail" cost. Teracom will offer a price equal to the wholesale price it has to offer for access to the network (this is the value of the net in alternative use) plus its own "retail" cost.

What is noteworthy is that even if Teracom formally faces competition on just a small part of the value chain and even if Teracom and the competitor have similar costs for the retail part, Teracom so-to-say competes with itself on the network part. The intensity of this competition is determined by the access price. Assuming this price to be equal to cost, including a market based return on investments, the outcome will be the competitive price. Production will be organized in an efficient, cost-minimizing, way. Note that this outcome depends on the access obligation imposed by PTS.

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[28] See PTS's decision 05-8674/23, December 15, 2005, on access conditions in the market for analogue TV broadcasting and decision 05-8675/23, December 15, 2005, on access conditions in the market for digital TV broadcasting.

Bypass. In principle, the competing company could also build a new infrastructure. Permission to build a new distribution network would be granted by on the ground that the company has a customer with a license. This alternative would, however, require substantial additional investment costs. Teracom has a huge competitive advantage because of its already established network and because the program companies may not be able to coordinate a switch from Teracom to another broadcasting company. An auction would imply that Teracom would gain the contract, and the price would be equal to the competitors cost, including investments in the new infrastructure.

Are all the regulations necessary? It is the requirement that SVT must be accessible in the terrestrial net which makes SVT vulnerable to Teracom's market power. Absent this requirement, it is likely that SVT would have much more market power over Teracom than vice versa. The reason is that it is relatively easy for most of the viewers to switch to satellite distributors, but that they probably have rather strong preferences for watching SVT over alternative channels. Even absent this requirement, one may expect SVT to have a strong preference for being available also in the terrestrial net. Still, its freedom to choose would enable it to gain better conditions for this service. If SVT would be free to chose the form of distribution there would probably be little reason to regulate Teracom.

Satellite

SVT is distributed by both Canal Digital and Viasat. SVT considers satellite distribution important, even if one could argue that its presence in the terrestrial net fulfills its obligation to be accessible to the public without cost. At least one reason is the presumed reluctance by the households to install two digital boxes, one for terrestrial and one for satellite signals. SVT has even gone further than this by ensuring that Canal Digital and Viasat offer their customers the possibility to watch only SVT and TV4 by buying a special subscription.

The satellite distributors compete head on with each other, and they probably also compete with terrestrial distribution. By not carrying SVT, a satellite distributor would be at a serious competitive disadvantage. The other satellite distributor would then be a de facto exclusive satellite distributor and the viewers would have a strong preference to choose this distributor.

As we understand it, SVT would be free to charge the satellite distributors for the distributions rights. In practice, however, it seems that SVT's does not use its bargaining power to collect such a fee. We cannot verify this since the contracts are subject to normal commercial secrecy. A positive result of this is that it does not put the satellites on a competitive disadvantage relative to the other distribution platforms.

Cable

The cable networks must carry SVT's channels according to the Radio and Television Act (Radio och TV lagen). This obligation is subject to the condition that the cable network distributes signals received by satellite.

It is not clear that the must-carry obligations fulfill any useful purpose. Not carrying SVT would most certainly be a quick exit strategy for any TV-distributor in Sweden.

Conclusions

Several of the regulations surrounding the distribution of public service appear unnecessary and possibly counter productive. SVT should have much bargaining power vis-à-vis the distributors by virtue of its size and program quality, if regulation did not mandate that SVT is broadcasted in the terrestrial network.

6 Regulatory Framework

6.1 Legislation

The TV market is subject to a number of regulations, such as regulation of advertising, technical standards for broadcasting and allocation and use of spectrum. However, our focus is the economic regulation of TV distribution: access regulation, regulation of prices and other economic conditions for TV *distribution*. This type of regulation was previously found in the Radio and TV Act (Radio- och TV-lagen, 1996:844), but since the introduction of EU's regulatory framework for electronic communication, this framework has been the basis for economic regulation of TV distribution in Sweden.

However, the Radio and TV Act (Radio- och TV-lagen, 1996:844) still plays a role. It stipulates that the government and the Swedish Radio and TV Authority decide which channels that are allowed to broadcast in the terrestrial network. In addition, as discussed in detail in Section 7.2, the act in practice gives Boxer a monopoly over SAS (Subscriber Access Systems), which in turn gives the company a monopoly over pay TV based on terrestrial broadcasting. Of importance is also the act's requirement that cable operators distribute public-service channels (the must-carry obligation) and SVT's obligation to reach almost the whole population via the terrestrial network. The latter two requirements were discussed in the previous chapter.

By and large, there is free entry into the satellite and cable infrastructural markets and the infrastructural service providers are free to enter into contracts with the pay-TV distributors (to the extent that they are not vertically integrated). For this reason, we will focus on legislation concerning terrestrial distribution. Since we will also discuss the applicability of general competition law on the TV market, we will briefly mention a few aspects of this legislation.

The E-com framework and the Swedish E-com Act

The EU regulatory framework for electronic communications (the "framework") comprises a series of legal texts and associated measures that apply throughout the 27 EU Member States. The goals of the framework are to encourage competition in the electronic communications markets, to improve the functioning of the internal market and to guarantee basic user interests that would not be guaranteed by market forces. The framework sets out to provide a set of rules that are simple, aimed at deregulation, technology neutral and sufficiently flexible to deal with fast-changing markets in the

electronic communications sector.[29] On the national level, the Member States instigate legislation that corresponds to the EU regulatory framework. In Sweden, this was done via the Swedish E-com act (Lag om elektronisk kommunikation, 2003:389), which entered into force on 25 July, 2003.

The practical consequence of the framework (including national legislation) is that it gives the National Regulatory Authorities (NRAs, such as PTS, the Swedish National Post and Telecom Agency) the power to regulate the provision of infrastructural services in the field of electronic communication. Mainly, the legislation applies to telecom (voice and data traffic), but also to broadcasting (transmission) services – TV and radio. The framework is flexible, in the sense that the degree of regulation (the "obligations") vary depending on how competitive the market at hand is. If competition is effective in a particular market, no obligations will be imposed. As the competitive conditions becomes progressively worse, stricter and stricter obligations can be imposed by the NRA. For example, the NRA may impose transparency in the pricing of access services, non-discriminatory pricing of access services or price control of such services, depending on the perceived lack of competition in the relevant market.

To a large extent, the framework is based on methods and legal standards developed within the field of competition law. The analysis leading up to the imposition of obligations is carried out in three main steps. In the first step, the relevant markets are defined. As is the case in competition law, the relevant market is defined in two main dimensions: the product market and the geographical market. Relevant markets are defined according to the same principles as those developed in competition law.[30]

Under the framework, 18 product markets have been pre-defined by the EU Commission.[31] (Currently, these definitions are under review and it is likely that fewer markets will be pre-defined after the revision.) This is in contrast with competition law, where markets are defined idiosyncratically for each case. Furthermore, three criteria that are specific to the framework are added to those that are used in competition law: there

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[29] See http://ec.europa.eu/information_society/policy/ecomm/todays_framework/index_en.htm for extensive information on the legislation and

http://europa.eu.int/eur-lex/pri/en/oj/dat/2002/c_165/c_16520020711en00060031.pdf (Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services, 2002/C 165/03), the "Guidelines", for a relatively concise treatment of the main elements of the analysis.

[30] For a general introduction into market definition, see the EU Commission's "Commission notice on the definition of the relevant market for the purposes of Community competition law", 1997.

[31] See the Commission Recommendation on relevant product and services markets within the electronic communications sector, at http://ec.europa.eu/information_society/topics/telecoms/regulatory/publiconsult/documents/relevant_markets/l_11420030508en00450049.pdf

must exist high and non-transitory entry barriers in the market, the market must not be characterized by dynamic competition (a tendency to move towards effective competition) and competition law must not be sufficient to resolve the competitive problems of the market.[32]

It follows that the standards for defining a relevant market are more stringent than under competition law; a market defined under the framework must not only be a relevant (competition law) market, it must also satisfy the three additional criteria.[33] Of the pre-defined markets, 17 concern telecom and one concerns broadcasting services. NRAs that wish to define additional relevant product markets have some, but limited, leeway to do so.[34] According to the Commission's guidelines on market analysis under this framework, the NRAs will "normally" only have to define relevant geographical markets.[35] However, the NRAs may deviate from the pre-definitions if national circumstances so require.[36]

Also in the first step, the NRAs define the relevant *geographical* market.

In the second step, the NRAs analyze the degree of market power held by the firms in the relevant market. More specifically, the NRAs assess whether there is a firm that is individually dominant or a group of firms that are collectively dominant, using standards and methods developed in competition law. If such dominance is found, the firm or firms are declared to have Significant Market Power, SMP. The Guidelines emphasize that a finding of dominance is equivalent to a finding that the market is not characterized by effective competition (and conversely, see para. 112).[37]

In the third step, the NRA may impose obligations. If a company is found to have SMP, then obligations must be imposed. Conversely, a company that does not have SMP may

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[32] See The recommendations, at 9, where these additional criteria are introduced. The guidelines (on market definition), in contrast, only emphasizes the close correspondence with principles and standards for market definition used in competition law (see Section 2). It is not explained in The recommendations why markets should be defined differently under the Ecom directive. A reasonable interpretation, however, is that the more stringent set of regulatory restrictions on firms that follows from the directive should only be applied in such markets where market failure is very persistent and where competition law is ineffective. See Cave et al, 2006.

[33] See Cave, Stumpf and Valletti (2006, see p 5) for a justification of this – that there would otherwise be too many relevant markets.

[34] See the Guidelines, at 29.

[35] The guidelines, at 36.

[36] Framework directive, Article 15 (3).

[37] The also paragraphs 19 and 70 in the Guidelines.

not be subject to obligations. (See the Guidelines, at 114.) As explained above, different types of obligations are available to the NRA. It must choose an obligation (or a set of obligations) that is adequate, while not excessively burdensome for the firm.

When considering the application of the Swedish E-com act on broadcasting markets, the Swedish NRA (i.e., PTS) is supposed to begin its analysis from the market that the EU Commission has pre-defined, i.e., broadcasting services. If special circumstances are at hand in the Swedish market, the authority can deviate from this product market, for example by delineating narrower or wider markets. It also has to decide the geographical scope of the market. The relevant markets can be expected to be somewhat wider in scope than what would be the case if the competition law was applied, because of the three special criteria. Then, an assessment is made of the degree of market power held by the firms in the defined markets. Market power (SMP status) is assessed in the same way as under competition law (dominance). If a firm is found to have significant market power, appropriate measures are imposed. For example, the firm can be required to provide access at cost-based prices.

The competition law

The competition law applies to all sectors of the economy, also to regulated industries. The law centers around three prohibitions. First, firms are not allowed to form cartels or enter into other anti-competitive agreements. Second, dominant firms are not allowed to abuse their dominance. Third, mergers that result in a "significant impediment of effective competition" can be prohibited. For the purpose of this report, we can ignore the first and third prohibition.

The prohibition against abuse applies only to dominant firms. By definition, all firms that have SMP status according to the E-com act will also be dominant. Firms that are found to be dominant are not as free to act as non-dominant firms. For example, they are not allowed to enter into anti-competitive exclusive contracts and they are, sometimes, required to provide access to infrastructural assets under their control. However, it is not illegal to *be* dominant and competition law and the prohibition against dominance abuse places few restrictions on the prices the dominant firm can charge.

For the prohibition to apply, the dominant firm must "abuse" its dominance. This means that the competition authority has a relatively high burden on proof; it must demonstrate that the conduct in which the firm has engaged is "abusive".[38] In contrast, when an NRA applies an act such as the E-com act, there is no such criterion. The NRA has much greater latitude to impose burdensome obligations on dominant firms, not because they

[38] This attempted explanation is somewhat circular, but this is not the place for a detailed analysis of the prohibition against abuse of dominance. Abuse of dominance is a complex issue and we refer interested readers to competition law textbooks and to the large body of economic literature on this issue.

have abused their dominance, but because the market is not working efficiently in the first place.

In summary, the competition law's prohibition against abuse of dominance applies to a larger number of electronic-communication markets than the E-com act does, but once the E-com act applies to a particular market (and firm), it has a stronger "bite" because there is no need to demonstrate that there has been an abusive behaviour.

Market definition

The main purpose of defining relevant markets is, arguably, to build an analytical framework and an understanding of the market. In principle and from an economic point of view, an effect analysis or, e.g., an analysis of market power can be conducted without explicitly defining markets. However, the analytical rigor imposed by an explicit market definition will often be helpful. From a legal point of view, it may of course be necessary to define relevant markets, if the legislator has formulated criteria in terms of relevant markets.

A relevant (competition law) market is defined as an "area" in geography and in product space where an hypothetical monopolist can profitably raise prices above the competitive level for an extended period of time. This definition is captured by the SSNIP-test – an hypothetical test of the profitability of a Small and Significant Non-transitory Increase in Price. For a candidate market to be a relevant market, a price increase of 5-10 % above the competitive level should be profitable.

If a coordinated price increase would not be profitable in the candidate market, because consumers would substitute to products "outside" of the market, the candidate market is expanded and the process is repeated again. For example, if a coordinated 10 per cent price increase by all American producers of war films would not be profitable, because buyers in the content market would then switch to other types of action films or to non-American war films, then "American war films" is a market that is too narrow to be a "relevant" market.

The seemingly simple dichotomy between product space and geography holds a lot of complications. In distribution and network markets (e.g., TV distribution) it is not always easy to separate the product dimension from the geographical dimension. In the example with American war films, "American" should be seen as part of the product market, while the geographical market would be related to geographical demarcations of the broadcasting rights.

Also, an analysis of the relevant product not only entails an analysis of the characteristics of potentially competing products: often the market's vertical boundaries must be defined and sometimes different product markets will be defined for different categories of customers. An example of the former is a distinction between wholesale and retail or between outputs and inputs at different levels along the value chain. An example of the latter would be a finding of separate markets for professional and non-professional buyers

or, closer to our topic, separate market for the provision of some service to public-service channels, to free-to-air commercial channels and to pay-TV operators.

Two final caveats are that market definition is interlinked with the issue to be analyzed and that market definition can change over time. Hence, when we discuss relevant markets in this report, we do not claim that the analysis is in any sense definite and final. Also, we have collected no or very little of the empirical data that is necessary to make a stringent analysis of relevant markets.

6.2 Relevant markets and EC legal practice

When applying competition law or the E-com legislation markets must often be defined, in the product dimension and in a geographical dimension. When the SSNIP test is applied, a typical methodology is to start from a narrow market and then to expand the market until the SSNIP test is answered in the affirmative. If the candidate market is too narrow, increasing the price will not be profitable because consumer will substitute away from the hypothetical cartel of sellers. They can do this either by purchasing outside of the geographical area or by purchasing products with similar characteristics that are not included in the tentative market. Alternatively, producers that currently do not sell products of the kind sold in the candidate market may re-locate, physically or in product space, and begin competing with the hypothetical cartel.

The SSNIP-test methodology may result in a large number of markets, although the additional criteria used in E-com legislation will reduce the number of market. Since there is no point in trying to construct an exhaustive list of all relevant markets in the TV industry under either of the legislations, we will focus on a few markets where we believe that competition is not very strong. In the following two sub-sections, we will focus first on retail markets, in particular the pay-TV market, and then on infrastructural markets.

6.2.1 The pay-TV market and other retail markets

Starting from pay TV, a key issue is whether free-to-air and public-service channels should be included in the relevant market or not.[39] Even if pay TV is found to constitute a separate relevant market (or possibly more than one relevant market), free-to-air and public-service channels may still constitute a competitive constraint in the pay-TV market.

We argue that free-to-air and public-service channels are not part of the pay-TV market. The former are provided for free (for the consumer), while a typical consumer pays at least SEK 200 a month for the latter type of services, at least in a single-family house.

[39] We begin the discussion at the pay-TV level, even though we will later in this sub-section discuss whether pay-TV based on the different broadcasting platforms are separate relevant markets or not.

The typical pay-TV service is comprised of 30-40 channels, most of which cater to niches, such as sports channels, children's channels or music channels.

Clearly, free-to-air TV constitutes a competitive constraint on pay-TV operators. If free-to-air TV did not exist, it is likely that a monopoly pay-TV operator could raise its price. However, according to the SSNIP-test, free-to-air (possibly including public-service channels) must be a quite strong competitive constraint on pay-TV, for these two services to be in the same relevant market.

If, starting from a competitive price of pay TV, an hypothetical cartel of all pay-TV operators could not profitably raise the price of their services with 5-10 per cent, then we would have established that pay-TV is *not* a relevant market. It is likely that free-to-air commercial TV would be the strongest competitive constraint and then we would tentatively include these services in the relevant market and repeat the SSNIP exercise.

However, we do not think that a cartel of all pay-TV operators would be constrained from raising their prices 5-10 per cent above the competitive level. One piece of evidence pointing in this direction is that the entry of the terrestrial pay-TV operator into the market forced the satellite-based pay-TV operators to reduce their prices or to otherwise improve their offers, as discussed below. We whish to emphasize, however, that although our conclusion is consistent with the EU Commission's legal practice, we have done no formal analysis to establish this fact.[40]

Next step in the analysis is to consider whether pay TV is a single relevant market, or whether there are two or more separate relevant pay-TV markets. In Section 3.1, we argued that a main dividing line is that between high-density and low-density areas. Alternatively, there may be a relevant market for each of the platforms. Since the two satellite pay-TV operators will undoubtedly be on the same market and since we see the biggest potential competitive problems for terrestrial and cable distribution, we will in the following focus on these two possible relevant markets.

Is pay TV based on terrestrial broadcasting a separate relevant market?

In pay-TV markets, the question of the geographical scope of the relevant market is co-mingled with the product scope of the market. If the relevant market encompasses both terrestrial, satellite and cable networks, the size of the geographical market will be Sweden. If cable is a separate market, then the geographical market for cable pay TV will be the cabled parts of Sweden. For this reason, we will mainly discuss market definition

[40] In M4547, KKR/Permira/Prosiebensat.1, the EU Commission reconfirms that the market for free (commercial) TV is separate from the pay-TV market, with references to earlier cases. It also leans towards a finding of national geographical markets.

in terms of product markets and only return briefly to the geographical market before concluding.[41]

However, we note that the viewers are typically geographically immobile – they want to watch TV in their homes. The distributors' coverage is fixed in the short run. Therefore, in the short run, a distributor's ability to compete for a certain household is determined by whether or not it can reach that household with the existing network, and the degree of retail price competition is determined by the geographical overlap of the networks. The geographical coverage of the distribution networks is therefore the natural basis for geographical market definitions.

The cable networks can reach households in the denser regions of the country, while terrestrial and satellite networks can reach individual households in low-density and medium-density regions and – via landlords and collective solutions – also households in high-density regions. In Section 3.1, we described the differences in competitive situations between high-density and low-density regions. Since these differences are quite large, we believe a natural starting point is to assume that these two regions are not in the same relevant market.

In order to apply the SSNIP test to terrestrial pay TV, we need to know three facts: the competitive price of terrestrial pay TV, the price elasticity of pay-TV services (at the competitive price) and the price/cost margin of terrestrial pay-TV operators (also at the competitive price). In practice, we have no definite knowledge of any of these facts.

Assume, initially, that terrestrial and satellite pay TV are in fact separate relevant market. Then, if Boxer is maximizing its profits, as we believe it is, it would already have increased its price above the competitive level. In fact, it should already be charging prices that maximize its profit and, hence, *no* price increase above the current level should be profitable. If the SSNIP test is applied to the *actual* price level, rather than to the *competitive* price level, the test will be answered in the negative. Still assuming that terrestrial and satellite pay TV are separate relevant markets, a naïve application of the SSNIP test to actual prices may erroneously lead an analyst to conclude that terrestrial distribution is a separate market. This is the so called cellophane fallacy.

Despite our lack of precise measures of the three facts that are required for a SSNIP test, it may be instructive to outline how a SSNIP test could be made. Since pay-TV is a

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[41] Since the households do not have the ability to substitute delivery of TV services at one location for another location, one may be tempted to define each household as a separate geographical TV market. This would not be a reasonable methodology in our view. A distributor/SMS cannot treat each household as a separate market since it will only possess aggregate information about demand for a much broader area. Even if a firm would have information about different households, it may still have to charge the same price due to the threat of arbitrage. Also in this case the firm would partition the country into broader geographical markets.

product that can be differentiated in many dimensions, we will use 10 per cent as our critical level. There are three hypothetical tests that can be done.

i) Could Boxer profitably raise prices 10 per cent above the current level?

ii) Could Boxer, Canal Digital and Viasat profitably raise prices 10 per cent above the current level?

iii) Are there reasons to believe that Boxer's current price level is at least 10 per cent higher than the competitive price?

If the answer to the first and second question is no and yes, respectively, this is consistent with terrestrial *and* satellite pay TV being a relevant market. Unfortunately, because of the cellophane fallacy, these answers would also be consistent with Boxer being a monopoly in one relevant market and Canal Digital and Viasat being competitors in another relevant market.[42] Hence, for our purposes, the key question is the third one.

Boxer and both Telenor's and MTG's broadcasting divisions, which includes Canal Digital and Viasat, respectively, report profit margins in the 15-20 per cent range.[43] (For comparison, Com Hem's profit margin is about twice as high.) The package of channels each of them offer in their "medium" packages (Boxerpaketet, Silver and Familjepaketet, respectively) would cost a small SMATV network SEK 100-200, while the pay-TV operators' retail price is SEK 200-245.[44] Without specific knowledge into this issue, we assume Boxer's programming costs are slightly less than 50 per cent of the retail price, or around SEK 85.

In addition, there are variable costs for billing and customer support. In this context, subsidies of set-top boxes can be seen as a variable cost, since higher prices would reduce the inflow of customers and hence the need for subsidies. However, the subsidies should be spread over the expected time the customer stays with Boxer. The broadcasting cost and some of the staffing cost can be treated as fixed costs.

Boxer's profit margin corresponds to a per-customer monthly profit of SEK 35. Again without specific knowledge we assume that the remaining SEK 80 (i.e., the difference between 200 and 85+35) can be split equally between fixed and variable costs. With these assumptions, a 10 per cent price increase from the *current* level would be profitable

[42] This analysis would, for example, be relevant when analyzing a merger between pay-TV operators.

[43] See the companies' annual reports for 2006.

[44] See the Appendix.

for Boxer if the own-price elasticity it faces is less than approximately 2 and unprofitable if the elasticity is higher than 2.[45]

If Boxer's own-price elasticity is such that a price increase is not profitable while, at the same time, the cross-price elasticities between Boxer and the satellite operators is such that a price increase by all three operators would be profitable, then question i) above has been answered in the negative and question ii) in the positive. This would be consistent with terrestrial and satellite pay TV being in the same market. However, as argued above, such a finding would also be consistent with Boxer being a monopoly in a narrower market, where it already had elevated prices above the competitive level.

As already stated above, because of the cellophane fallacy, the appropriate test would be whether the competitive price is at least 10 per cent below the *current* price. Following such a price reduction, Boxer would still be profitable, since its margin is about 16 per cent. Furthermore, Boxer's accounting return on equity was very high, almost 90 per cent. On the other hand, Canal Digital's and Viasat's profit margins appear to be of similar magnitudes. Return on equity is more difficult to estimate for these companies, since they form parts of larger corporations. For comparison, Com Hem's return on equity was approximately 300 per cent in 2006.

Return on equity can vary for a number of reasons. Com Hem is owned by two private equity firms, which have chosen to finance Com Hem via borrowed capital rather than via equity. (I.e., the "leverage" is high: Com Hem has liabilities of around SEK 15 billion, resulting in a large reported loss.) Boxer was unprofitable until 2003. The owners had to invest equity, which was then written off against the losses. Because of this, it is natural that the company now has a relatively high return on equity. What level of return would be justified, however, would require a more extensive investigation than we have been able to do in this report. This applies to Com Hem as well as to Boxer.

One piece of evidence points in the direction of satellite and terrestrial distributors being in the same market. The entry of Boxer into the market appears to have triggered a price and quality war between Boxer, Canal Digital and Viasat. The two satellite operators have reduced prices, they have introduced packages to match Boxer's main package and they compete intensely by offering set-top subsidies and by advertising their prices in media.

In contrast, Com Hem has responded much less strongly to Boxer's entry. In Section 3.3.4 we discussed to what extent cable operators constitute an effective competitive constraint on terrestrial and satellite-based pay-TV operators, and vice versa. Potentially, a chain-of-substitution argument could connect these two segments, which we discussed in terms of high-density and low-density regions, respectively. The link between the two

[45] Applying the SSNIP test on the numbers given in the text yields a critical elasticity of $\varepsilon = (1-(200-125)/(220-125))/0.1 \approx 2$ for a 10 per cent price increase.

segments would be SMATV. However, we argued that the chain-of-substitution effect is not particularly strong in the pay-TV market.

We do not consider this a full-fledged market delineation, but we think the facts point in the direction of pay-TV operators based on terrestrial and satellite broadcasting being in the same relevant markets, while pay TV via cable networks constitutes a separate relevant market.

We should emphasize that we may acquire more information in the future when the analog network is closed down and the two platforms need to start poaching customers from each other if they wish to grow. It is possible that the own-price elasticities that the companies now respond to is based on "free" customers, i.e., customers that have not yet signed up for any of the platforms. In the future, when the market has stabilized, the operators will to a larger extent be competing for customers that already subscribe to a pay-TV service and these customers are likely to be less price sensitive.

EC legal practice

In EU merger case M1439, *Telia/Telenor* (1999), the parties argued that the pay-TV market should be divided into separate markets: one for cable TV and one for satellite TV. The main basis for this claim was that the substitutability between cable and satellite pay-TV packages was "negligible"; Telia stated that during three years they had not lost a single customer to digital pay TV.[46] The EU Commission, however, leaned towards a finding of a joint market for pay TV distributed via cable and satellite, although it did not take a definitive stance. In particular, it argued that there was a tendency for the two technologies to become more substitutable.[47] Similarly, in case M3609, *Cinven/France Telecom Cable/NC Numericable* (2005), the EU Commission appeared to lean towards a finding that pay-TV based on the different modes of distribution were in the same relevant market and cited earlier cases where such a conclusion had been reached.

In earlier and more recent cases, however, the EU Commission has often leaned towards a finding that cable TV and satellite TV are different relevant markets, or even established outright that this is the case. See, e.g., M4217, *Providence/Carlyle/UPC Sweden* (2006), IVM.490 *Nordic Satellite Distribution* (1995) and M1027 *Deutsche Telekom/BetaResearch* (1998).

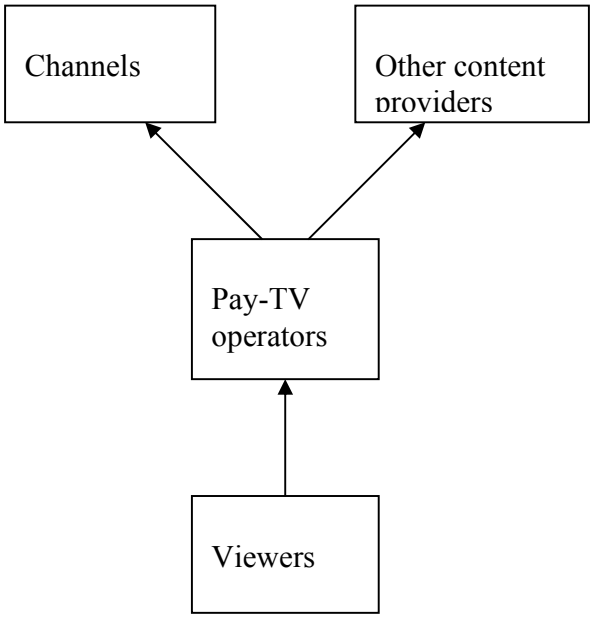
In our view, the analytical framework that has been used in most EU cases that has concerned the TV market can be illustrated by Figure 6. Pay-TV operators acquire content in bundled form, i.e., channels, or directly from the content providers, i.e., Hollywood studios or sports-event organizers. Often, a main concern has been the content

[46] At 268.

[47] At 269, 274-276, 279.

markets. The EU Commission has found that there are several separate relevant content markets, including channels, Hollywood-studio content, football and other main sport events.

Figure 6. The analytical framework in EU's TV cases



The EU Commission has also found that markets stop at national borders or follow linguistic areas and that pay TV and free-to-air commercial TV are separate markets.[48]

Free-to-air and pay TV

Since we have identified no competition problems in any retail market besides pay TV, we have not looked carefully into how other retail markets could be identified. In line with EC practice, we think it would be reasonable to separate free-to-air TV from pay TV and both of these from public-service TV. Free-to-air TV, however, is a two sided market, where the sellers only get revenues on the advertising side of the market. In a similar manner, public-service TV does not charge viewers directly, so there is no relevant market in a traditional sense.

Conclusions

Mainly due to differences in geographical footprints between the techniques, we believe that there is one relevant market consisting of pay-tv distributors based on satellite and terrestrial platforms, and one relevant market consisting of cable operators. The cable segment may even be too broad to constitute a single relevant market.

[48] See the merger cases referred to previously in this section.

This is despite the fact that SMATV to some extent is a bridge that links the two segments: SMATV based on terrestrial and satellite broadcasting is potentially efficient in high-density areas. (There are some problems due to content rights: operators cannot automatically transform digital satellite or terrestrial signals into analogue signals within the SMATV network.)

IPTV is a nascent technology that is challenging the cable networks. In the future, IPTV has the potential of becoming competitive in high-density areas and also in many low-density areas. This will increase the overlap between the platforms and may result in pay TV becoming a single relevant market.

At the moment, however, a number of circumstances suggest that there are two relevant pay-TV markets, rather than one or three. The most important reasons for believing that terrestrial and satellite pay TV are on the same market is the seemingly intense competition for new customers and the price and quality response of the satellite operators to Boxer's entry. The most important reason for believing that cable pay TV is a separate market is the apparent lack of similar competition between Boxer and Com Hem, the fact that Com Hem mainly contracts with landlords and its very high market share in high-density areas.

6.2.2 Infrastructural services

Infrastructural services based on a specific broadcasting platform will be a (competition law) relevant product market, distinct from services based on other platforms, if the buyers in the market cannot easily substitute between platforms. According to the SSNIP test, a relatively large fraction of the customers should stop buying a given category of products in response to a 10 per cent price increase above the competitive level, for the product category not to be a separate relevant market. The buyers of infrastructural services are pay-TV operators and program companies offering public-service TV or commercial free-to-air TV. For a number of reasons, we think that the different platforms will not be easily substitutable for these buyers.

Pay TV

A pay-TV operator will have made significant investments while building a customer base, including subsidies to a stock of set-top boxes that that tend to be platform specific. Even more critically, the operator's customers will be located in areas where a particular platform is competitive. Hence, a satellite-based operator cannot migrate its customers to a cable network or vice versa.

The substitutability between terrestrial and satellite distribution is likely to be limited, from the perspective of a pay-TV operator, not only because of investments in platform-specific set-top boxes. The set of channels different distributors have made agreements with is not identical. A channel that is currently available on a satellite platform may not have a license for terrestrial distribution. Content property rights may be limited to a

certain distribution mechanism, customers will be reluctant to change the antenna for a satellite or vice versa.

For the above reasons, a pay-TV operator is unlikely to move from one platform to another, in response to a price increase of 5-10 per cent. The very fact that all distributors are vertically integrated in itself suggests that the substitutability is limited: limited substitutability in combination with mutually interdependent investments at different levels of the value chain is a strong incentive to vertical integration.

Free-to-air commercial TV and public service

We note that no individual channel or program company purchase distribution directly from satellite or cable operators. Equivalently, the only Swedish customers of satellite or cable distribution are pay-TV operators.[49]

In the terrestrial network, however, free-to-air commercial channels and SVT purchase distribution services directly. SVT, the public-service programming company, is required to broadcast via the terrestrial network. Hence, it is impossible for SVT to respond to price increases by moving to another platform. Specifically, the public-service channels must be broadcasted in such a way that 99.8 per cent of the population can receive signals via a roof-mounted antenna. Taking this regulation as given, terrestrial distribution of public service is certainly a distinct relevant market. However, as argued in Section 5.2.2, if this requirement were lifted, SVT would have a much stronger position vis-à-vis Teracom. Possibly, this would result in a wider relevant market, given SVT's extremely strong position, since many viewers are likely to follow SVT if SVT were to migrate to another platform. Certainly, it would give SVT strong countervailing bargaining powers and it is likely that Teracom would no longer be dominant even if the market is still as narrow as terrestrial distribution of public-service TV and even if Teracom is still nominally a monopoly in that market. (See further the discussion below.)

We think that it is unlikely that commercial free-to-air commercial program companies would substitute satellite or cable broadcasting for terrestrial broadcasting in response to a small price increase of the latter service. The only free-to-air channel that has an overall appeal to viewers that approaches that of SVT is TV4. For smaller free-to-air channels, very few viewers would follow the channel to another platform.

For the above reasons, we argue that also for free-to-air commercial channels and for public-service TV, terrestrial distribution services is a relevant market that is distinct from the other platforms.

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[49] The satellite distributors do, however, broadcast SVT's channel, because this is convenient for their DTH customers. It may also be argued that landlords purchase distribution services when they contract with, e.g., Com Hem to get access to a basic package of channels that is included in the rent.

EC legal practice under competition law

In the EU cases concerning cable TV, the EU Commission has typically not made a distinction between infrastructural services and retail services, mainly because these services are virtually always vertically integrated within one firm (as far as the bottleneck infrastructure, the "access network", is concerned.) As discussed in the previous section, the EU Commission has often, but not always, tended to see the market for (retail) cable TV as distinct from the market for satellite TV.

Satellite broadcasting services is not vertically integrated with satellite-based pay-TV services to the same extent. Consequently, the (wholesale) market for satellite broadcasting services has been analyzed separately, for example in M.490, *Nordic Satellite Distribution*. As mentioned previously, the EU Commission found satellite broadcasting to be a separate relevant product market and established that the corresponding geographical market was Nordic. A similar conclusion was reported in M.1439, *Telia/Telenor*.

As far as we are aware, terrestrial distribution services have not been explicitly analyzed in any competition-law case.

Conclusions on (competition law) relevant markets

Except for regulation that prevents this, Teracom could potentially price discriminate between different customer categories: SVT, free-to-air channels and Boxer. SVT cannot change its public-service status, but commercial channels can decide whether they want to be free-to-air or pay-TV channels. For this reason, it appears reasonable to define broadcasting of public-service TV as a separate product market. It may also be reasonable to define broadcasting of all commercial channels as an integrated product market, but we have not analyzed this issue in depth.

For the above reasons, we argue that, from the point of view of the buyers of broadcasting services – mainly pay-TV operators, but also free-to-air commercial and public-service channels in the terrestrial network – each platform represents a distinct relevant product market. Because of public-service TV's obligation to purchase terrestrial broadcasting services, we view terrestrial broadcasting of public-service TV as a separate relevant product market.

The relevant geographical market is Sweden for terrestrial distribution and Sweden or smaller for cable distribution. For satellite distribution, the EU Commission argued that the geographical market was the Nordic region.[50] We have not analyzed this issue, but it appears likely that the market is at least Nordic.

[50] See the EU Commission's decision in M.490 - Nordic Satellite Distribution.

Market definition under the E-com directive

In its recommendation on relevant market for the application of the E-com directive, the EU Commission defined a market for "Broadcasting transmission services, to deliver broadcast content to end users".[51] The Swedish Postal and Telecom Agency (PTS) interpreted this as "services provided by companies that control networks that are used for broadcasting of TV and radio content"… "directly to consumers".[52] The buyers in this market are (radio and TV) program companies and pay-TV operators. PTS found that each broadcasting platform constituted its own separate relevant market: terrestrial, satellite, cable and perhaps also IPTV and internet TV. Furthermore, terrestrial broadcasting was further sub-divided into two TV markets, analogue and digital, and a radio market. For the other platforms, no distinction was made between radio and TV or between digital and analogue broadcastings. (See also the discussions in Sections 5.2.1 and 7.3.)

Dominance, the three special criteria and SMP status

In order to establish that a firm has SMP status, it is not sufficient to define the relevant market according to the methods from competition law. Two additional steps are necessary. First, the firm must be found to be dominant. Second, the market must fulfil the three additional criteria that are particular to the E-com framework: entry barriers must be high, there must not be dynamic competition and ordinary competition law must not be sufficient to address the competitive problems.[53]

Dominance, according to competition law and practice, can be seen as a high level of market power. A first and rough measure of market power is market shares. Teracom has a monopoly, while the owners of cable-TV networks may be seen as monopolists in their own networks. Alternatively, Com Hem has a market share around two thirds of a broader cable market. The satellite operators have roughly equal shares of the market, although Canal Digital/Telenor appears to have a somewhat stronger position, in

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[51] See Commission recommendation of 11 February 2003 on relevant product and service markets within the electronic communications sector.

[52] PTS's decision 04-6953/23, p. 7, our translation from Swedish.

[53] An analysis of entry barriers is necessary also for a finding of dominance under competition law. Hence, from a theoretical point of view this criterion appears to add nothing to the analysis. However, from a practical point of view this criterion means that entry barriers are analyzed by the EU Commission when they pre-define relevant markets. Possibly, this can have the effect that it will be difficult for NRAs to find SMP status in a product market where entry barriers are typically (in most member states) relatively low, although entry barriers happen to be high in one or two countries. Because of this legal structure, we postpone the discussion of entry barriers, even though this is a key aspect of market dominance.

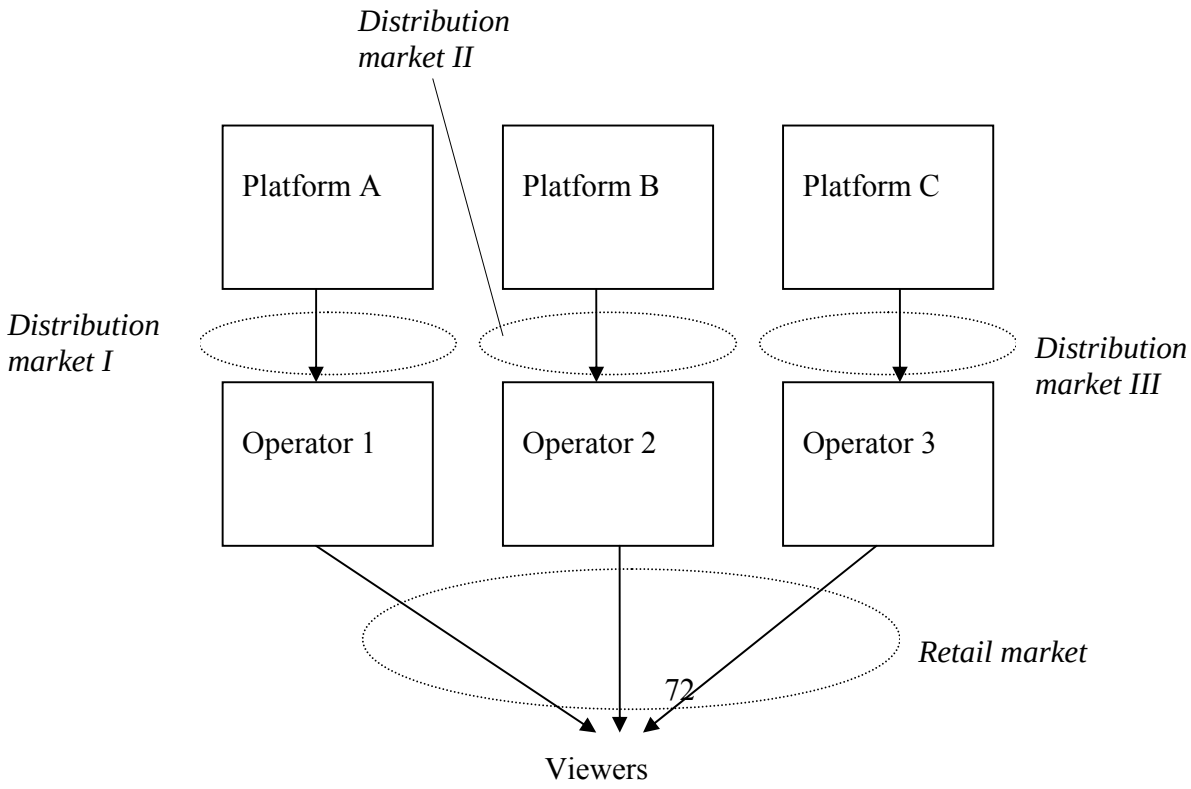
particular considering Telenor's extensive ownership of other TV platforms and associated services.

Dominance in the market for infrastructural services to pay-TV operators – the effect of indirect constraints

The downstream competition between different pay-TV platforms and the vertical repercussions of this competition suggests that even a monopoly over a particular platform may not be sufficient to be dominant in an infrastructural-services market. If there is effective competition in the downstream pay-TV market, an upstream monopolist would not be able to raise prices much above the competitive price level. If it tried to raise its price, its customers (the pay-TV operators based on this particular platform) would then no longer be competitive vis-à-vis operators based on other platforms. This phenomenon is sometimes called indirect constraints.

A market configuration where indirect constraints can be effective is illustrated in Figure 7. If, for example, platform A tried to raise its price, operator 1 could (by assumption) not purchase distribution services from platforms B or C. However, competition in the retail market would not allow operator 1 to raise its price. A large increase of the price for infrastructural services would make it unprofitable and would, eventually, force it to exit from the industry. This would leave platform A with no – or at least much fewer – customers. In markets where indirect competitive constraints of this type are effective, an upstream monopolist may not be considered dominant.

Figure 7. Indirect constraints from a competitive downstream market can prevent upstream firms from being dominant in monopoly relevant markets



Our analysis of competition in the retail segment of the pay-TV market (see Chapter 3 and Section 6.2.1) suggests that competition between pay-TV operators based on terrestrial and satellite platforms is more intense than that between cable operators and operators on the other two main platforms. We argue that the cable market is a separate relevant market at the retail level, while the other two platforms compete in the same relevant market. This suggests that there is dominance in the provision of cable-TV distribution services, but neither in terrestrial nor satellite distribution services.

Dominance in the market for infrastructural services to public-service TV

For public-service TV, the same logic does not apply. Since SVT has to buy from Teracom and since SVT is not exposed to the same kind of competition in the downstream market, Teracom could potentially be dominant in the market for terrestrial broadcasting of public-service TV. However, Teracom could still fail to be dominant in a competition-law sense if SVT has sufficient countervailing bargaining power.

The relation between SVT and Teracom and the two firms' relative bargaining strengths have already been analyzed in Section 5.2.2. We argued that SVT is weakened by regulation that mandates that SVT is broadcasted in the terrestrial network, but that primarily because of the access requirement imposed on Teracom by PTS, SVT still has a relatively strong position. However, when analyzing dominance/SMP, regulation that is a consequence of the E-com act cannot be considered, since that would be circular.

To understand the negotiation between SVT and Teracom in the hypothetical situation where Teracom is *not* required to provide access, we must speculate what would happen if they would not come to an agreement in such a setting. This is usually referred to as the "threat point" in economic parlance.

It is SVT and not Teracom that owns the license to broadcast in the terrestrial net. In case negotiations with Teracom fails, SVT could then, in principle, build a new broadcasting network or it could contract with a third firm that would then have to build new infrastructure. This is likely to be a very costly alternative. SVT's public-service status makes it difficult for it to undertake major investment projects of this kind itself. Furthermore, SVT declares that, because of the need for technical coordination, they would only be interested in a solution that allows distribution in the whole country. As a result, it would not be possible for an entrant (or SVT itself) to build a new network in only (say) the Stockholm area and then to expand this network gradually.

Teracom, on the other hand, depends on SVT for a large but not overwhelming fraction of its revenues. Currently, charges to SVT account for more than 40 per cent of Teracom's broadcasting revenues and more than 15 per cent of total revenues. This fraction is likely to fall when analogue broadcastings are terminated. If SVT and Teracom failed to come to an agreement, SVT's frequencies could not be given to Boxer or to free-to-air channels, since the broadcasting license is given to SVT.

From a purely commercial point of view, it appears that Teracom would have the upper hand in a situation where PTS had not required access to the terrestrial network. On the other hand, both SVT and Teracom are government owned. If Teracom tried to charge SVT exorbitant prices, SVT could almost certainly use political contacts to prevent this. For the same reason, it may also be difficult for Teracom to discriminate SVT by charging higher prices than those charged to commercial companies. It is not given, however, that such political considerations should enter into an analysis of market dominance.

In conclusion, SVT is likely to be able to exert relatively strong countervailing power, but it may still possible to come to the conclusion that Teracom is dominant in this market, in particular if "political" aspects of bargaining process are not considered. SVT is forced to buy from Teracom and, to some extent, SVT buys a service that is not exactly comparable to services procured by commercial program companies and Boxer.

PTS's access decision will, of course, influence the bargaining situation, as argued in Section 5.2.2, but this cannot be used in an analysis of the legal basis for the very same decision. In addition to dominance in a competition-law sense, the relevant market must also satisfy three "special" criteria: that entry barriers are high, that the market is not dynamic and that competition law is not sufficient.

The three "special" criteria

Entry barriers are likely to be relatively high into all three markets for distributional services. Teracom's material assets had a book value of around SEK 3 billion at the end of 2006 and the replacement value is likely to be a lot higher. The accumulated purchase value of all material assets (i.e., ignoring depreciation) was approximately SEK 6 billion, while investments amounted to SEK 250 million in 2006. Furthermore, since viewers' antennas are directed towards broadcasting masts and since, therefore, a new mast in a different location may require that a second antenna is installed, it is difficult to enter on a small scale. For reasons discussed previously, it is also difficult to enter on a small geographical scale.[54]

The cost of launching a broadcasting satellite is reported to be up to a few billion SEK. However, since satellites have multiple transponders and since these can broadcast in different directions, it is likely that entry can occur on a smaller scale than for terrestrial broadcasting. Still, entry barriers are likely to be relatively high.

On a per-customer basis, the costs of building a cable access networks are likely to be very high in large parts of Sweden, although more moderate in some dense regions and in newly built apartment blocks or suburban areas. In principle, entry on a relatively small

[54] Spectrum scarcity, however, does not constitute an entry barrier, since broadcasting licenses are controlled by the programming companies.

scale is possible, as evidences by SMATV networks. However, for the majority of existing cable customers entry costs are likely to be very high for a potential new rival.

In conclusion, all three markets are likely to meet the criteria of high entry barriers.

The lack-of-market-dynamics criteria is clearly better satisfied for the cable market than for terrestrial and satellite broadcasting markets, since the competition between the two latter is more intense than that between cable and the other platforms. The migration to digital broadcasting has triggered more change in the terrestrial/satellite segment, although the IPTV is expected to affect all current platforms. We conclude that it is more difficult to claim that the market for terrestrial broadcasting services meet the criteria than to claim that the market for cable-based broadcasting does so.

We argue in Chapter 7 that competition law *may* be sufficient to address the competitive problems we identify in the cable market. Hence, we recommend that the Swedish Competition Authority investigates the cable market. If this investigation demonstrates that competition law cannot resolve the problems, than clearly this third and final criterion would be satisfied. For the satellite segment, we see no important competitive problems at all. Since we argue that terrestrial broadcasting is constrained by competition from satellites, it is not clear that there are important competitive problems that competition law fails to address.

Conclusion on SMP status

Even though there exist separate relevant wholesale (or infrastructural-services) markets corresponding to each of the broadcasting platforms, we argue that because of indirect competitive constraints from the downstream market there is no dominant provider in two of these markets. Since satellite and terrestrial pay-TV operators compete in the downstream market, even monopoly providers of infrastructure fail to have a dominant position. On the other hand, since cable operators face weak downstream competition, an upstream provider of infrastructural services would be dominant.

We argue that there exists a separate market for the provision of infrastructural services to public-service program companies (i.e., to SVT). In that market there are no indirect constraints and, abstracting from political pressure, the position of SVT is too weak to create countervailing power that would prevent the upstream firm (Teracom) from being dominant.

We argue that entry barriers are high in all platform markets and that lack of dynamics is particularly pronounced in the cable market. Before a definitive conclusion can be drawn on whether competition law can redress the competitive problems in the cable market, we suggest that a serious attempt to apply competition law is made (see Section 7.1).

7 Current issues

In this section we will discuss three possible problems to competition, namely access to infrastructure in terrestrial broadcasting, competition among Pay-TV operators in terrestrial broadcasting and competition in the cable segment. These sections are written to be self-contained. An unfortunate consequence is that there is substantial overlap between these sections and the sections explaining the framework.

7.1 Cable distribution - Com Hem

7.1.1 Summary

We recommend the Swedish Competition Authority to initiate an investigation into whether Com Hem is abusing a dominant position in the Swedish cable-TV market, by requiring landlords, including co-operative buildings societies (bostadsrättsförening), to include the price of its basic package in their rents and by using operator-specific e-mail addresses to reduce address portability. This conduct reduces the possibilities for TV-distributors based on alternative infrastructures, including the emerging IPTV platform, to compete effectively with Com Hem.

7.1.2 Competition for viewers

Cable networks are mainly active in areas with a high population density, where people typically live in apartment blocks. In such areas, the competition for the viewers takes place at two levels. First, there is competition to win a contract with the landlord to access the cables in the buildings. These cables are always owned by the landlord. The right to distribute cable-TV is in practice exclusive since the network does not allow multiple operators for technical reasons. Second, there is competition to win a contract with the individual households.

A special feature of the Swedish market is that the households rarely own their apartments. They are either tenants or they are members of co-operative buildings societies. This is one reason why collective solutions regarding TV-distribution in a building may be more attractive in Sweden than in other countries.

Landlords

The cable companies do not need to compete much with terrestrial or satellite distributors in areas with a high population density. In principle, it would be possible for the landlords to install a central antenna on the roof (for terrestrial or satellite signals) and to distribute the signals via the existing cables in the house. Such a construction would

count as SMATV (Satellite Master Antenna TV) – a form of cable distribution. For several reasons this possibility is not attractive, however.

One reason is that the cable operator has the (de facto) exclusive right to distribute cable TV in the building for a certain contractual period. The cable companies typically take on some of the costs of upgrading the networks in the buildings in exchange for the rights to distribute cable TV to the households. Since the networks do not support multiple operators these rights are de facto exclusive. The contracts with the landlords are still sometimes long. The length of new contracts should be investigated further.

Another reason is that the SMATV-operators are small and thus pay high prices to the program companies for the right to distribute their channels. It is probably also administratively more cumbersome to operate a small SMATV-network than a cable network.

The cable operators do not compete fiercely with each other either. A new cable operator will not start to compete with the incumbent in the same infrastructure inside the house since the incumbent has a de facto exclusive right. Nor is there much competition for the market when a contract is up for renewal. The reason is that the incumbent cable operator in a certain building has an important cost advantage. The incumbent cable operators usually own the 100 meters (or so) of cables connecting the cable network inside the buildings (owned by the landlords) and the backbone network. Since it is costly to dig, the incumbent is effectively sheltered from competition.

The competition for the market may also be limited due to the fixed costs of being active in a particular area. As far as we understand Com Hem (and possibly other cable operators) may offer large landlords in a certain town an attractive deal, knowing that all the smaller landlords will then have to stick to Com Hem since it may be to expensive for other cable operators to enter that town.

Com Hem may have a substantial advantage over other cable companies is that they own their own back-bone fiber net connecting all major cities in the whole country. We have, however, received diverging information on this point and it needs to be further investigated. They also own the infrastructure they use within the cities, as well as the local coax cable connecting individual buildings to the net. The net inside the buildings is owned by the landlords. At some time Com Hem must have taken the investment cost. But today this probably means that they have a lower variable cost than their competitors.

According to Com Hem there is competition between the different cable operators in the sense that they bid for the same projects. Still, the churn is quite low.

Households

With only one cable company operating in each building, the households have no choice if they want to watch cable-TV. It is also difficult for many households to switch to terrestrial or satellite distribution. In many cases it is probably difficult to receive the

signals. Reception is especially problematic in the city centers, in apartments low down in the buildings, facing north (for satellites). In other cases it is technically possible to receive the signal. But then the landlords often do not allow the tenants to install their own parabolic dish, for security and other reasons.

We should emphasize, however, that we have received somewhat diverging views on the technical possibilities of receiving terrestrial signals via a small antenna. Com Hem suggests that it works well in most places. This issue needs to be investigated further.

Compared to satellite and terrestrial distribution, the cable companies also have the advantage of being able to bundle TV-services with telephony and access to the Internet – so-called triple play. To the households there should be a clear advantage in only dealing with one provider of all the communications services that they require. By charging a very low price on the 3rd component, a triple play operator may effectively foreclose competition from operators only offering one of the components. The fact that e-mail addresses and website addresses may be operator-specific adds lock-in.

Cable operators do have a disadvantage compared to the terrestrial net in that terrestrial customers can bring their box to alternative locations such as their summer houses or boats. The cable distributors have the advantage that they easily allow households to have multiple TV-sets and to avoid a digital box.

In the case of Com Hem there is an additional reason why competitors in other platforms find it difficult to compete for the households. Com Hem's basic package is namely included in the rent. The basic package does not only include the public service channels. From September this year Com Hem's analogue basic package will consist of the following 15 channels: SVT1, SVT2, SVT24, Barnkanalen, Kunskapskanalen, TV3, TV4, TV4 Plus, TV4 Sport, Kanal 5, TV6, TV8, Kanal 9, MTV and one local channel. This construction differs from other cable companies' mode of business. It is therefore not possible for the household to avoid paying Com Hem for TV.

The problem of overlapping contracts

The fact that the competition for viewers occurs both at the level of the landlords and at the level of the individual households is in itself a problem to competition. As already discussed it is difficult for the households to switch operator as long as the incumbent operator has the contract with their landlord. But it is also difficult for a landlord to switch, since the incumbent has contracts with the tenants. These contracts may not only be for TV but also include telephony and Internet and operator-specific e-mail addresses.

IPTV and future developments

In the future, the cables companies will likely have to compete intensively with IPTV which is TV distributed over broadband. Most current IPTV business models appear to be based on traditional broadcasting, in the sense that viewers chose between a number of channels that broadcast according to fixed schedules. However, IPTV or TV via the

Internet in other forms can potentially offer viewers a more individualized menu. The viewers will then be able to watch the programs at the times they themselves choose. This will require additional changes in the industry, since people will also be able to avoid commercials. IPTV distributed over fiber will also have the advantage of a larger capacity in the future. For this to happen it will be necessary to use more efficient distribution. There is a need to switch to more efficient compression techniques, such as MPEG4, and to coordinate the distribution between different operators so that there are not multiple transmissions of the same channels.

Despite IPTV's promises for the future, our feeling is that they do not constitute an important competitor to cable companies today. To better substantiate this claim, it would be of great interest to investigate where, for example, Telia's IPTV's customers are located.

7.1.3 Negotiations with program companies

Since the customers in cable areas cannot easily switch distributor, the cable distributors will have important bargaining power over the program companies. The program companies, on the other hand, are also important in the eyes of the viewers. A distributor not carrying for example TV4 would have a very clear disadvantage. Ultimately, the bargaining powers of the distributor and the program company are determined by the consequences of a failure to reach an agreement. Will the viewers follow the distributor and start to watch other channels, or will they follow the cannels and bypass the existing cable network?

In order to further analyze these negotiations we distinguish between public service (SVT), the main commercial program companies with important advertising revenues (MTG, SBS and TV4) and the smaller commercial program companies relying mainly on subscription revenues from the pay-TV operators (e.g. Eurosport and Disney).

SVT

The cable companies do not have any market power over the public service channels, since they are required to carry them without charging any fees from their customers or from the program companies. The must-carry obligations include SVT1 and SVT2 in the analogue packages and some additional channels in the digital packages. Beginning in January 2008 TV4's main channel will not have a must-carry status.

Even absent a must carry regulation SVT would most likely have considerable bargaining power over the cable networks.

MTG, SBS, TV4

As we understand it there are at least four factors suggesting that Com Hem has considerable bargaining power over the main commercial program companies MTG, SBS and TV4.

First, if a distributor and a program company fail to reach an agreement, the program company will start to loose its advertising revenues immediately, while it will take time for the viewers to switch to another distributor.

Second, Com Hem has a very broad range of channels. Among the general interest channels, they have both MTG's TV3 and TV6 and SBS's Kanal 5 and Kanal 9 in addition to TV4's main channel and SVT. In the movie and sports segments they carry channels from MTG, SBS and TV4. As far as we can understand, this means that for most channels, Com Hem already has a reasonable substitute to offer its viewers. This fact should imply that the viewers are more inclined to stay with Com Hem than to follow any program company failing to reach an agreement with Com Hem also in the longer run.

Third, due to so-called network externalities among the viewers, a large cable operator will have more bargaining power than a small cable operator. They should be able to secure better prices per viewer in their negotiations with the program companies. If Com Hem would not carry a certain channel, substantially fewer people would watch that channel. Since people tend to watch the programs that their friends watch, the channel would loose even more viewers than Com Hem's market share suggests. With less people watching the channel it would meet less interest from the tabloids, which again would reduce interest in the channel.

One may note that Com Hem has almost half of the Swedish households as customers. A commercial program company not reaching a deal with Com Hem will therefore probably loose almost a half of its revenues. In contrast, the channels owned by MTG, SBS and most other program companies account for a rather small share of the viewers' time. Arguably TV4 has a better position due to its popularity among the viewers.

Fourth, Com Hem has reserved limited space for the number of channels included in the analogue basic package. Since it is important for the program companies to have channels included in this package, they will have to compete to be part of the basic package.

A concrete example of this type of competition is when Com Hem replaced Eurosport with TV4 Sport in their analogue basic package. It is notable that the switch occurred despite Eurosport having approximately 20 times more viewing time than TV4 Sport (formerly known as Sportexpressen) in 2006.[55]. TV4 now appears to upgrade their contents as a result of the new contract. Eurosport will in the future only be part of Com Hems digital pay-tv channels, which reaches a much smaller audience. This example also indicates that TV4 itself has substantial market power.

[55] MMS, 2006. One should note, however, that Eurosport's higher market share partly is the result of having been included in Com Hem's package.

Also the terms of the contracts suggest that Com Hem has substantial bargaining power over the program companies. Com Hem has been able to secure low prices for the channels. In contrast to what appears to be the normal case, Com Hem does not pay at all for the right to distribute the channels included in their basic package. (Com Hem does pay for the pay-TV channels.) They have also succeeded in getingt permission to sell the channels a la carte, despite the program companies' interest in bundling.

Niche companies

Finally, we have to consider a large number of program companies that account for only a small share of the viewer time in Sweden and which derive almost all their revenues form selling distribution rights. For these companies the relationship with the pay-TV operator is much like a normal vertical relationship, with the program companies as the upstream. Again, a strong position in the downstream "virtual" market is likely to translate into a strong bargaining position for channels in the channel-to-operator market.

7.1.4 Interaction between the viewer and the channel markets

A large cable operator will secure more favorable conditions from the program companies than smaller cable distributors or satellite distributors (where the customer base is more mobile). Lower input prices and the right to sell à la carte implies that a large cable operator will be able to offer good deals to its customers, thereby increasing its market share. This is a positive competitiveness loop: The more competitive you are in one market, the more competitive you will be in the other.

7.1.5 Economic rationale for public intervention

Arguments against and for public intervention

It is clear that the competition for viewers in areas with high population density is low and that if any of the cable companies has much market power it is Com Hem. It is also clear that Com Hem has substantial bargaining power over the main commercial program companies and that the two types of market power reinforce each other.

A possible further reason why it would be valuable to increase the competition to Com Hem is that concentration in the media sector is extra problematic. By serving approximately half of the Swedish population with TV, the owners of Com Hem has *potential* political power. We should emphasize that we do not want to suggest that anyone has abused this power, but it might be considered a risk factor. This issue is beyond the scope of this report, however.

Despite all the apparent obstacles to competition in the cable segment, it is not immediately clear that public intervention is warranted. The first reason is that Com Hem appears to offer quite good deals to its customers.

As for the pay-TV segment, Com Hem offers a very broad range of pay-TV channels. Com Hem also offers the households to buy pay-TV channels à la carte. (Due to the fixed costs of administrating each pay-TV customer, they have created the "8 favorites" package allowing the households to construct their own preferred mix of channels.) In addition, Com Hem's prices on pay-TV packages do not appear to be very high compared to the prices charged by the satellite or terrestrial operators. On this point there is a need for further investigation to correct for the cost level which may be lower in cable in general and for Com Hem in particular. Against the attractiveness of Com Hems pay-TV

packages should be said that only a small share of Com Hem's households, more exactly 343 000 out of 1,75 million, subscribe to digital content. This is substantially lower than the corresponding figure for other cable operators. The reason for this, on the other hand, may be due to the fact that the basic analogue package already includes sufficient variety.

As for the analogue basic package, Com Hem has included all the largest six channels. The price of this package must be further investigated, distinguishing between large and small landlords at different locations.

Complementary information about Com Hem's market power can be derived from their profitability. From January to March Com Hem's turnover was about SEK 840 million or 15 percent more than the same quarter last year. Com Hem's operating profit was SEK 355 million, representing a profit margin of 42 percent.[56] These numbers reinforce the idea that Com Hem can earn a substantial markup without loosing its customers – the usual definition of market power in the economics literature.

We conclude that there is good reason to initiate an investigation despite the good deals offered by Com Hem. Removing obstacles to competition may improve the situation further.

The second, and related, reason why public intervention might be counter-productive is that Com Hem possesses substantial buyer power over the program companies. Even a monopolist enjoying lower costs will pass some of this on to its customers. Any intervention to reduce Com Hems market power may reduce its buyer power and may potentially lead to worse conditions for the viewers. It is not clear that competition between two high cost firms leads to lower prices than the price charged by a low cost monopolist. As we see it, this issue must be further investigated and it is typically the company, i.e., Com Hem in this case, that has the burden of proving that the efficiencies outweigh the anticompetitive effects of a possible antitrust violation.

The third reason why it is not clear that public intervention is warranted is that one may expect more competition in the future, both because of the new IPTV platform and because the landlords and tenants are becoming increasingly sophisticated as buyers. There also appear to be important initial problems for the IPTV platform, meaning that it may still take some time before it is a considerable competitive constraint on the cable companies.

Possible obligations

While some sources of Com Hem's market power are unavoidable, such as the natural competitive advantage of cable distribution in dense areas, other obstacles to competition are due to the company's own behavior and may therefore be challenged by the

[56] Resumé, 24 April 2007. See also the discussions in Sections 3.2 and 6.2.1

appropriate authorities. We see two important barriers to competition that might be removed by appropriate remedies.

First, the single most important obligation that could be imposed on Com Hem is probably a ban on the inclusion of the basic package in the rent. Other similar obligation, but of less importance, would be to include mandatory portability of e-mail addresses and websites.

These conducts create a barrier for distributors based on other platforms to compete. Of special importance is that it may be an important obstacle for the entry of IPTV and thereby the opening up of the most important potential competitor to cables. However, this type of contract also makes it more difficult for pay-TV operators based on terrestrial and satellite distribution to compete for individual households.

The conduct does not have any substantial immediate positive consequences for the viewers, landlords or the program companies. There is a gain in the lower costs due to centralized billing. This gain needs to be investigated further, but it is unlikely to be of decisive importance. Also, the possibility that Com Hem's buyer power would be reduced and that this would lead to higher input prices and therefore to higher prices for viewers should be considered.

Second, the other important obligation would be mandated access to Com Hem's bottleneck access network, i.e., the coaxial network connecting the networks inside the buildings and the back-bone networks. This bottleneck gives its owner a strong competitive advantage when the (de facto) exclusive contract with a landlord expires. If competitors could gain access to this network, as they can to other bottlenecks in electronic communications, competition would probably be substantially fiercer.

Other possible actions that one might want to consider include a ban on price discrimination vis-à-vis landlords of different size, an investigations into the technical possibilities to allow multiple operators in the same net, combined with some sort of access regulation, a ban on long-term contracts with the landlords, a ban on triple-play bundling that is not cost-based and, finally, a ban on overlapping individual and landlord contracts.

7.1.6 Legal grounds for public intervention

There are three sets of legislation that are relevant, namely the Competition Act, the Electronic Communications Act and the Radio and TV Act. Both the former Acts require that the company has a large degree of market power (Dominance or Significant Market Power) in order for regulatory intervention.

Market definitions and dominance

In our view, cable distribution is not on the same market as terrestrial and satellite distribution. Both Viasat and Boxer state that they have very few customers in apartment

blocks. Com Hem, on the other hand, argues that a substantial proportion of all households in Com Hem buildings subscribe to other pay-TV packages than their own. This needs to be investigated further.

We consider it likely that Com Hem would be considered dominant even if the Swedish market for cable-TV distribution as a whole would be considered as the relevant market. Com Hem's market share is approximately 2/3 on this market.

Abuse of dominance and the Competition Act

According to the Competition Act (and according to Article 82 of the EC Treaty), a dominant firm is not allowed to abuse its position. In particular, a dominant firm is not allowed to engage in exclusive behavior. Landlord contracts, which have the effect of including a basic pay-TV package in the rent, make it almost impossible for other pay-TV operators to compete for the large majority of tenants. In other words, there is an exclusive effect of these contracts that is similar to a de facto exclusivity agreement between a dominant manufacturer and a retailer.

The main reason is that a tenant that would like to subscribe to Boxer's pay-TV package, to mount a parabolic dish on the balcony or to contract with an IPTV distributor would have to pay twice for the most attractive channels. Only customers that wish to have a very broad choice or that have strong preferences for narrow channels will find that worthwhile.

An additional reason is that landlord contracts in combination with individual contracts (e.g., triple-play contracts) will almost unavoidably result in overlaps that make it much more difficult for a rival cable operator or an IPTV operator to challenge the incumbent when the landlord contract expires.

SMP status and the E-com Act

Given that Com Hem is dominant in a relevant market, the company may also be found to have SMP status according to the E-com Act. In addition to dominance, this would require that entry barriers are high, that the market is not dynamic and that competition law is not sufficient to address the problems.

According to the above analysis, exclusionary behaviour (i.e., landlord contracts) creates an artificial entry barrier and preserves the dominant position of Com Hem. If these contracts can successfully be attacked via the Competition Act, there appears to be good reasons to assume that competition will become much more effective. Entry barriers will be reduced and competition between platforms is likely to be "dynamic".

On the other hand, if it is found that the landlord contracts et cetera do not violate the prohibition against abuse of dominance, this suggests that Com Hem has significant market power (SMP) as defined in the E-com Act. If SMP status is established, the next step is to impose obligations. One such obligation is to mandate access to Com Hem's

monopoly network: the network that connects the individual houses (or the landlords' networks) with the city networks.

7.2 Terrestrial distribution – Boxer

Terrestrial TV differs fundamentally from satellite and cable TV in that the spectrum is limited. Even if the ongoing digitalization enables a more efficient use of the spectrum, with room for more channels and a higher quality, scarcity remains important.

To allocate the limited spectrum, the channels' rights to broadcast in the terrestrial net are regulated via a licensing system. In Sweden, as in other European countries, licenses are awarded directly to the channels in a beauty contest. Currently, there are 12 free-to-air channels and 27 pay-TV channels in the terrestrial net.[57] The free-to-air channels buy distribution services from the only network operator in Sweden, Teracom. This is discussed in Section 5.2 and in the following section.

The licenses to the pay-tv channels stipulate that they have to buy encryption services (SAS) from Boxer, the pay-TV operator in the terrestrial net. Boxer has denied other potential pay-TV operators access to its encrypted signals, thereby using its legal monopoly on encryption services to also become a de facto monopolist on SMS-services.

7.2.1 Proposals for change (incomplete)

A recent government inquiry (Nytt regelverk for marksänd digital-TV, SOU 2004:39) proposed some changes in the direction of a more market-based system. A single pay-TV operator handling both SAS and SMS services was still seen as conducive to efficient use of the available spectrum; with multiple operators with multiple encryption systems there was a risk that the same channel would need to be broadcasted twice or that the spectrum would otherwise not be used efficiently. But it was suggested that the pay-tv operator should be selected in a competitive process – a beauty contest – and it was proposed that the license period should be six years. However, the inquiry proposed criteria that made it almost certain that the current operator (Boxer) would win the beauty contest. In particular, it was suggested that operators that were active on other platforms (satellites or cable) should not be allowed and neither should operators that were integrated with channels. According to the proposal, the pay-tv channels' right to broadcast should continue to be conditioned on using the appointed operator.[58]

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[57] When licenses are awarded, the free-to-air channels (broadcasted without encryption) are favoured over pay-TV channels (encrypted). Many channels nevertheless prefer the pay-tv option, since this will give them subscription revenues, in addition to revenues from selling advertisement spots. The number of free channels is not set rigidly set; it depends on the number and quality of the applicants.

[58] It was also suggested there should be a slightly larger number of pay-TV licenses than there are available slots. Then, the pay-tv operator should be given the right to make the final selection of channels, so that it

The *current* rules have criticized by the European Commission on the grounds that they, in practice, give Boxer an exclusive right over an electronic communication network and that they, therefore, violate the Competition Directive. In the context of electronic communications, the directive is an interpretation of the Article 86 of the EC Treaty, which gives the Commission the right to ensure that member states do not "unnecessarily" grant exclusive rights to companies or that such rights are more extensive than they have to be in order to reach an appropriate objective.[59]

As far as we can understand, it is uncontroversial that the Government can retain the right to select channels for terrestrial broadcasting, via a licensing system, since spectrum is limited and since it is seen as legitimate that governments regulate TV broadcastings on their territories for cultural and related reasons. It is also relatively uncontroversial that the Government owns the infrastructure for terrestrial broadcasting (i.e., Teracom). There are substantial economies of scale, suggesting that much of the infrastructure operations are natural monopolies. The choice is between regulation and public ownership. It is probably even okay that the Government owns a pay-TV operator.

The conflict with the Competition Directive arises when it is required that pay-TV channels buy encryption services from a designated pay-TV operator, when this requirement effectively implies that the pay-TV operator also obtains a de facto monopoly on SMS-services.

In June 2007, the government delivered a proposal that differed significantly from the government inquiry's proposal. Most importantly, the government now proposed that the *channels* should decide who should be the operator(s). To ensure efficient use of spectrum and to allow consumers convenient access to all channels, the channels were required to cooperate on technical matters and it was strongly suggested that all channels should be accessible via a single "card". In Section 7.2.6 below, we will come back to the government's proposal and speculate on the possible consequences of adopting this solution.

7.2.2 Structure of the problem

There appears to be three basic ways to organize the SMS activities. The first alternative is to create competition *in* the market, by giving several pay-TV operators equal access to the broadcasting and encryption services, possibly provided by a single but presumably independent infrastructure operator.

The second alternative is to accept that only one pay-TV operator (possibly providing both SAS and SMS services) is active during predetermined time periods, but to require

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could compose a commercially attractive package of channels for its subscribers. This proposal would have increased the bargaining power of the operator, relative to the channels.

[59] We do not have insights into the specific arguments of the EU Commission.

the potential operators to compete *for* the market. This can be achieved by auctioning – or using a beauty contest to allocate – the right to be the monopoly operator in the terrestrial network for a limited time period. This alternative is presumably the basic idea of the recent Government inquiry, and the consistency with the European legislation must be examined. Such consistency may perhaps be achieved by allowing the program companies rather than the Government the right to choose the operator, assuming that it would be in the program companies' interest to create competition for the market.

The third alternative is to keep a legal or a de facto monopoly for a single pay-TV operator (possibly providing both SAS and SMS services) in the terrestrial network. This alternative presumes that such a monopoly can be organized in a manner consistent with European legislation. Such consistency might be achieved by organizing a competition for the market, but to structure the rules of the competition in such a way that the incumbent can be more or less certain to win the market.

Which alternative that should be preferred depend on ones objectives. We will presume that the objective is a combination of public service goals and economic efficiency. A large set of factors will then be important for the choice, including the economies of scale in SAS and SMS services, the strength of competition between the terrestrial and other platforms and the mode of competition between different pay-TV operators within the terrestrial platform, to mention just a few.

Clearly, all of these factors are difficult to evaluate for anyone without a deep understanding of the industry. For this reason, one may also think of a fourth (meta-) alternative, namely to let some of the market participants choose which of the three (primary) alternatives to go for. This alternative should be preferred if, first, the actors given the right to choose possess the necessary knowledge and if, second, their interests are relatively well aligned with broader social interests. This appears to be one of the central ideas behind the governments proposal for reform. Presumably, the more critical condition is the second. In the usual economic terminology this could be referred to as an absence of serious moral-hazard problems.

An obvious consequence of this alternative is that it will be impossible for an outsider to predict with any degree of certainty what the exact outcome of the process will be. Still, if there are good reasons to believe that the moral-hazard problems are limited, one may nevertheless be confident that the choice will be socially efficient.

The rest of this section discusses the various factors important for choosing between the three alternatives, how the three alternatives might score on each such factor and, finally, the possible implications of delegating the right to choose to the program companies.

7.2.3 Objectives

The proposed reforms are supposed to meet a host of different objectives and different actors have different views of their importance. The most important objectives, as we see it, are the following:

First, it appears clear that there is a wish to retain substantial political control over which channels that are broadcasted in the terrestrial net. Possibly, the political control could be combined with some market control. The Government could grants more licenses than there is room for channels, and then let the pay-TV operator(s) make the final choice on commercial grounds.

Second, all the channels should be easily available to all households. It is, for example, desirable to make it possible for the households to receive all the channels with only one box/card. Additional issues include the possibility that the program companies and pay-TV operators agree on exclusive distribution rights implying that the households would need multiple subscriptions to watch all the channels (so-called multihoming).

Third, the spectrum should be used in an efficient way. Even if there are multiple pay-TV operators offering the same channel, the signals should only be transmitted once. This requires that all pay-TV operators coordinate on a common standard for encryption.

Fourth, any economies of scale should be exploited. Possibly this includes that the pay-TV operators should have buyer power vis-à-vis the program companies. This would probably only be of importance if lower input prices are forwarded to the households in the form of lower subscription fees.

Fifth, there should be competition on price and quality between pay-TV operators. It is not clear to us if competition is an independent objective for, e.g., the European Commission or if it is the effect of low prices and high quality that is the true goals.

Sixth, the actors should have appropriate incentives for investments to make the terrestrial platform competitive with other distribution platforms. Appropriate investment incentives require vertical coordination between the owner of infrastructure (Teracom) and the actors investing in the boxes (i.e., the pay-TV operator). This is mainly to avoid hold-up problems in investments in new technology. For example: if Teracom makes investments in technology, the operator may fail to make complementary investments in building customer bases or migrating customers to the new technology. (Or vice versa.) Alternatively, one of the two parties may want to re-negotiate commercial relations after the other party has made substantial investments. Appropriate investment incentives also require that any pay-TV operator investing in subsidies of new boxes should be able to reap the benefits of the investments. With competition for the market there is risk that the pay-TV operator becomes a “lame duck” towards the end of tenure.

Seventh, there may be gains from coordinating terrestrial distribution with distribution from other platforms. One possible example is market hybrid boxes that enable households to receive signals by cable or satellite in their homes, and terrestrially in their summer houses or boats. In other words, a combination of high capacity and portability.

There are clear conflicts between the different objectives. If one insists on competition between different pay-TV operators within the terrestrial platform, one may have

problems exploiting scale economies, and efficient use of the spectrum and easy access to all channels.

7.2.4 Alternatives

In this section we will discuss how the three main alternative of organizing the SMS-activities would serve to achieve the identified objectives. As we have already point out, much of the information necessary to make these predictions is simply not publicly available. Our discussion can therefore only be tentative.

Competition *in* the market

To achieve competition in a market where infrastructure is critical, it is often necessary to introduce access regulation. Otherwise, if there are sufficiently large returns to scale in infrastructure, the market cannot maintain several competing vertically integrated firms. Conversely, if rival service providers are given equal access to the existing infrastructure, several firms can compete on an equal footing. Possibly, this will expose some stages of the value chain to effective competition, while the market as a whole can benefit from economies of scale in infrastructural services. The clearest example of this is perhaps the fixed telephony market, where incumbent operators are required to give new entrants access to (parts of) the telephone network.

In the context of terrestrial broadcasting, a necessary condition for competition in the market is that rival operators can gain access to Teracom's infrastructural services. In particular if Teracom remains the main owner of Boxer, this makes cost-based access regulation of infrastructural (broadcasting) services necessary. However, this type of regulation is already in place, according to PTS's decisions under the E-com Act. (See Chapter 6 and also the following section.)[60]

However, as long as channels are required to use Boxer's SAS services and as long as Boxer is not required to provide cost-based access to its SAS services, access to Teracom's physical infrastructure has little value for rival pay-TV operators. At least given today's technical solution, the dividing line between natural-monopoly services and potentially competitive services appear to lie between SAS services and SMS services. Consequently, in analogy with access regulation in other markets and if competition *in* the market is the sought-after solution, the main thrust of an effective access regulation should be on cost-based access to SAS services.

To achieve a high level of efficiency, it may be necessary to re-consider the vertical boundaries between Teracom and Boxer. In other words, it may be desirable to transfer some services from Boxer to Teracom so that scale efficiencies can be used optimally.

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[60] An alternative solution is to make a vertical separation. This means that Teracom can no longer be a dominant owner of Boxer.

Those services which are natural monopolies should be performed by Teracom, while Boxer and other operators should concentrate on services where returns to scale are modest. Given that channels are required to use SAS services provided by a particular firm, SAS services should be seen as natural monopolies. Transferring SAS services from Boxer to Teracom is one way of making access regulation effective. However, we are no experts of encryption technology and it may be possible to develop alternative technological solutions that would allow the pay-TV operators to use different encryption technologies, while still avoiding that channels have to be broadcasted more than once and while ensuring that consumers would not have to buy multiple set-top boxes or other costly or bulky equipment.

In this scenario, the competing operators, including Boxer, will be selling relatively undifferentiated services. Typically, this results in intense competition and thin margins. To raise profit margins, the operators will likely try to increase differentiation. One obvious way to do this is by entering into exclusive agreements with some channels, as is done in the satellite segment. Another method would be to bundle a basic package in the terrestrial network with a premium package based on other platforms (e.g., to provide satellite at home and DTT in the summer house).

We believe that vertically integrated media firms, such as MTG, probably will not allow other operators to broadcast their channels, unless they are forced to. It is unlikely that a relatively comprehensive package, such as "the Boxer package", would be available via the terrestrial network, unless the legislator explicitly mandates this. To mandate the creation of a comprehensive package without the Government explicitly pointing out one pay-TV operator to fulfill this role might require the indirect method of having the program companies agreeing on this. This is further discussed below.

The main advantages of this solution are that problems that arise at the end of a single operator's license term are avoided and that, in principle, an efficient mix of scale economies in services that are natural monopolies and competition in services with small returns to scale can be achieved. The main drawbacks are that access regulation is likely to be necessary and, at least in its pure form, that all channels will most likely not be accessible via a single subscription and/or a single card.

Competition *for* the market

Alternatively, the process for selecting the pay-tv operator can be made more transparent and competitive and then the (temporary) monopoly operator can be given control over the spectrum rights for encrypted broadcasting. In this scenario, the government specifies the conditions for a pay-tv franchise, including the duration of the operator's franchise and, possibly, the length of the broadcasting licenses that the operator in turn can issue to channels. (Alternatively, the government can retain the right to award licenses.) These conditions must also specify the number of channels given to the pay-tv operator and, consequently, the number of frequency slots reserved for public-service and free-to-air channels.

The competition for the right to be a pay-tv operator can be structured as a beauty contest or the right can be auctioned. (Or a combination of the two methods.) However, there must be rules that ensure that the competition for the next franchise term is effectively competitive. In particular, a successful competitor for the new franchise term must be allowed to access the customer base and to purchase such equipment as is owned by the operator but installed in the customers' homes, such as subsidized set-top boxes or cards. In a beauty contest, competition may be one of the criteria. That is, one may favour actors without an interest in TV-distribution in competing platforms and actors without an interest in program companies.

A franchise system of this kind would be similar to the franchise system used for cable TV in the US. When it comes to the issue of vertical coordination between investments in infrastructure and investments in customer bases, a franchise system would put the terrestrial pay-tv operator on a relatively equal footing with the operators of other platforms. It would also ensure an efficient use of broadcasting spectrum. The government inquiry for digital terrestrial broadcasting proposed a solution with some of these characteristics, although, as mentioned, the selection mechanism appeared to be biased in favour of Boxer. The proposal, however, was not accepted by the government.

Also with this alternative one may want to reconsider the vertical boundaries between the infrastructure and the operator, in order to create competition for as large part of the vertical chain as possible, but also in order to promote investment incentive and to facilitate the transfer of the license between two operators.

The main advantage of relying on competition *for* the market (if the legal problems could be overcome) is that returns to scales can be achieved on both sides of the market: a single infrastructural system can be coordinated with a single population of set-top boxes and all consumers have convenient access to all channels. Allowing vertical integration (at least temporarily) makes it possible to combine the two key assets: broadcasting infrastructure and a customer base equipped with set-top boxes for reception. (Contracts with program companies and content providers can also be seen as a key asset.) This is likely to make terrestrial pay-tv competitive against pay-tv based on other platforms.

The most important drawbacks are that there will most likely be significant end-of-term problems: it would be difficult to create a situation where potential entrants compete on equal footing with the incumbent and the limited time horizon would be a dis-incentive to investments. It may also be inherently difficult for other operators to compete effectively against the current operator Boxer, since only Boxer has the advantage of being vertically integrated with Teracom. To reduce these problems, it may again be desirable to transfer some services from Boxer to Teracom. A further problem is that it is not obvious when to first allow competition. If an auction is held very soon, this will imply a large capital loss for the owners of Boxer, one of which is a private entity, although compensation may be possible. If the auction is held only in the distant future, the current monopoly situation will persist for many years.

A maintained monopoly

If the relevant market is pay TV, irrespective of platforms – or at least a market that comprises terrestrial, satellite and IPTV – then it is relatively unproblematic to allow the current monopoly to persist (from an economic perspective). In this situation, the most effective competition is likely to be competition based on infrastructure, i.e., between platforms.

The main advantages of this solution is that competition will encompass all stages of the value chain, from infrastructure to services provided to final customers, and that vertical integration between infrastructure and services creates good incentives for investments. The obvious drawbacks, from an economic point of view, are that platforms may not be close enough substitutes and that they will therefore not compete very effectively after all – and that customer inertia and real or perceived switching costs attenuate competition. From a practical point of view this solution is almost certainly inconsistent with EU rules and hence not a practical alternative (in its pure form).

7.2.5 Delegation

The government can decide on detailed rules, or it can try to set the broad framework, within which the market participants can be free to make their own arrangements. An important aspect of the rules will be how they influence the bargaining position between channels/program companies and pay-tv operators. If broadcasting licenses are given to the operator, this will obviously increase the strength of the operator; if the licenses are given directly to the channels, they will have a better hand.

The main attraction of the more hands-off alternative is perhaps that the legislator does not have to do very much: it will be up to the channels/the market to instigate change. The market participant may be presumed to possess better knowledge about the functioning of the market than public officials and therefore to be better judges of which alternative that best would fulfill the different objectives.

There are also clear drawbacks of delegating the decision to the market actors. One problem is that their interests may not be aligned with the political goals or the viewers' interests. We see three important risks. One is that some program companies are vertically integrated with pay-TV operators on other platforms and may therefore not want to create competition with other platforms in which they have an interest. The program companies may also want to push solutions that strengthen them in their competition with other program companies. One possibility would be to market subscriptions including their own channels but excluding the rivals' channels. The incumbent program companies may also try to reach solutions to prevent new rival channels from entering the Swedish market. Cooperation may also be contagious. The need to cooperate on certain issues may trigger explicit or implicit cooperation on issues where channels should not cooperate such as pricing of subscriptions and advertisement slots.

Another problem is the risk of substantial bargaining frictions. It may be difficult for the different actors to reach an agreement since they have different objectives. Agreements

among tens of channels and operators may be difficult to achieve, so that "nothing happens", so that technological innovation slows down and so that the terrestrial broadcasting platform becomes less competitive vis-à-vis the other platforms. Alternatively, disagreement may result in inefficient spectrum use, if different coalitions of channels opt for non-compatible technologies.

7.2.6 Predicting the outcome

According to the government's proposal, licenses are given directly to the channels. The channels/program companies are then supposed to agree on technical matters and to collectively select an operator. To induce cooperation between channels, the broadcasting licenses will be contingent on the channels cooperating on technical matters.

More specifically, the government's proposal stipulates that the channels' broadcasting licenses can be conditioned on a duty to "use a specific broadcasting technique and to cooperate with other licensees in technical matter, *for the purpose of promoting availability and competition*".[61] (The change, relative to the previous legislation, in italics.) The licenses are awarded by The Swedish Radio and TV Authority (previously by the government), except for public-service channels. In the background text, the government *recommends* that several operators should be given the possibility to sell pay-tv subscriptions, it *requires* that all program companies cooperate on technical matters in order to make "the consumers' access to all channels as good as possible", it *recommends* that all channels should be available on a single card, it *recommends* that the channels have entered into an agreement on technical standards/solutions before licenses are finally awarded and it *recommends* that the technical solutions are decided on by the channels/program companies. The background text will be used by courts that interpret the act.

Depending on what the channels decide, the outcome may be competition for the market, competition in the market or no effective competition at all. Consequently, it is necessary to look into the details of the proposal and how the specific rules will influence the likelihood of different scenarios.

Being academics, we allow ourselves to *speculate* about the possible outcome, reiterating our previous warning that we lack the necessary information to make reliable predictions. Please enjoy!

Scenario 1: Maintained dominance

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[61] Our translation of Chapter 3, 8 § 7 in the proposal for the new Radio and TV Act. In original, the text reads "Ett tillstånd att sända TV-program eller andra ljudradioprogram än närradio och lokalradio får förenas med villkor om skyldighet att"…"använda en viss sändningsteknik samt samverka med andra tillståndshavare i tekniska frågor *i syfte att främja tillgänglighet och konkurrens*".

It is possible that Boxer will remain an important terrestrial operator, and even the dominant one. This may happen if the only technical solution that makes all channels available on a single card requires that all channels contract with the same pay-TV operator and if the Radio and TV Authority (and the courts) interpret full availability for all consumers as a necessary requirement for a channel to get a license. I.e., those refusing to contract with the operator that the majority of channels contract with will not be given a broadcasting license. It is unlikely that a majority of channels will prefer any other operator to Boxer, since the most likely other operators are either vertically integrated with channels or the dominant cable-TV operator.

Even if Boxer remains the dominant terrestrial operator, some bargaining power is likely to shift from Boxer to the program companies. Specifically, the channels' share of subscription revenues may increase. The main program companies may also use their strength to affect the packaging of the channels in such a way that the smaller channels will loose out.

Scenario 2: Competition within the market

It is also possible that all three major commercial program companies TV4, MTG and SBS set up (or contract with) their own pay-TV operator to market their own mini-subscriptions, with elements of exclusive rights to their channels. A substantial part of the households may choose multiple subscriptions, for example combining TV4 and MTG or TV4 and SBS (in addition to the free channels) assuming that they are all available on the same card/box. In this case, Boxer may find itself in a quite squeezed situation.

Alternatively, Viasat and Canal Digital may market such subscriptions (TV4+Viasat and TV4+SBS, respectively) together with hybrid terrestrial-satellite boxes, while Com Hem may push for terrestrial-cable hybrid boxes. Also TeliaSonera may market a hybrid terrestrial-IPTV box, e.g., offering TV4+SBS. The program companies must still also make themselves available on one terrestrial box/card including all of them. The most natural distributor to market such a deal would be Boxer. A problem, however, is that some of the program companies may have an interest in making this alternative commercially weak in order to favor their own offers.[62]

With mini-subscriptions and a weakened Boxer it will be more difficult for other program companies to market their channels. This may in the long run imply that the four major players, also including SVT, will be able to take over more of the available slots.

[62] There is one technical issue which we have not seen discussed, but that may affect the outcome of this process. Some actors wish to coordinate boxes and cards between different platforms (hybrid boxes) but there is also a need to coordinate boxes and cards inside terrestrial distribution. We are not sure whether there is a conflict between these two developments.

Due to the increased competition in the TV-distribution market, the drive to integrate the different distribution technologies as well as the commercial strength of triple-play offers, there may also be a tendency towards more integration. In this light Boxer is probably the most vulnerable player due to its current exclusive focus on terrestrial distribution. (However, Teracom has some cooperation with IPTV providers, perhaps because it wants to keep the option of hybrid services open.) Possible acquirers may be Com Hem and TeliaSonera, but the other distributors may well have an incentive to preempt such deals. Teracom, which is one of the owners of Boxer, presumably prefers a buyer with an interest in a strong terrestrial platform. Com Hem may then be an ideal partner. In combination with Com Hem, Boxer may also have the bargaining strength vis-à-vis the program companies to create subscriptions with all major channels at reasonable prices. We would then end up with four major distribution groups: Viasat/Tele2Vision/Bredbandsbolaget, Telenor/Canal Digital, TeliaSonera and Boxer/Com Hem.

It is unclear whether this scenario will weaken the terrestrial platform. It is true that important actors already have interests in promoting their own distribution which is today based on other platforms. But this does not necessarily imply an interest in harming the terrestrial platform. It appears that there may be sufficient synergy gains in hybrid boxes to ensure an interest in continued investments in the terrestrial network. The problem may be that it is more difficult to agree on the exact solutions when many interests are involved.

7.2.7 Conclusions

The combination of limited spectrum availability and costly broadcasting infrastructure creates an unusual situation. It may appear that terrestrial broadcasting is being treated asymmetrically, relative to broadcasting via other platforms, and from an economic point of view it is *possible* that the best alternative would be to allow Teracom/Boxer to maintain a vertically integrated monopoly on the terrestrial platform, in competition with operators based on other platforms. However, this depends on how good substitutes the platforms are. Also, a legal monopoly is very unlikely to be acceptable under EU rules.

In principle, to avoid the creation of a monopoly the government should design rules in such a way that there can be competition, either in the market or for the market. The government's preliminary proposal leaves much of the choice of market structure to the market participants. This may very well be a good thing. Given that a hands-off strategy is followed, it is difficult to predict the outcome. However, it appears as if the government's has tried to achieve a situation which combines some elements of the three archetypical market structures. There is an element of competition *for* the market: if all channels can agree, they can replace Boxer by an alternative. However, it appears unlikely that this will happen, since it appears unlikely that they can all agree. There is an element of competition *in* the market, since some form of entry into the market is most likely to occur. At the very least, the large program companies and media conglomerates can launch narrow pay-tv services based on their own channels and possibly some of the

new operators will be able to launch more comprehensive packages. There is also an element of preserved monopoly: the incumbent will not automatically be exposed to competition at a certain date and, depending on how the new act will be interpreted, there appears to be an asymmetry built into the market structure, pointing in the direction of making Boxer an operator that all channels have to contract with.

A key aspect of the new regulation and its implementation will be whether all channels in practice will be required to contract with one and the same operator and what mechanisms will be used to achieve this objective. As argued above, much point in the direction of Boxer being this central operator, but how will the central operator be appointed? Will it be by majority voting by the channels or by some other mechanism? If the channels have to be unanimous, what will happen if they fail to reach an agreement? If a central operator is appointed by some mechanism and one channel refuses to contract with the central operator, will its license be revoked? If so, how quickly? Practical questions such as these will determine how much bargaining power each channel/programming company and each operator will have in the negotiations and they will therefore impact on the final outcome.

Irrespective of the exact outcome, it would probably be a good idea to transfer some technical services (SAS services) from Boxer to Teracom. In all of the scenarios outlined above, this is likely to increase efficiency, although for slightly different reasons. In particular, it may be necessary to give Teracom control over a common encryption technology, while Boxer remains one of possibly several pay-TV operators.

7.3 Terrestrial distribution – Teracom

Teracom provides infrastructural services to pay-TV operators – currently only Boxer – and free-to-air program companies, mainly SVT and TV4. From the perspective of these buyers of infrastructural services terrestrial broadcasting is a separate market, in the sense of competition law (see further the discussion in Chapter 6). That is, even if terrestrially broadcasted channels from the end consumers' point of view clearly are part of a broader TV-market, it is not possible for Boxer, SVT or TV4 to easily substitute services on some other platform for Teracom's services. For Boxer and TV4 this lock-in is primarily for commercial reasons. For SVT it derives from the company's public-service obligations. Whether or not this lock-in carries over into a competitive problem is another issue.

One may also note that some of Teracom's infrastructure is more or less dedicated to public service, since it is built to serve 99,8 percent of the Swedish population. Such an extensive coverage is beyond the reach of commercial TV.

Main critique of current application of the E-com act

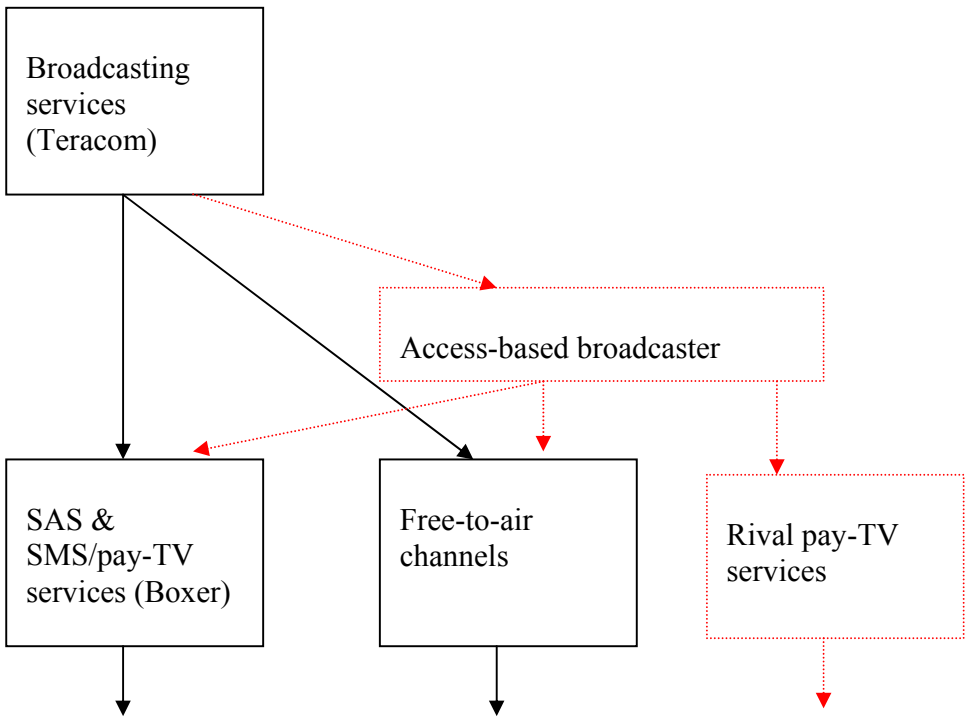
Defining terrestrial infrastructure as a separate market appears to lead to the immediate conclusion that some form of access regulation via the E-com legislation may be warranted. As already mentioned, PTS has also taken a decision with this effect. However, as we see it there are reasons to reconsider this decision, both in the case of

pay-TV and free-to-air (including public service). There are three main elements in our criticism. First, in our view Teracom is not dominant in its relation to pay-TV operators. Consequently, the E-com act is not applicable in this relation. This issue was discussed in Chapter 6. Second, taking as given the objective of ensuring access for rival terrestrial pay-TV operators, the access requirement is ineffective, since Boxer maintains a legal monopoly over the critical SAS services. This, in turn, has been challenged by the EU Commission. In the previous subsection this question was discussed at length. We argued that it is not obvious that competing pay-TV operators in the terrestrial network would be socially optimal, but given that we have an access regulation, it should facilitate access. Third, although the regulation *is* likely to have some effect on Teracom's pricing towards free-to-air channels, Teracom is not a downstream competitor to the program companies. Consequently, the regulation is effectively a *price* regulation (or a wholesale product) rather than an *access* (price) regulation. Although price regulation is possible under the current E-com act, it should explicitly be analyzed as such.

7.3.1 Current application of the E-com act

The current access regulation imposed by PTS, under the E-com act, has two effects. It works like a price regulation of Teracom's services to the free-to-air channels and it removes some obstacles for entry by terrestrial pay-TV operators. As we see it, this regulation is probably not very effective in achieving the latter purpose. A schematic representation of the situation is provided in Figure 8.

Figure 8. The effect of the current application of the E-com act to TV broadcasting



Viewers

The access regulation is effectively a regulation of Teracom's wholesale prices

Focusing first on the effect of the regulation on the free-to-air segment, the regulation is phrased like an access regulation but it works like a price regulation. Only a small fraction of the value added in *infrastructural services* can be opened up to competition via this type of access regulation. In practice, a rival broadcaster is likely only to feed signals to Teracom for multiplexing and broadcasting. In other words, Teracom would still for practical purposes be the only broadcaster and the rival broadcaster would only impose itself as a middleman between Teracom and Teracom's ten or so broadcasting customers. Such a broadcaster would, in effect, be a "virtual broadcaster".

Despite this, the regulation will have some bite on Teracom's pricing towards free-to-air channels. Since the regulation requires that access should be provided at cost-oriented prices, if Teracom charges its free-to-air customers significantly more than that, they may simply require to be their own broadcasters. (Or they may contract with a third party to play that role.) However, we cannot see any reason not to phrase the regulation as a direct price regulation, since this is possible under the E-com Act. An indirect price regulation, phrased as an access regulation, does not relieve the regulating authorities from the need to measure virtually all costs incurred by Teracom.[63] On the other hand, the program companies are likely to hesitate to set up their own virtual broadcaster. If the objective is to regulate Teracom's prices towards SVT and other free-to-air channels, an explicit price regulation would appear to be much more appropriate. If this, for some reason, is not possible to do under the E-com Act, the legislator may want to consider introducing this type of regulation in the Radio and TV Act. In fact such regulations were included in the act before the introduction of the E-com Act.

Access regulation to promote competition in the pay-TV market

The second main effect of the access requirement is, in principle, to facilitate entry of rival pay-TV operators. If entrant pay-TV operators are given the right to purchase broadcasting services from Teracom at cost-based prices, they can contract with licensed channels and begin to compete with Boxer. Seen this way, the provision of broadcasting services would remain a monopoly, while competition would be introduced in the downstream pay-TV market. This is the normal way to use access regulation: the bottleneck monopoly service remains a monopoly, while the potentially competitive downstream services are opened up to actual competition.

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[63] This is in contrast with normal access regulation, which saves regulatory costs by focusing on only some stages of the regulated firm's production process.

Another way of saying the same thing is the following. The main reason for requiring Teracom to provide access to its infrastructure cannot reasonably be to expose Teracom to competition, but it can be to expose *Boxer* to competition (and also, perhaps, to regulate the wholesale prices that free-to-air channels have to pay).

We have two critiques against the current application of the E-com act for this. The first point, that downstream competition in the retail pay-TV market is strong enough not to make Teracom dominant in the broadcasting market and that, therefore, the criteria for applying the E-com act are not satisfied, was discussed at length in Chapter 6.[64]

The second point is that the access requirement is ineffective as long as Boxer's position is protected by the legal requirement that pay-TV channels buy encryption (SAS) services from Boxer. This is likely to change in the near future, as discussed in the previous sub-section. It appears inconsistent to require, under the E-com act, that Teracom supplies some broadcasting services but that Boxer is allowed to retain monopoly over another key service.

[64] More exactly, we see Teracom as dominant in the market for terrestrial broadcasting services for free-to-air channels, but not in the market for terrestrial broadcasting services for pay-TV operators.

7.3.2 Suggestions for future regulation of terrestrial broadcasting

Pay TV

We have argued that although infrastructural services for terrestrial pay TV is a separate relevant market and although Teracom is the only supplier, it does not have a dominant position, because of indirect competitive constraints. Hence, our analysis suggests that the E-com act is not applicable. However, regulation may still be warranted. Since Teracom is government owned, the government is free to regulate Teracom via its charter, in addition to regular legislative measures.

How the regulation should be designed depends on how competition in the market for terrestrial pay TV is structured. In the previous sub-section, we discussed the three main modes of competition: competition *in* the market, competition *for* the market and maintained monopoly. We assume that the EU Commission will not accept the current situation, which gives Boxer a legal monopoly over SAS services.

If competition in the market is the preferred alternative and given that the E-com act is not applicable, the natural solution is to introduce access regulation in the Radio and TV Act. Transferring SAS services from Boxer to Teracom is likely to facilitate this type of regulation.

If competition for the market is preferred, there must be competition for time-limited franchise terms. Again, transferring SAS services to Teracom will facilitate this type of competition.[65]

Finally, it may be possible to find a structure that allows a maintained monopoly without conflict with EU's Competition Directive. If SAS services are transferred to Teracom and if the requirement that channels purchase encryption services (SAS) from Boxer (or Teracom) is lifted, it may be possible to argue that entry into broadcasting (and encryption) is free and that, therefore, there is no legal monopoly. In practice, entry is unlikely to happen, because of the high entry barriers into terrestrial broadcasting.

Free-to-air TV

In the market for terrestrial broadcasting services for free-to-air TV, Teracom arguably has a dominant position. Hence, regulation via the E-com directive may be possible. Note, however, that for the reasons given above, the regulation will work as a price regulation rather than as an access regulation. If, for some reason, it is difficult to maintain a price regulation of broadcasting services based on the E-com Act, we see two alternatives.

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[65] As discussed in the previous sub-section, this was the proposal of the government inquiry, although the proposal was rejected by the government.

The first alternative is to regulate Teracom's prices to final customers (SVT, TV4 and others) in the Radio and TV Act. The other alternative is to lift the requirement that SVT must be broadcasted via Teracom. This would significantly improve SVT's bargaining position vis-à-vis Teracom. Absent such platform-specific coverage obligations the public-service channels could switch to the satellite platform if Teracom tried to extract monopoly profits. As in the case of pay-TV, this argument crucially hinges on the assumption that it is relatively easy for the viewers to switch between terrestrial and satellite reception. To the extent this assumption is true, infrastructure competition in combination with the free-to-air channels' interest in minimizing their costs of distribution would be sufficient to discipline the provider of infrastructural services.

8 Appendix: Pay-TV operators and their packages

This list is not complete; most of the operators' premium packages and special packages, such as film or sports packages, are not included.

		Boxer				
		Fria	Lilla	Normal	Normal+filr	Allt
Pris/mån			**41**	**120**	**200**	**339**	**500**
Antal kanaler			**16**	**20**	**33**	**37**	**42**
Kostnad enl SPA			**10**	**34**	**100**		
Kanal	*Profil*						
SVT1	Allmän	X	X	X	X	X
SVT2	Allmän	X	X	X	X	X
TV3	Underhållning			X	X	X
TV4	Allmän	X	X	X	X	X
Kanal 5	Underhållning			X	X	X
TV6	Underhållning	X	X	X	X	X
Aftonbladet TV7	Nyheter	X	X	X	X	X
TV8	Nyheter, underhållning			X	X	X
Kanal 9	Underhållning		X	X	X	X
TV4 Plus	Underhållning		X	X	X	X
TV4 Film	Film			X	X	X
TV400	Underhållning			X	X	X
TV4 Fakta	Dokumentär			X	X	X
TV4 Guld	Underhållning					
TV4 Komedi	Underhållning					
ZTV	Underhållning, musik			X	X	X
SVT24	Nyheter, sport	X	X	X	X	X
SVT HD	Allmän					
Kunskapskanalen	Dokumentär	X	X	X	X	X
Axess TV	Kultur, vetenskap, dok	X	X	X	X	X
Barnkanalen	Barn	X	X	X	X	X
Disney Channel	Barn					X
Disney Toon	Barn					
Playhous Disney	Barn					
Nickelodeon	Barn			X	X	X
Cartoon	Barn					
Jetix	Barn					
Discovery Travel & Liv	Resor					X
Travel Channel	Resor					
Viasat Explorer	Natur, äventyr					
Viasat Natur	Natur					
Animal Planet	Natur			X	X	X
National Geografic	Natur					
Discovery	Vetenskap		X	X	X	X
Discovery mix	Vetenskap					
Viasat history	Dokumentär					
History Channel	Dokumentär					
Viasat N/C	Natur, crime					
Viasat Crime	Crime					
Zone Reality	Äventyr/dokumentär					
BBC Food	Mat					
Lifestyle TV	Underhållning/kristen					
Star!	Kändisreportage			X	X	X
E!	Kändisreportage					
The Voice	Musik	X	X	X	X	X

MTV	Musik			X	X	X
Music choice	Musik					
Vh1	Musik			X	X	X
Vh1 Classic	Musik					
TV Finland	Allmän/finsk	X	X	X	X	X
TV3+	Underhållning/dansk					
Canal7	Underhållning/Mellanöstern			X	X	X
BBC Prime	Underhållning					X
BBC World	Nyheter					X
CNN	Nyheter			X	X	X
Sky News	Nyheter					
Deutsche Welle	Nyheter/tysk					
Al Jazeera	Nyheter					
Bloomberg	Ekonominyheter					
CNBC	Ekonominyheter					
DiTV	Ekonominyheter					
Canal+ Sport 1	Sport					X
Eurosport	Sport		X	X	X	X
Eurosport 1	Sport					
Eurosport 2	Sport					
Sportexpressen	Sport					
Viasat Sport	Sport					
Extreme Sports	Sport					
Canal+ Film 1	Film				X	X
Canal+ Film 2	FIlm				X	X
Silver	Film				X	X
TCM	Film				X	X
Hallmark	Film					
Adult Channel	Erotik					
Kanal Lokal Stockholm	Lokalkanal	X	X	X	X	X
Kanal Lokal Göteborg	Lokalkanal	X	X	X	X	X
Kanal Lokal Skåne	Lokalkanal	X	X	X	X	X
Kanal Lokal Östergötla	Lokalkanal	X	X	X	X	X
Gotlandskanalen	Lokalkanal	X	X	X	X	X
TV Shop	Försäljning					

Comhem			Viasat		Canal Digital		
Small	Medium		Bas	Silver	Lokal	Familje	
39	**199**		**123**	**203**	**145**	**245**	
14	**42**		**14**	**39**	**13**	**54**	
21	**155-160**		**25**	**115**	**30**	**200**	
							Kanal
X	X		X	X	X	X	SVT1
X	X		X	X	X	X	SVT2
	X		X	X			TV3
X	X		X	X	X	X	TV4
	X				X	X	Kanal 5
X	X		X	X			TV6
X	X		X	X		X	Aftonbladet TV7
X	X		X	X		X	TV8
	X				X	X	Kanal 9
	X			X	X	X	TV4 Plus
	X					X	TV4 Film
	X					X	TV400
					X	X	TV4 Fakta
	X				X	X	TV4 Guld
	X				X	X	TV4 Komedi
	X		X	X			ZTV
X	X		X	X	X	X	SVT24
X	X				X	X	SVT HD
X	X		X	X	X	X	Kunskapskanalen
X	X						Axess TV
X	X		X	X	X	X	Barnkanalen
	X			X		X	Disney Channel
				X		X	Disney Toon
				X		X	Playhous Disney
	X			X		X	Nickelodeon
	X			X		X	Cartoon
	X			X		X	Jetix
						X	Discovery Travel & Living
				X		X	Travel Channel
			X	X			Viasat Explorer
				X			Viasat Natur
	X					X	Animal Planet
				X		X	National Geografic
	X					X	Discovery
X	X						Discovery mix
	X			X			Viasat history
						X	History Channel
	X						Viasat N/C
				X			Viasat Crime
				X			Zone Reality
						X	BBC Food
						X	Lifestyle TV
	X					X	Star!
				X			E!
X	X					X	The Voice

	X		X	X	MTV
	X			X	Music choice
	X		X	X	Vh1
				X	Vh1 Classic
					TV Finland
			X		TV3+
					Canal7
	X			X	BBC Prime
			X	X	BBC World
	X		X	X	CNN
				X	Sky News
		X	X		Deutsche Welle
				X	Al Jazeera
		X	X	X	Bloomberg
			X	X	CNBC
				X	DiTV
					Canal+ Sport 1
				X	Eurosport
	X				Eurosport 1
	X			X	Eurosport 2
	X				Sportexpressen
			X		Viasat Sport
				X	Extreme Sports
					Canal+ Film 1
					Canal+ Film 2
					Silver
	X				TCM
	X				Hallmark
				X	Adult Channel
X	X				Kanal Lokal Stockholm
					Kanal Lokal Göteborg
					Kanal Lokal Skåne
					Kanal Lokal Östergötland
					Gotlandskanalen
			X		TV Shop

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In addition, we have used newspaper articles, annual reports, internet web pages, EU merger cases and legislative texts as referred to in the main text or in footnotes. We have also read and benefited from other chapters in Seabright and von Hagen's anthology, which indirectly is listed above.

Interviews

Johan Bobert, Boxer

Patrik Hofbauer, Canal Digital

Gunnar Asp, Com Hem

Krister Kinch, Com Hem

Ronny Bergens, Fastighetsägarna

Stephan Guiance, FastTV

Sven Bergenstråhle, Hyresgästföreningen

Jan Johansson, Kanal 5

Kristian Viidas, Konkurrensverket

Jan Lund, MTG

Peter Schierbeck, Radio och TV Verket

Anders Johansson, SABO

Joachim Benno, Telenor

Lars Backlund, Teracom

Magnus Ahxner, Teracom

Märta Rydbeck, TV4

Malte Andreasson, TV4

Petra Måhl, TV4

Lars Hultkrantz, Örebro Universitet