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The Impact of Regulatory Issues and Market Structure on the Digital Television Industry:

A Comparison of the German and Swedish Markets
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FOREWORD

This working paper explores the basic contexts and structures of digital television markets in two northern European nations. It is part of several related projects being undertaken by research fellows and associates that are investigating television policy, market developments, and effects at the Media Management and Transformation Centre, Jönköping International Business School, Jönköping University, Sweden.

This paper has been written by Claudia Loebbecke, a professor at the University of Köln, and Robert G. Picard, Professor and director of the Media Management and Transformation Centre. Research for the paper was carried out under grants from the Der Deutsche Akademische Austauschdienst (DAAD) and The Swedish Foundation for International Cooperation in Research and Higher Education (STINT).

This report explores differences in the content aggregators, market structures, and regulation and suggests how and why the two northern European nations are achieving different types of digital television industries and the implications of the differences for developments in other nations.
1. Introduction

Analogue technologies are being progressively replaced by digital communications technologies that provide efficient uses of existing information and communications infrastructures, converge a wide variety of communication technologies, products, and services, and increase consumer and citizen access to information and entertainment. This convergence is blurring the market and regulatory boundaries between broadcasting, telecommunications and information technology. Digital television (DTV) technologies are one of the primary developments appearing in this new environment.

The introduction and demand for digital television are highly influenced by the existing market structures of nations and the terrestrial, cable, and satellite services currently available. Germany and Sweden are deeply involved in their respective DTV initiatives and the two markets present unique opportunities to compare approaches because they have different policy and structural elements.

The German television market is a highly competitive and decentralised market with a significant number of free-to-air channels and a mature television advertising market. German public service broadcasting is based on a regional structure. Sweden, however, has a centralized, less competitive market, dominated by national broadcasters. It has a limited number of free-to-air commercial broadcasters and a relatively young television advertising market. Public service broadcasting has a central position in the television market and is operated at the national level. These market structure differences, created by regulatory and policy choices, result in significant differences in the environment in which digital television technologies and services are being introduced in the two countries.

1.1 Evolution of Digital Television

Digital technology is fundamentally transforming communication systems, making content independent of the distribution medium, and providing the capability for it to be distributed using multiple platforms. This progression has made possible the introduction of DTV which includes distribution of television and related programming on digitalized cable systems, digitalized satellite systems, and digital terrestrial television.

The European DTV market has grown substantially greater than the DTV market in the United States. European digital satellite television started in March 1996 in France; cable services followed shortly and digital terrestrial television started in the United Kingdom in late 1998. European DTV markets have developed in different ways depending on migration paths from analogue television. Thus, important divergences between EU markets can be observed (Marsden & Ariño, 2004).

The European DTV penetration at the end of 2002 counted 8.1 million cable households (5.2% of all TV households); 21.5 million satellite households (13.9%); and 2.6 million digital terrestrial television (1.7%). Together, there were 32.2 million digital TV households, 20.8% of all households (CEC, 2002). Table 1 summarizes the numbers of digital TV households and the proportion of the different distribution technologies.
Table 1: Digital TV households as of 2002

<table>
<thead>
<tr>
<th></th>
<th>Total HH</th>
<th>DTV %</th>
<th>Cable DTV</th>
<th>DTV %</th>
<th>Satellite DTV</th>
<th>DTV %</th>
<th>Terrestrial DTV</th>
<th>DTV %</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU</td>
<td>154.73</td>
<td>32.2</td>
<td>20.8</td>
<td>8.1</td>
<td>5.2</td>
<td>21.5</td>
<td>13.9</td>
<td>2.6</td>
</tr>
<tr>
<td>Sweden</td>
<td>4.6</td>
<td>1.44</td>
<td>31.6</td>
<td>0.46</td>
<td>10.0</td>
<td>0.84</td>
<td>18.4</td>
<td>0.15</td>
</tr>
<tr>
<td>Germany</td>
<td>37.9</td>
<td>4.14</td>
<td>10.9</td>
<td>1.94</td>
<td>5.1</td>
<td>2.21</td>
<td>5.8</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Source: CEC, 2002

In most countries, a first transformation that has already taken ground is the substitutability of each of the three distribution technologies, terrestrial, cable, and satellite for video content service delivery. As cable companies began to consolidate, broadcasters began to lose the competitive advantage of reaching national audiences. This trend has been accelerated by the fact that a substantial majority of households subscribe to either cable or satellite. People do not generally select the programs they watch based on the source. Their choices are dictated by the preferences for certain types of programs (Loebbecke & Staudinger, 2003).
2. The Case of Germany

2.1 Content Aggregators

2.1.1 Overview

The German television market is decently competitive and decentralized. It accounts for about 30 free-to-air channels and a mature television advertising market. Public service broadcasting is based on a regional structure that originally was intended to reduce national political influences. The amount of advertising revenues in the German television market is approximately 3.8 billion Euros by 2003 (ZAW, 2004), providing a strong financial base for commercial broadcasters.

2.1.2 Digital TV (DTV) Offerings

In Germany, both public and commercial broadcasters offer digital television services; possibly with different interests for the digitization. The public broadcasters support the transition process to digital by already providing digital content. Some channels are offered exclusively for digital distribution. The commercial broadcasters also offer their program in digital quality. But until mid 2004, only some of them include additional services. One important player in the German DTV market is the pay TV provider ‘Premiere’ that dominates the pay television sector. All 2.9 million subscribers (as of June 2004) receive digital signals, usually via satellite (Premiere, 2004; Mohr & Thomas, 2004).

2.2 Market Structure of TV Distribution Providers

In Germany, more than 50% of the 36.2 million TV households are connected to analogue or digital cable, making the cable the dominant broadcasting network. In December 2003, satellite and terrestrial accounted for 39% and 4% of households respectively. Table 2 depicts the development of the market shares of the alternative TV reception modes during the last decade. In June 2003, less than 9% of German households actually receive digital TV signals via any one of the three main infrastructures, cable, satellite, digital terrestrial or Internet (Cocco, 2003; Loebbecke & Staudinger, 2003).

<table>
<thead>
<tr>
<th>Table 2: TV reception modes (analogue) in Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable</td>
</tr>
<tr>
<td>Satellite</td>
</tr>
<tr>
<td>Terrestrial</td>
</tr>
</tbody>
</table>

Source: Limmer, 2003

2.2.1 Cable

The German cable industry is largely influenced by its technological structure. Historically, the German cable system has been divided into four levels. Level One infrastructure is the transmission of broadcast signals from the source (e.g. satellite uplink)
represented by the broadcasting stations as signal suppliers. Level Two represents the signal to the cable head ends (e.g. satellite downlink) consisting of the general transmission networks including broadcasting networks, satellite, and radio link system. These networks are connected to Level Three, the cable backbone, i.e. trunk network. Level Four stands for the final connection into the subscriber’s residence. In a narrow sense, and for comparison with Sweden, Levels Three and Four represent the ‘German cable industry’ (Loebbecke & Staudinger, 2003).

For many years, Deutsche Telekom (DT) owned the entire Level Three infrastructure across Germany as monopolist\(^1\). A major change in the proportion of the Level Three networks owned by incumbents occurred in March 2003, when DT sold its remaining cable networks. Following the sale, DT only had an equity position in one cable network in Germany. DT’s divestiture brought the total share of the cable market owned by telecommunication carriers down to a little over 5 % (e.g. Loebbecke 2003a; OECD 2003a).

Four regional operators segment the market: “ish” (North Rhine-Westphalia, approximately 4.2 million subscribers), Kabel BW (Baden-Wuerttemberg, 2.3 million), “iesy” (Hesse, 1.2 million), and Kabel Deutschland (serving the other regions, 10.4 million). While the service offerings of these companies differ, all of them provide TV and radio broadcasting. But Internet and telephone services are still in the fledging stages (Loebbecke, 2003; Loebbecke & Staudinger, 2003).

Market leader Kabel Deutschland plans the acquisition of the other three operators for 2.7 billion Euros. This would lead to a monopoly with 17 million customers. But in the end of August 2004, the German antitrust commission interdicted the deal. Kabel Deutschland now offers to be concessive, aiming to get green light anyway.

Contrary to Level Three, the in-house networks on Level Four are operated by various (> 4,500) players consisting of professional Level Four operators, regional operators, and housing associates. Five main operators are worth to mention: Tele Columbus with 2.3 million customer households in June 2004, PrimaCom with about 1.2 million, Bosch with 1.2 million, and EWT with 0.8 million (Tele Columbus, 2004; PrimaCom, 2004; Bosch, 2004; EWT, 2004; FRK, 2004).

2.2.2 Satellite

The current generation of satellite systems was particularly designed for broadcasting. It offers mainly digital one-way high-bandwidth transmission. The main players on the German market are SES ASTRA and Eutelsat. The majority of satellite homes use their set-top box mainly for free-to-air reception. In Germany, 5.1 million satellite customers are

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\(^1\) In March 2000, DT sold the company’s majority stake in the cable companies in North Rhine-Westphalia and Hesse. This was followed, in 2001, by DT’s sale of its majority interest in the regional cable television company for Baden-Wuerttemberg. This left DT as the 100 % indirect owner of cable television networks offering cable television services in six regions and as the holder of minority interests in three regions. The six regions, remaining under full ownership, accounted for approximately 75 % of the geographic area of Germany and 58 % of the German population. In March 2003, DT completed the sale of its six remaining cable TV regions (Hamburg/Schleswig-Holstein/Mecklenburg-Western Pomerania, Lower Saxony/Bremen).
enabled to receive digital signals. 2.2 million of them use a set-top box and make use of the digital transmission. Increasingly, innovative services are emerging in the narrowband (data services such as e-mail) and broadband (services as Internet access) areas. Furthermore, satellite technology in Germany has become more important as a substitute technology for the Level Three. In these cases data is sent by satellite receiver station to the head end of the Level Four, where it is fed in (Mohr & Thomas, 2004).

2.2.3 Terrestrial

Another competitive threat for the cable industry in the market for video content services emerges from the digital terrestrial transmission technology. Although the numbers in Table 2 show a continuous decline of the share of analogue terrestrial TV subscribers, Germany has started a major initiative promoting digital terrestrial transmission. In 2002, a first pilot project for digital terrestrial TV was established in the Berlin-Brandenburg region, where the analogue terrestrial transmission was switched off completely in August 2003. Other projects followed; a nationwide roll-out is at least under political consideration. In the first expansion stage the digital terrestrial technology will allow the transmission of 18 to 20 channels (Loebbecke & Staudinger, 2003).

2.3 Regulatory Issues

The German telecommunication broadcasting sector is regulated by four main laws: The telecommunication law (Telekommunikationsgesetz-TKG), the telecommunication service law (Teledienstgesetz-TDG), the media services treaty (Mediendienstestaatsvertrag-MDStV) and the broadcast treaty (Rundfunkstaatsvertrag-RStV). One main issue of German telecommunication and broadcasting regulation lies in the divided responsibility between the federation and the states. Thus, contrary interests are not always aligned and may create obstacles for further developments (Mohr & Thomas, 2004).

The structure of the German cable network with its different levels results from adjustment policies. The separation of Level Three and Level Four should allow additional business to small electrical engineering companies (Buellingen, et al., 2002). Since Deutsche Telekom sold the Level Three cable networks this separation blurs. The new owners of Level Three also want to play on Level Four.

Until now, the cooperation between the cable network providers and the TV stations does not stand for freedom of contract but for high regulation. The broadcast treaty and the media laws of the states enjoin on the network providers a special selection of TV programs for the available channels. Reason for this is the aim to protect variety and quality by so called must-carry programs. This causes a substantial asymmetry between cable and satellite distribution because the Luxembourg and France based satellite providers SES Astra and Eutelsat do not (cannot) obtain such regulation (Buellingen, et al., 2002). Primary, the digital technology will offer the cable network providers to selfish chose their program portfolio because 2/3 of each new created digital capacity are free for the providers’ own use (RStV, 2003; Doerr, Janik & Zorn, 2001).
2.4 Insights and Conclusions

The competitive landscape for video content services seems to have been in favour of (analogue) cable operators. The primary competition for cable operators in the video content field comes from the satellite players. The spectrum of free to air TV channels offered via satellite has expanded since the 1980s. The prices for satellite receiving installations declined during the last years, turning 'TV via satellite' into a mass market and making it a better substitution for cable TV. Furthermore, for a couple of years, satellite TV is the only transmission technology that offers receiving foreign video content (TV programs), making it attractive especially for immigrants and non-German speakers (Loebbecke, 2003).

As a highly cabled country Germany essentially relies on free-to-air programming and has less developed digital television markets. As far as digital television and the creation of new market models for the television industry are concerned, Germany is behind other European countries. The predominant form of television is still mainly advertising-financed free-to-air television (Mohr & Thomas, 2004).

To avoid cannibalization effects with their telecommunication business, Deutsche Telekom did not invest to upgrade the cable infrastructure from analogue to digital as long as it owned the cable networks. Thus, even today the broadband penetration rate for cable is much smaller in Germany than in other countries (OECD, 2003; Paltridge, 2003; Point Topic, 2003). Digitalization of the German television and radio networks is supposed to be completed by 2010, including a complete substitution of the analogue technology (Mohr & Thomas, 2004). Hence, digital penetration is expected to rise significantly during the next years and, at the same time, regulation is expected to further decrease in importance.
3. The Case of Sweden

3.1 Content Aggregators

3.1.1 Overview

The Swedish television market is relatively centralized and dominated by national broadcasters. It has 3 nationwide analogue free-to-air channels (2 public service and 1 commercial) and two addition free-to-air channels that serve more than half of the population. Public service broadcasting and the national commercial channel are operated at the national level with windows for regional material, primarily news and public affairs programming. The television advertising market is relatively young and amounted to €392 million in 2003, 23 percent of total advertising expenditures (IRM, 2004).

Sweden has inaugurated digital terrestrial television broadcasts and has used the technology to expand the offerings of the national public service broadcasters and to make some foreign channels previously available only by satellite and cable available as terrestrial broadcasts.

3.1.2 Digital TV Offerings

Sweden was one of the first European nations to initiate digital broadcasting, with broadcasts beginning in 1999. The public service broadcaster, Sveriges Television, was one of the strongest proponents of the transition and today broadcasts its two national and 5 regional channels and a 24 hour news channel as digital terrestrial channels. It also provides them as digital cable and satellite channels. The pre-existing national commercial terrestrial channel, TV4, broadcasts digital terrestrial broadcasts, as does Kanal 5—which previously was available only by satellite and cable. Digital terrestrial broadcasts of MTV Nordic, Eurosport, Discovery Channel, and Animal Planet and other cable channels are also available. Additional channels have been authorized but are not yet broadcasting. 3 channels owned by the Modern Times Group that were previously available of satellite and cable—TV3, TV8, and ZTV—do not offer DTT broadcasts because of choices of their parent firm (Naning, 2001; Brown, 2004)

3.2 Market Structure of TV Distribution Providers

Terrestrial signals play a more significant role in broadcast reception in Sweden than in Germany. 34 percent of Swedish households only receive terrestrial broadcasts, although 44% have cable service and 22% to receive satellite signals (Brown, 2004). Because it is a small market, the number of commercial domestic channels and amount of Swedish-language programming on cable and satellite are highly limited by economic factors. As a result, the majority of content on those distribution platforms is of foreign origin and in foreign languages making them less attractive to many viewers.
3.2.1 Cable

The Swedish cable industry is less developed than the German system and is based on 70 companies, but 4 firms (ComHem, Kabelvision, UPC Sweden, and Sweden On-Line) provide 85% of total subscription because of their strength in the large cities. Digital conversion is well underway but less than 10 percent currently receive digital service.

Cable services carry the free-to-air terrestrial channels, and a range of basic and premium channels.

3.2.2 Satellite

Satellite television has played a significant role in Swedish television since end of the 1980s when 2 channels (TV3 operated by what is now the Modern Times Group and Kanal 5 that is now operated by the Scandinavian Broadcasting System) began services from a base in London to overcome the terrestrial broadcasting monopoly of Swedish public service television.

The satellite system created to serve the needs of these commercial broadcasters was, of course, used to provide multi-channel services based on foreign channels in a tiered system of basic and premium services. Satellite services are provided Viasat (a subsidiary of the Modern times Group) and Canal Digital (a service of the Norwegian telephone company Telenor). Although originally established as analogue services, the competing platforms began digital broadcasts in 2001. Canal Digital has a 60% market share.

3.2.3 Terrestrial

Terrestrial television was a monopoly of the Swedish public service broadcaster until 1992 when the government responded to the arrival of commercial satellite television services in 1987 and 1988 by authorizing TV4 to operate a national channel with regional services.

Despite the early emergence of DTTV in Sweden, analogue reception remains entrenched as the primary means of reception. Only 4 percent of TV households receive digital terrestrial signals despite its availability in 90% of the households (EBU, 2002). A significant reason for public resistance is that viewers are required to pay a subscription fee (about €33) to receive DTTV, including the national channels available as free-to-air broadcasts via analogue signals. In addition the Modern Times Group’s channels (TV3, TV8, ZTV) remain available by analogue in the largest urban areas and by cable and satellite elsewhere.

The future of DTTV service provision is under continuing debate through parliamentary and agency actions. It is recognized that some mechanism to reduce household expenses for DTTV reception are necessary if the scheduled switch off of analogue signals in 2007 can be accomplished. Although several proposals have been put forward, no definitive policy to promote take-up has been decided.
3.3 Regulatory Issues

Swedish telecommunication broadcasting is primarily regulated by the 1996 Radio and Television Act. Two agencies bear primary responsibility for sector structural and operational issues. The Ministry of Culture has authority over terrestrial broadcasting technology and licenses and the Radio and Television Authority is responsible for frequency issues and cable and satellite activities. Another agency, the Swedish Broadcasting Commission has authority over content for broadcasting, cable, and satellite. Regulation is highly centralized and coordinated across the agencies.

The cable and satellite sector is less regulated than in other nations and licenses are not required for cable or satellite broadcasters, although they must register and report their activities. The primary regulation on cable systems is that they must carry the broadcasts of the public service broadcaster and the national commercial broadcaster TV4.

3.4 Insights and Conclusions

The Swedish market environment currently favours established terrestrial broadcasters but provides significant opportunities for cable and satellite operators because they first offered multi-channel services and operate in a largely deregulated environment.

In the past two decades television policies as a whole have been complicated by policymakers desire to maintain a controlled, closed system approach to broadcasting that has been frustrated by commercial actors circumventing the policies with satellite and cable transmission and refusal to cooperate with transition to digital terrestrial television. The result has been convoluted policy that has produced an inefficient broadcasting system that is confusing to consumers.

Digital conversion is well underway for satellite and cable services and the majority of subscribers are expected to receive digital services in the mid-term. The outlook for digital terrestrial television remains murky, however. Although it still has the support of the government and regulators, it is faced with significant resistance by consumers and domestic satellite and cable channels. It is doubtful that the 2007 turnoff date can be achieved unless rapid and significant policy choices alter consumer reluctance.
4. Comparative Summary: Germany and Sweden

Regarding the market structure and regulatory issues concerning DTV in Germany and Sweden, we have found significant differences (see Table 3 for a summary). This leads to differences in broadcasters’ and consumers’ support for digital television and the speed and extent of its introduction.

Table 3: Comparison between Sweden and Germany

<table>
<thead>
<tr>
<th></th>
<th>Sweden</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TV market</strong></td>
<td>Less competitive, centralized</td>
<td>Highly competitive, decentralized</td>
</tr>
<tr>
<td><strong>Number of free-to-air channels</strong></td>
<td>1 available nationally, 2 available for more then half of the population each</td>
<td>About 30 available nationally</td>
</tr>
<tr>
<td><strong>Public service broadcasting</strong></td>
<td>Central position, national level</td>
<td>Regional structure</td>
</tr>
<tr>
<td><strong>TV advertising market</strong></td>
<td>Young</td>
<td>Mature</td>
</tr>
<tr>
<td><strong>Households</strong></td>
<td>4.4 million</td>
<td>36.3 million</td>
</tr>
<tr>
<td><strong>Cable households</strong></td>
<td>1.9 million (44%)</td>
<td>20.6 million (57%)</td>
</tr>
<tr>
<td><strong>Satellite households</strong></td>
<td>1 million (22%)</td>
<td>13.8 million (38%)</td>
</tr>
<tr>
<td><strong>Terrestrial households</strong></td>
<td>1.5 million (34%)</td>
<td>1.9 million (5%)</td>
</tr>
<tr>
<td><strong>Regulatory concept</strong></td>
<td>State/central</td>
<td>Federal / decentralised</td>
</tr>
</tbody>
</table>

As Germany has a large and highly competitive TV market that is rather under-developed regarding digital television and interactive services, there could be a remarkable market potential for DTV in the next years (Mohr & Thomas, 2004). Satellite, cable and, less likely, DSL as the dominating infrastructures of today are foreseen to become the primary distribution channels for the digital ‘broadcasting’ services in future. We expect digital terrestrial TV to rather find a niche than become an important player. The speed and extent of the DTV introduction will partially depend on the willingness of the involved players (cable network operators, satellite operators, TV stations) to invest in the new technology as well as the regulatory situation. We still lack deeper insights into the consumers’ willingness to pay for the digital services. However, the planned analogue signal cut-off in 2010 is an additional stimulus for the development of DTV services and infrastructure.

As Sweden is an early adopter of DTV, especially of digital terrestrial television, the initial situation differs from Germany. Digital terrestrial television was seen as an opportunity to pre-empt inroads into the Swedish market by foreign satellite broadcasters. But due to the massive technical and conceptual problems regarding the launch of digital terrestrial television, user numbers still are rather low and end results of have been the broader provision of foreign channels by terrestrial distribution. Because of the costs of acquisition of digital terrestrial television, most Swedish viewers consider the costs of subscribing to the services outweigh the benefits (Brown, 2004), although that may change in the future. The small number of channels forced Swedish broadcasting authorities to enhance the
attractiveness by granting licenses to foreign broadcasters for foreign channels that are already available on cable and satellite. Analogue switch-off will be completed in 2007, three years before Germany. This should be a stimulus for further development in Sweden, most likely preceding the German one.
5. Conclusions

The differences evident in the German and Swedish cases indicate that the transformation to digital television in Europe will not produce equivalent outcomes across nations. The forms of DTV that come to dominate markets—cable, satellite, or terrestrial—will be highly influenced by pre-existing structures of terrestrial broadcasting, the extent to which cable and satellite services are available and consumed, pre-existing regulation and policy, and the level of activity of domestic content aggregators.

It appears that several different patterns of digital television services will be likely to emerge across Europe and that no uniform approach will be produced.

These factors suggests that policy expectations for broad adoption of digital terrestrial television that will lead to switch-off of analogue terrestrial broadcasting by either the originally planned or extended dates are unlikely to occur. Given existing policies that switch-off of analogue television will occur when high penetration of digital terrestrial television exists, it is very likely that target adoption levels will not be achieved because of the significance of digital cable and satellite services. In such cases, policymakers may have to adjust the targets to account for the effects of the other digital television infrastructures.
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