

## Internationalization of the Swedish Telecom Services Market

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### CHAPTER SUMMARY

This chapter surveys the internationalization of the Swedish telecom services market according to regulatory developments, growth of market segments, network barriers to entry, foreign entrants, and foreign activities by the domestic companies Telia and Kinnevik. Relevant entries into Sweden are discussed with reference to an earlier hypothesized model of internationalization of telcos, along with some tentative trends and strategic implications.

Even though voice and data services are growing more slowly in Sweden than in some larger European countries, Sweden attracts the interest of large players partly due to the alleged precursory nature of the liberalized free market, which, in combination with its smallness and advanced nature, makes Sweden attractive for trial-and-error, and partly due to the advancement in the Swedish cellular market—one of the most attractive markets. In addition, the Swedish telecommunication network precludes any major network barriers to entry, since it is fairly well digitized and fiberized. In the last decade, there have been new entries in cellular telecom services, public switching telephony and datacom services by both domestic and foreign players.

The FDIs of large telcos, such as Cable & Wireless, Vodafone, Pacific Telesis and France Telecom in Swedish telcos and the FDIs of AT&T, MCI and BT in Swedish offices are also important to note. The initially targeted market segment by these new entrants is the group of large, highly internationalized Swedish MNCs, also an important segment to the incumbent Telia.

Traditionally, Telia has had several cooperation activities, concerning technology and networks, with PTTs in the other Nordic countries as well as with European organizations such as CEPT, ETSI, EMO etc. More recently, however, more commercial cooperation activities have been carried out partly through the Unisource venture with PTT Telecom and the Swiss PTT and partly through FDIs, as in the Baltic states. Moreover, Millicom International Cellular, in which Kinnevik has a major stake, has made several FDIs in cellular in small developing countries.

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## 1. INTRODUCTION<sup>1</sup>

Customers in Sweden have traditionally been internationally oriented, seeking new solutions and service providers, especially for international services. In spite of the regulatory possibilities and the customers' needs, inward FDIs did not appear in Sweden until the early 1990s because the necessary digital technology had not been installed. However, over the last years an increasing interest in inward FDIs has been evident, which explains why the major revenue base of Telia is threatened, for instance through the appearance of extensive private networks and international calling cards.

Telia predicts (Telia, 1992) a decrease in the total growth of its sales volume from 6% in the 1980s to 2-3% in the mid-1990s, due to the recession and decreased market shares in almost all service segments. This sales figure may be decreased further since an increasing part of Telia's revenues derive from services that are exposed to competition, such as cellular, data services and cable TV (OECD, 1993a).

The new situation reveals a number of complex strategic issues, at both company and government level. One issue is the role of technological evolution both as an element in an internationalization strategy and as an explanatory variable behind market structural change.

The purpose is to describe and analyze the size and orientation of inward and outward FDIs in Sweden with respect to the market development for different services, the requirements of the major customer segments and entry barriers in the regulatory framework, network economics and performance, and price levels.

The focus of this paper is the strategic issues of the telcos and their actual behavior, which have been analyzed on the basis of primary<sup>2</sup> and secondary<sup>3</sup> data.

## 2. THE SWEDISH MARKET AND BARRIERS TO ENTRY

This chapter outlines some basic barriers to entry of the Swedish telecom services market. In addition, the character and the growth rates of a set of market segments (voice and data services) are analyzed.

### 2.1 Regulatory conditions in Sweden

This section tries to give a regulatory background to the conditions for and possibilities of inward FDIs in Sweden. The history of Telia's legal structure and status will be discussed, as well as the early and new regulations in Sweden in relation to the new directives from the EC.

Ever since the end of the 19th century, the market structure of telecom services in Sweden has been characterized by the lack of a monopoly grant, while in other EC countries the market structure has been gradually changing from a monopoly status of the national PTT to greater competition in telecom services.

In the EU, the EC recommends further liberalization according to the Rome Treaty, the Service Directive of 1990<sup>4</sup>, the ONP Directives in 1990<sup>5</sup> and 1992<sup>6</sup>, and the recently proposed

<sup>1</sup> This chapter is a part of an ongoing research project which deals with the evolution of international competition in the telco industry in the major OECD countries.

<sup>2</sup> Interviews have been conducted with most players in Sweden during the spring of 1993.

<sup>3</sup> Collection of available statistics from OECD and CEPT as well as some consultancy reports.

<sup>4</sup> Commission directive of 28 June 1990 on competition in the markets for telecommunications services.

Service Review (EC, 1993), through free competition in telecom services in 1998 and a 'Green Paper' for mobile/personal communication before 1994. Thus, the inevitability of full liberalization before the end of this decade is apparently confirmed in the proposed Service Review.

Telia has been a government-owned and government-controlled business agency since its inception. However, in 1981 the legal structure of Telia was changed, when a corporate subsidiary was formed (Teleinvest) to take care of the competitive business not relating to the core telephony services. In 1984 Telia was also allowed to borrow in the capital market through Teleinvest (Bohlin, 1992). In 1989, Swedish Telecom International was formed as a subsidiary of Teleinvest in order to take care of the large Swedish customers going abroad. According to the government bill passed (SFS, 1993) Telia became a corporate company on July 1st, 1993.

Even though there has been a de facto monopoly in Sweden since 1918, Sweden together with New Zealand (OECD, 1993a) has the most liberal regulatory framework concerning telecom services in the OECD. This means that in these two countries competition is formally allowed, although not always realized, in all parts of the public network assigned to telephony, in X.25 data communications and leased lines, as well as in analog and digital cellular telephony, and in paging. Competition is also allowed in other services in Sweden according to the new legislation (SFS, 1993).

In general, regulation takes place partly by restricting the activities of the national PTT (e.g. manufacturing and cable-TV services), partly by setting the structure of the market (e.g. licenses and price levels) and partly by defining the roles and interfaces of the regulatory body (Granstrand & Johansson, 1992). In Sweden there has been a tradition to separate regulatory functions from the government. Those functions have traditionally been included in the responsibility of Telia. However, in 1992 the regulatory functions were transferred to the National Telecommunications Agency (Telestyrelsen), which was set up in 1992<sup>7</sup> with 8 offices as an independent regulatory body responsible for settling disputes between parties on the market and for standardization, representing Sweden in international agreements and supervising the proposed Telecommunication Law (SFS, 1993) which, among other things, upholds and safeguards the national security and the universal service goal.

The liberalization in Sweden has mainly dealt with the interconnection of equipment, i.e. a definition of which equipment was part of the monopoly in 1980, free competition in low speed modems in 1983 and high speed modems in 1988, free competition in telephone handsets in 1985 and in PBX in 1990, along with free competition in the resale of leased lines to third parties and temporary network-to-network interconnect conditions in 1991 (Bohlin, 1992).

The enacted Telecommunication Law (SFS, 1993) states that a license is required for the provision of telecom services, i.e. services enabling transmission of voice, facsimile and data communication with low-speed modems, for the provision of mobile telecom services to a subscriber by using radio access and for the provision of capacity in leased lines to second or third parties. The law is supplemented by a Radio Law and a Tele-terminal Law. Moreover, if

<sup>5</sup> Council directive of 28 June 1990 on the establishment of the internal market for telecommunications services through the implementation of open network provision.

<sup>6</sup> Further directives on the application of ONP on leased lines, packet switched data and ISDN.

<sup>7</sup> However, the National Telecommunication Council was formed in 1989, responsible for standardization and frequency allocation, and transformed in 1992.

a license is granted, there is an obligation to provide excess capacity to anyone and the inter-connect charges should be based on the cost of providing the capacity. It should, however, be noted that the implemented laws give Telia the opportunity to be a dominant actor in a different way than was the case in the UK in the early 1980s, where Mercury was granted a duopoly structure of the market for ten years.

## 2.2 Performance of the Swedish telecommunications network

Digital networks seem to be a prerequisite for competition and attractive FDIs in telecom services. The sharing of services and telcos in the analog telecommunication network is not successful. The possibilities for a telco to manage a network are significantly improved with a digital network. This means that digitization, fiberization and call failure provide an essential background to the feasibility of FDI. This section is focused on the technical aspects of the Swedish telecommunication network but also tries to give some idea of the economies of the network in terms of the general distribution of main lines and central offices, which in turn may give an indication of the resources required to establish network control.

Over the last few years a major reduction of the cost/performance ratio in telecommunication equipment and provision has led to a major pressure on prices and to several possibilities of by-passing Telia's lines. Striking examples are cellular services and PBX services with leased lines.

Table 2.1

Summary of some key features of the Swedish telecommunication network 1985-1991

	1985	1986	1987	1988	1989	1990	1991
<b>DIGITAL central offices (1000)</b>							
No. of central offices (1000)	735	1014	1206	1624	1829	2300	2800
No. of digital central offices in perc. of total <sup>8</sup>	14.3	18.9	22	29	32	38	47
OECD <sup>9</sup>	n.a	n.a	n.a	n.a	35	42	48
<b>INTER-OFFICE TRANSMISSION</b>							
No. of main lines digital (perc. of total) <sup>10</sup>	n.a	n.a	n.a	39.5	n.a	61	75
OECD <sup>11</sup>	n.a	n.a	n.a	n.a	n.a	n.a	67
<b>FIBERIZATION</b>							
Km. fiber in inter-office transmission	5500	n.a	n.a	n.a	n.a	n.a	10000
Km. fiber in inter-office tr. (perc. of total)	17	27	37	49	58	75	n.a
OECD <sup>12</sup>	15	19	25	32	40	48	n.a
<b>CALL FAILURE</b>							
No. of long distance calls (perc. failure)	2.5	1.8	1.5	1.5	1.4	1.1	1.1
No. of faults per 100 main lines	16.5	17	14.6	14.3	11.8	11.9	10.3
OECD, long-distance failure average	n.a	n.a	n.a	n.a	n.a	2.8	n.a
OECD, average faults/100 main lines	n.a	n.a	n.a	n.a	n.a	29.1	n.a

<sup>8</sup> CEPT (1990).

<sup>9</sup> An average of Norway, Spain, Sweden, the UK, the Netherlands, Germany, Finland, France, Italy, Switzerland, Denmark, Japan and the US (Ameritech, Bell Atlantic, Bell South, Nynex, Pacific Telesis, SW Bell, US West, GTE and United Telecom). Figures from FCC, annual reports and CEPT (1990).

<sup>10</sup> CEPT (1990); this reference also applies to fiberization and call failure (except the OECD data).

<sup>11</sup> OECD (1993). This reference also applies to the call failures in the OECD (long distance and main lines).

<sup>12</sup> An average of Norway, Sweden, the UK, the Netherlands, Germany, Finland, Italy, Switzerland, and the USA (the networks of Ameritech, AT&T, MCI and Sprint).

As shown in Table 2.1, digitization in Sweden in terms of the number of digital central offices (CO) is about the same as the average in the OECD, i.e. in 1991 47% of the COs in Sweden were digital. Digital main lines in inter-office transmission in Sweden increased to 75% in 1991, just above the OECD average of 67%.

As may be seen in Table 3.1, the time of the introduction of competition in telecom services in Sweden may be defined as the time when Comvik Skyport, AT&T and later BT set up offices in the country, i.e. in the mid and late 1980s. At that time digitization reached 20-30% in Sweden, which might be taken as a minimum level of required digitization (on average) for larger inward FDIs. However, this figure is general and has to be analyzed and adjusted further for each service that is considered.

The substitution of optical fibers for coaxial cables, the so-called fiberization, is however not similarly important for FDIs since all cables may be used for digital transmission, even though optical fibers are important because of network capacity. Sweden has had a significantly higher level of fiber in the trunk network over the past years, 75% in 1990 compared to the OECD average of 48%.

Moreover, call failures and technical faults in the Swedish network have been significantly improved over the last decade and the indicators are significantly lower than the average in available OECD statistics (OECD, 1993a). The improvements in these measures may partly be explained by a higher degree of digitization and fiberization, but may also be the result of a more customer-oriented strategy by Telia and of strict requirements by the Swedish government.

The economies of the telecommunication network may be discussed in terms of the distribution of central offices and main lines, measured per inhabitant. These measures may give a general notion of the possibilities of achieving network coverage, e.g. resource requirements in terms of support personnel and number of nodes. In Table 2.2, a much lower number of inhabitants per main line than in the UK, Germany and France is revealed. This may be an effect of the larger area per inhabitant in Sweden, since the number of main lines is dependent on the number of locations of central offices to which the lines are connected. This is also seen in the number of inhabitants per central office, where Sweden had a much lower figure than the other three countries in the early 1980s and probably still has.

It may be hypothesized that the resources required for a high relative degree of network coverage are significantly higher in Sweden than in the other three countries, and it may also be hypothesized that the cost of inter-connection, especially to less populated areas, is higher.

Table 2.2

Inhabitants per main lines and central offices in Sweden, UK, Germany and France 1981-1990

Source: CEPT (1990)

		1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
SWEDEN	Inhabitants/ main line	1.7	1.68	1.66	1.63	1.59	1.56	1.54	1.51	1.49	1.47
	Inhabitants/ central office	1208	1168	1124	n.a	n.a	n.a	n.a	n.a	n.a	n.a
GERMANY	Inhabitants/ main line	2.79	2.68	2.57	2.46	2.36	2.29	2.22	2.15	2.12	2.45
	Inhabitants/ central office	2047	1965	1748	1672	1610	1563	1518	1466	1445	n.a
UK	Inhabitants/ main line	2.93	2.88	2.79	2.7	2.61	2.56	2.49	n.a	n.a	2.31
	Inhabitants/ central office	1973	1936	1910	n.a	n.a	n.a	n.a	n.a	n.a	n.a
FRANCE	Inhabitants/ main line	3.06	2.8	2.61	2.49	2.4	2.31	2.26	2.18	2.1	2.02
	Inhabitants/ central office	2001	1843	1739	1666	1606	n.a	n.a	n.a	n.a	n.a

To sum up, Tables 2.1 and 2.2 give an idea of the network considerations that may be made prior to FDI in Sweden. The degree of digitization in Sweden is on a par with other OECD countries, while the number of installed fibers in the trunk network is significantly higher than the average in the OECD. In addition, the call failures, both in the long-distance network and the average of faults per main line, are significantly lower in Sweden than the average OECD level. The degree of digitization and fiberization in the Swedish telecommunication networks may call for low barriers to entry in terms of technical network considerations, while the distribution of central offices and main lines would imply relatively higher economic network barriers to entry in Sweden.

### 2.3 The telecom services market in Sweden

Considerations of FDIs in any country involve market potential. As seen in the previous chapter, improved network conditions in Sweden do not seem to be a prerequisite for entry, which implies that it is essential to consider other factors, such as the general market potential, price levels, the market share of the dominant actor and growing services segments before making FDIs in Sweden. This chapter outlines the general characteristics of the Swedish customers, the price levels, the growth patterns of different services, in combination with a discussion on maturity and, finally, the major customer segments and their requirements.

The economy in Sweden is to a large extent affected by the economy in other countries. The heavy international orientation of Swedish industry and, consequently, the more sophisticated demand for reliable, controllable and predictable telecommunications systems, may be explained by the fact that, on average, one third of the gross domestic product is exported and that in Sweden there is a high concentration of large companies.

Telephony charges in Sweden are below average in the OECD (OECD, 1993a) for residential users (42%)<sup>13</sup> as well as for business users (51%)<sup>14</sup>. In addition, there is a substantial cross-subsidisation of local calls from long-distance and international calls. Due to the difference between the charges and the cost structure in the provisioning of telephony services in Sweden, the international and long-distance call charges will decrease while local call charges will increase, even though the Telecommunication Law or the proposed agreement between Telia and the government will state a maximum price level of telecom services at net consumer price index—1%. Cellular prices are lower (36%)<sup>15</sup> than the OECD average, as are the X.25 data communication charges (30%) and the leased-lines charges at different speeds (60-70%)<sup>16</sup>.

A result of the new legislation, stating cost-based tariffs, and of the increasing FDIs in Sweden, will be that prices as entry barriers, not the prices as such, will increase, even though the price levels today are relatively lower than the average OECD levels.

Table 2.3 summarizes the market growth in Sweden, France, Germany and the UK, where the average annual growth rates between 1988 and 1991 of voice and data services, respectively, are shown. In Sweden, the fastest-growing voice services are voice messaging (25%) and cellular (12%), while in data services facsimile (45%) and EDI (40%) have the highest growth rates. The only service with a negative growth rate is satellite for voice, which may be explained

<sup>13</sup> For residential users the fixed charges are 20% lower, while the usage charges are 57% lower.

<sup>14</sup> For business users, especially the usage charges on a basket of telephone charges are significantly lower (63%), while the fixed charges are average ones.

<sup>15</sup> On a basket of charges.

<sup>16</sup> This figure is valid as an average when Turkey is excepted, since Turkey has exceptional prices.

ned by the increasing share of fiber in overseas telecom services. However, Sweden seems to have lower growth rates in all services in comparison to France, Germany and the UK.

Table 2.3

Average annual growth rates (%) in voice and data services (1988-1991) in real values for each country

Source: MIRC (1991)

#### DATA SERVICES

	Facsimile	Online database	Public e-mail	EDI	Mobile data	Satellite (video & data)
Sweden	46%	15%	6%	43%	9%	4%
France	70%	41%	19%	171%	14%	11%
Germany	77%	36%	35%	142%	51%	26%
UK	58%	26%	21%	130%	24%	17%

#### VOICE SERVICES

	Cellular telephone	Specialized mobile	One-way paging	Voice messaging	Satellite voice	Toll free
Sweden	13%	8%	6%	28%	-6%	4%
France	16%	10%	5%	14%	-3%	24%
Germany	32%	20%	16%	52%	-6%	19%
UK	27%	20%	14%	55%	3%	13%

Potential service segments in Sweden may be those that are growing at a significantly higher pace in other European countries and those which are not already mature in Sweden. The maturity of each service may be measured as the density in terms of accumulated usage per inhabitant. This is, however, not done in this paper, but potential service segments in Sweden are still identified (from Table 2.3). Examples are mobile data, which is growing fast in Germany but not in Sweden in spite of the installed Mobitex<sup>17</sup> system, as well as public e-mail and EDI<sup>18</sup> along with toll-free voice services, which are at least growing at a threefold higher pace in France, Germany and the UK. These services ought to have a potential in Sweden as long as they are not mature (which, for instance, the Mobitex system might be). Cellular, on the other hand, is growing more slowly in Sweden, simply because the penetration is much higher<sup>19</sup> in comparison to the other three countries in Table 2.3.

Finally, the demand and requirements of the Swedish telecom service customers will be analyzed. In terms of usage of telecom services in different industry segments in Sweden, manufacturing has the largest volumes but at the same time one of the lowest growth figures in Swedish industry (on average 25% annually from 1981-1987), while financial/insurance/banking are growing at the highest pace (42%) according to OECD (1993b). Average annual growth rates for other industry segments are for central & local government 13%, for transport 27% and for retail/wholesale 25% over the same period of time. The high growth

<sup>17</sup> A first variant of Mobitex was installed in Sweden in late 1986, while another Mobitex system with higher capacity is now sold to other countries.

<sup>18</sup> The frame relay technology seems to have brought expectations of growth in Sweden in the LAN-LAN segment (not included in Table 2.3) according to the interviewed respondents.

<sup>19</sup> 7.9% in Dec 1992 compared to 2.4% in the UK, 0.8% in France and 1% in Germany (CIT Research, 1992).

rate in financial/insurance/banking is, however, not unique for Sweden, but it may suggest a potential for growth in other segments as well.

According to Thorngren (1993), the initial focus of the telcos entering the Swedish market seems to be pricing, while in the long run a more relevant focus ought to be services at more valuable pricing for the customers and new services. This is in line with decreasing price levels approaching cost levels, which increases the barriers to entry in comparison to the former administrative price levels.

Lindskog (1993) has presented the criteria of the Swedish central & local governments' procurement of data services (approx. 45 MUS\$ annually) in 1993. The determinant of procurement was price, since all of the offers seemed to have a reasonable technical solution. The prices of BT were 20% higher and those of Megacom<sup>20</sup> 33% higher than the prices offered by Transpac on a basket of services. In addition, it was important for the Swedish central & local governments to have the possibility of determining the agreement within two years as well as measuring its availability and performance. When it comes to the procurement of telephony equipment and services (approx. 185 MUS\$ annually), Lindskog determined three important customer freedoms, i.e. the possibility of using different PBXs, different telcos and also the possibility of using hybrid solutions of PBX and Centrex<sup>21</sup>. Other relevant customer criteria according to Lindskog are a strong telco/partner, a reliable technical solution, security and a balanced and buyer-friendly agreement.

The procurement criteria of Swedish industry may not be equally focused on price, although it is still important, as it was for the Swedish central & local governments. The possibilities of telecom services developing along with support seem to be at least as important as price for the industry. A striking example of this is the fact that most large companies in Sweden have had to build up their own LAN solutions with their own technical support staff since, according to BT (Sweden), the telcos have not been able to meet the requirements. According to Bäckman (1989), Swedish corporate customers with more than 50 employees ranked price only as the 17th most important criterion for procurement of data services in 1987. This was however the case when there was still no real competition for customers in Sweden.

At this stage it would have been fruitful to further analyze the customer benefits of the different customer segments for each telecom service in order to provide a framework for entry patterns. Services with high potential growth rates and high customer benefits for a suitable volume of customer usage would generate high levels of FDIs, while services with low potential growth rates and low levels of customer benefits for a low volume of customer usage would be of low foreign interest. An example of the former services may be EDI for the manufacturing industry, while satellite for voice may be an example of the latter. Another service that is identified as having a potential and ought to have high customer benefits is toll-free voice services offered, for example, by the financial/insurance/banking segment to private customers or by parents to their children.

<sup>20</sup> A subsidiary of Telia.

<sup>21</sup> Centrex provides a PBX-functionality built into the network.

### 3. FOREIGN ENTRIES IN THE SWEDISH MARKET

This section will give an overview of the foreign and new entrants' activities and investments in Sweden as of 1993. Telia will thus not be covered explicitly, even though it will be mentioned when relevant in relation to other actors.

However, a brief comment on the competitive situation of Telia should first be made. As indicated in the previous chapters, Telia's major revenue base in Sweden is threatened.<sup>22</sup> International experience from the UK and the US suggests that Telia should aim at a 60% market share in international calls (it was 90% in 1991) and an 80% market share in long-distance calls (it was 100% in 1991) in 1995 (Thorngren, 1993). Since the early 1980s Telia's market share has dropped to approx. 50% for data services in general and telecommunication equipment such as telephone terminals, small PBXs and modems, while it has a market share of approx. 80% in large PBXs and approx. 60% in cable TV (Cap Gemini, 1992).

These figures give an indication of the volumes of FDIs that have been and will be made in Sweden over the next few years. The FDIs and the corresponding activities will follow different patterns which are important to identify in order to be able to forecast and anticipate future steps by competitors. In this paper, this analysis will be carried out using some generalized options from an earlier proposed model of internationalization of a telco (Granstrand & Johansson, 1992).

In general, no international competition occurred in telecom services in Sweden until the 1980s. Telia was active not only in telephony (fixed and cellular), but also in PBX and terminal manufacturing, packet and switched data services, broadcasting and cable TV etc.

#### 3.1 Cooperation and consultancy activities

Cooperation and consultancy activities occur especially in network cooperation. A natural cooperation alliance is the necessary cooperation between Telia and other telcos concerning leased lines, inter-connect traffic<sup>23</sup> and also concerning some international data services. An important network cooperation agreement is that between telcos and other companies with fiber cables, such as railway and energy distribution companies. Cooperation agreements between cable-TV operators and telcos will also most probably be seen in the Swedish market.

In 1992 the telco Tele2 set up an inter-connect agreement for X.25 with Sprint (to SprintNet). In addition, Tele2 has a long-term strategic agreement with Banverket (the railway company supporting and investing in the railway), who invested in a fiber-optics network (6 pairs of fiber) in 1991. Two of these pairs are partially designated to Tele2 (as well as Comvik GSM and potentially Dotcom, see below). Tele2 also cooperates closely with Sydkraft Telecom, a subsidiary of the energy distribution company in southern Sweden, who also has a fiber-optics network. In addition, agreements have been reached with Svenska Kraftnät and Vattenfall, other large energy distributors, who have placed their power lines at the disposal of Tele2 for the installation of fiber cables. These agreements are an important part of Tele2's strategy to by-pass Telia and a part of their aim to install fiber in the local loop. Tele2 claims that it is cheaper to invest in new networks because of the administrative prices of leased lines from Telia to urban areas, even though they are still using Telia on some parallel routes.

<sup>22</sup> The market shares of foreign telcos in Sweden have unfortunately not been available.

<sup>23</sup> Currently priced at 0.65 SEK/min by government decision.

The remaining capacity of the two fiber pairs of Banverket (approx. 84%) has been offered to Dotcom, a Swedish supplier of PBX systems<sup>24</sup> from Alcatel, Siemens, Philips and AT&T along with equipment for e.g. security systems. The option to use the remaining capacity would make it interesting for Dotcom to enter the long-distance and international telephony market and possibly also the data services market. Strategic alliances with, for instance, cellular telcos or CATV operators seem, however, necessary in order to get access to the local customer and in order to by-pass the local network of Telia.

A strategic owner behind several corporations is Kinnevik with strategic ownership in Tele2, Comvik and Kabelvision<sup>25</sup>. These ownership connections, along with the strategic alliances with Banverket and the energy distribution companies, make a powerful conglomerate, as seen in Figure 1.

The cooperation between Telia and PTT Telecom in Unisource is important for Telia's international telecom services in Sweden and consequently for Telia's competitive situation in Sweden.

Important strategic alliances have thus been found between Banverket and the companies Tele2, Comvik GSM and potentially Dotcom. In addition, Tele2 and the energy distribution companies Sydkraft Telecom, Svenska Kraftnät and Vattenfall have powerful agreements. International alliances which may have an effect on Sweden are MCI-BT and Unisource.

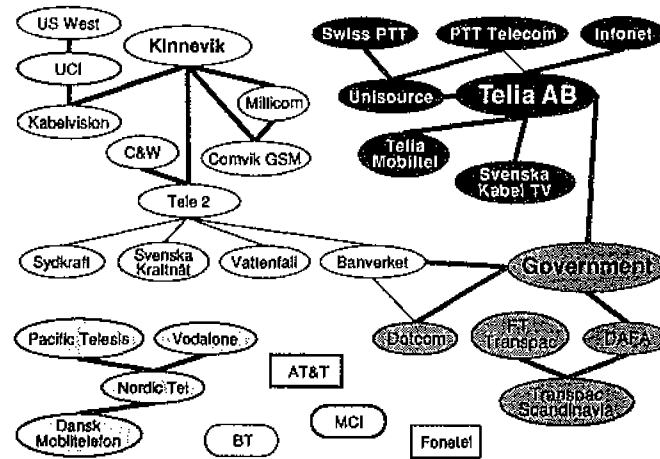


Figure 3.1. Major agreements (thin lines) and major ownership relations (thick lines) on the Swedish market in 1993.

<sup>24</sup> Including the specific solutions of network groups with radio links, leased lines and routers etc.

<sup>25</sup> In addition, Kinnevik has invested in two TV channels in Sweden.

### 3.2 Special service focus

Interest in FDI in the 1980s was focused on data services, not telephony. In the early 1990s telephony seems, however, to be more interesting for telcos in Sweden and, consequently, a strategic shift from data services to telephony and data services is seen in the telecom services industry.

Telcos with an obvious special service focus are actually only VAN operators, cellular telcos and to some extent cable-TV operators in Sweden. Other telcos, such as BT, AT&T, MCI, Transpac Scandinavia and Tele2 provide several services and are also trying to diversify into new services.

One of the operators focusing on VANS is General Electric Information Systems (GEIS). GEIS set up the first datacommunication link over the public switching telephone network in Sweden already in 1968. The business idea was that a centrally located large computer is cheaper for the user than owning a computer. The strategy pursued by GEIS has always been to offer global transmission, processing and storage of business information, including MNS, EDI and e-mail, by using leased lines. The companies Electronic Data Systems and IBM have similar value-added services in Sweden, neither of them in direct competition with Telia.

Another special service worth mentioning is CATV and the 26% interest of United Communications International<sup>26</sup> in Kabelvision<sup>27</sup>, which is the second largest cable-TV company (approx. 25% market share) after Telia's subsidiary Svenska Kabel TV (approx. 60% market share). The largest shareholder in Kabelvision is, however, Kinnevik (37%).

A third special service focus is that seen in the cellular telcos Comvik GSM,<sup>28</sup> Nordic Tel and Telia Mobitel, who have cellular as their main service offer. Telia Mobitel has, however, also mobile services such as land mobile radio, maritime mobile radio and paging. Because cellular has the highest penetration in the World,<sup>29</sup> cellular telcos in Sweden focus on most market segments. They have each invested about 150 MUSD<sup>30</sup> in their existing networks. The area focus in their declared expansion plans for the GSM networks is however somewhat different.<sup>31</sup>

Scandinavian Info Link ought to be mentioned as a special service or application formed in 1988 by some large users<sup>32</sup> in order to establish an electronic-mail system (Memonet). In 1993, telecom services such as facsimile and access to databases are included. The Swedish Post Administration acquired the company recently, and also included a service that automatically converts electronic mail into ordinary letters.

The special service focus discussed above may be summarized as follows. A narrow focus is seen among the VAN operators GEIS, EDS, IBM etc., among the cellular telcos Nordic Tel,

<sup>26</sup> UCI is partially (45%) owned by US West.

<sup>27</sup> Communications Week International, No. 82, pp. 3.

<sup>28</sup> Comvik has recently closed their old analog cellular system, which was set up in 1981.

<sup>29</sup> CIT Research (1992).

<sup>30</sup> According to managers with Comvik GSM and Nordic Tel.

<sup>31</sup> Telia Mobitel has their NMT 900 customers who presumably demand the same coverage of GSM, i.e. 94% of the population and 84% of the area. They aim to reach this coverage in 1996 for their GSM network. Comvik GSM and Nordic Tel, however, seem to be satisfied with a coverage of the major parts of the population, i.e. the southern parts of Sweden including major cities and roads in the northern region, with approx. 90% of the population and 60% of the area.

<sup>32</sup> Ericsson, Volvo and Scandinavian Airline Systems (SAS). In 1992 approx. 40% of Scandinavia's 100 largest companies were subscribers to the service.

Comvik GSM and Telia Mobitel, among the Swedish Post Administration with e-mail, and among the cable-TV operators, such as Kabelvision and Svenska Kabel TV.

### 3.3 Special market segment and area focus

A special market segment and area focus may characterize almost all of the telcos that are not cellular telcos, i.e. they have all focused on business customers in large internationally oriented companies, who demand advanced data services and international VPN services. The telcos have followed their customers (MNC) abroad combining this with gaining market shares in the return-to-home-country-market (AT&T and MCI). Transpac and BT, on the other hand, have the ambition to gain larger market shares also in the domestic Swedish market, even though their focus is on large companies.

BT uses the Tymnet network, which they acquired in 1989, to provide international data services together with Syncordia, their outsourcing subsidiary. BT Worldwide (Sweden) states that they have a 25% market share in international data services in Sweden through the former Tymnet. LAN-LAN connections are also established in Sweden through additional leased lines. BT is expanding the original Tymnet network and aims at implementing ATM technology in the network, which will integrate voice, video and data. In addition, BT has focused on video-conferencing services and products. BT will expand their services to include international telephony in Sweden (and the rest of the world) already next year through their Cyclone project, aimed at providing a range of VPN services for international customers at 5-15% lower prices (Telephony, 1992).

BT has a global ambition and sees the Nordic network as an (important) hub in their global network. Large MNCs are penetrated by BT. When BT bought Tymnet, they took over an X.25 network of leased lines in Sweden along with ten technicians for support services in a Stockholm office, which was set up by Tymnet in 1984. In 1993 BT Worldwide has Nordic offices also in Göteborg, Oslo, Copenhagen and Helsinki. Since last year, several qualified sales personnel have been hired, partly from Megacom, a subsidiary of Telia.

France Telecom Transpac focuses initially on data services in general. In Sweden, France Telecom formed Transpac Scandinavia in 1992 through the acquisition of DAFA (a major user of data services with a large leased-line network) in order to get access to a national network with close nodes and an existing customer base. A similar approach has also been adopted by Transpac in the UK, Germany, Switzerland and Italy.

Transpac Scandinavia aims at establishing a multi-domestic base of customers and local networks with close nodes (however connected into a pan-European network within France Telecom Transpac). This implies a strategy towards both international and domestic customers.

Another approach has been adopted by Cable & Wireless (C&W), who together with Kinnevik formed Tele2 out of Comvik Skyport in 1991. The initial focus by Tele2 was affected by Comvik Skyport's data services activities, e.g. national and international X.25 connections through leased lines. However, in March 1993, Tele2 also included international calls (approx. 5% lower price) with direct customer access<sup>33</sup> in their service portfolio, which reflects their ambition to become the second telco with an extensive direct customer access in Sweden. In addition, they intend to launch a calling card, which via transit agreements with

<sup>33</sup> Through a new international prefix (007) instead of 009 with Telia. Their service is available to all customers that have an AXE (i.e. a digital connection)-connected terminal (55% of the subscribers in Sweden at the end of 1992).

Finland and Denmark will transfer international calls. Finally, it should also be mentioned that Tele2 has invested in a fiber-ring in Stockholm with a central office in Kista, an industry area with a high MNC concentration outside Stockholm.

Tele2 uses the experiences gained from Mercury in the UK in order to build a new base of customers and networks in Sweden. Tele2 invested approx. 70 MUSD up to 1990 and will invest approx. 15 MUSD annually until 1995.<sup>34</sup> Tele2 focuses on the perceived customer benefits, not on the technical solutions, through professional customer services and additional telecom services, which would mean that Tele2 does not think that new technology is a competitive weapon in the long run.<sup>35</sup>

The approach 'follow your customer's data services abroad' fits well into the activities by AT&T and MCI in Sweden. AT&T Nordics provides international data services. In the late 1980s, AT&T Nordics offered leased lines and private networks on X.25 together with Telia. In 1993, AT&T Nordics also offers switched data services along with VPN for data services (called GSDN). Since their launch of the AT&T calling card, however, international telephony, and especially international toll-free calls, have been included.

AT&T concentrates on America-related customers, i.e. American customers in Sweden and Swedish customers in America. AT&T Nordics established an office in Stockholm in 1987 as a part of their international operations department, with the intention not to interfere with the local telco.<sup>36</sup> However, in 1992 AT&T bought McCaw,<sup>37</sup> which was a clear strategic move towards direct customer access. This calls for a wider view when analyzing AT&T Nordics.

MCI International opened an office in 1992 and invested in an international gateway in Stockholm. The office is a part of their strategy to follow their customers (MNC) abroad and they state that they do not see Telia as an immediate competitor. In contrast to AT&T, though, MCI International Sweden seems to focus on telephony with calling cards and private line services (VPN) along with international toll-free calls. However, they also provide switched international data services in cooperation with Telia. MCI states that they do not have any ambitions towards switched international calls apart from their calling cards.

The debate on area focus by the foreign telcos investing in Sweden must be raised to a European level, since BT, France Telecom Transpac, AT&T, MCI and the GSM telcos (through their owners Vodafone (25% in Nordic Tel), Pacific Telesis (51% in Nordic Tel) and Millicom (20% in Comvik GSM)) are all a part of a European strategy.

The special market segment and area focus is on large MNCs in the major metropolitans in Sweden. AT&T, MCI, BT, Tele2 and Transpac all have this focus. Tele2 and Transpac Scandinavia seem, though, to have broader network coverage ambitions than the other three. The cellular telcos Nordic Tel, Comvik GSM and Telia Mobitel are directing their marketing activities towards the mass market, although with slightly different initial network-coverage ambitions.

<sup>34</sup> Communications Week International, April 19th, 1993.

<sup>35</sup> According to managers of Tele2.

<sup>36</sup> According to managers of AT&T Nordics.

<sup>37</sup> The cellular telco in New York.

### 3.4 Globalized and denationalized telcos

Among the telcos making FDIs in Sweden, it is only AT&T with large international FDI volumes and BT, mostly through their trial-and-error with Syncordia (their outsourcing company), who claim ambitions towards a globalized telco.<sup>38</sup> France Telecom (Transpac) does not have the same expressed strategy to become a globalized telco. Cable & Wireless has also had an extensive global strategy, but Sweden and Tele2 seem to be more a part of a trial-and-error approach in one of the most liberalized countries in the OECD, using the experience gained from Mercury in the UK.

Finally, we have not been able to find any denationalized telcos (telcos with no important home market) and thus not in Sweden either.

### 3.5 Summary of entry barriers and new entrants

There are no major regulatory barriers to entry. The new Telecommunication Law states only that a license is required for the provision of telecom services. In addition, there is an obligation to provide excess capacity to other actors. However, Telia's dominant position will remain, and the new law will open up increasing opportunities to fully utilize its competitive advantages in Sweden, which may be an important entry barrier within a short period of time for FDIs.

The network barriers to entry seem to be low. Since the end of the 1980s, the quality of the Swedish telecommunication network has been sufficient to attract FDIs. The entry barriers in terms of the economies of the network may, however, be hypothesized to be higher relative to other European countries, if the distribution of central offices and main lines is taken into account.

Since the new legislation states cost-based prices, and since competition in Sweden will increase, prices as entry barriers will increase. Prices will, however, decrease from a lower level relative to the OECD average, even though most prices are administrative prices.

Entry into the Swedish market will most probably be characterized by entries into specific services and market segments, such as the early entrants into international data services, which have followed a service path including domestic leased lines, VPN etc. towards telephony and a broader customer base. The situation in 1993 is, however, rather different, since the digital network allows lower barriers to entry into telephony, which may call for a wider spectrum of potential specific service segments to be entered. The focus on business customers and especially MNCs will, however, most probably remain until the by-pass possibilities to the end-customer have been enhanced, e.g. through cable-TV networks and cellular networks in the local loop.

In Table 3.1 some of the key data for new entrants in Sweden are summarized. The early entries by GEIS, IBM and EDS are, however, not included since their activities in telecom services, i.e. global transmission, are difficult to separate from the other activities of the companies, such as information storage and processing.

In Table 3.1 it may be seen that there are small differences in the number of offices and nodes, but large differences in the number of employees. This may be an indication of the ambitions and level of activity of the telcos.

<sup>38</sup> Even though this strategy is now shared with MCI through a joint company including Syncordia.

Table 3.1

Summary of key data for some new entrants. Sources: Annual reports and interviews

Telco	Year of entry	Major owners	Offices (Swe)	Empl. (Swe)	Turnover (1992 <sup>(39)</sup> )	Nodes (Swe)	Tot. Inv. (mid-93 MUSD)	Entry strategy	Entry areas
AT&T	1987	AT&T (100%)	1	30	n.a.	1	n.a.	Cooperation (leased lines)	Int'l dataserv. calling cards
BT	1989	BT	2	40	75 (Nordic)	3	n.a.	Cooperation (leased lines)	Data services, Int'l telephony
Comvik GSM	1981 (92) <sup>(40)</sup>	Korsnäs (100%)	7	170	n.a.	2	> 150 <sup>(41)</sup>	Investments in new network	Cellular (GSM)
MCI	1992	MCI	1	2	n.a.	1	n.a.	Cooperation (leased lines)	Int'l telephony, data services
Nordic Tel	1991	Pacific Tel. (51%) Vodafone (19%) <sup>(42)</sup>	3	> 150	n.a.	3	appr. 150 <sup>(43)</sup>	Investments in new network	Cellular (GSM)
Tele2	1986 (91) <sup>(44)</sup>	Kinnevik (60%) C&W (40%)	3	130	n.a.	6	appr. 70 <sup>(45)</sup>	Coop. (leased lines), inv. in new network	Int'l data, Int'l telephony
Transpac Sc.	1992	France Telecom (60%)	8	16 <sup>(46)</sup>	n.a.	8	n.a.	Acquisition	Data services

Following the pattern described above, Dotcom is an example of a potential new entrant into the international and long-distance call segment for business customers, who initially is required to provide a leased line, or a co-leased line, to the railway station, where Dotcom's potential fiber ends. Dotcom was formed in 1990 out of a part of the former Ericsson Information Systems. An interesting but unknown potential entrant is Fonetel in Malmö, who in 1992 won recognized status to operate network services, similar to Tele2. The initial service focus of Fonetel will be on international telephony and data, probably using satellites and a switching center in Malmö. Fonetel is formed out of Washington-based Veracom International.<sup>47</sup> Other probable potential entrants are the cable-TV operators Kabelvision/Finvision (with a rather high level of network coverage in Sweden) and Stjärn-TV (located in the Stockholm area), who ought to be strategic partners in local networks.

A de facto new entrant is Unisource, jointly set up in 1991, owned by PTT Telecom and Telia (potentially also the Swiss PTT, who owns a part of Unisource Satellite Services since 1992), who recently entered the international data services market. Most probably, Unisource will include international switched telephony in the long run.

<sup>39</sup> Most of the companies had not started full-scale operations in 1992.

<sup>40</sup> Comvik AB started in 1981, Comvik GSM AB in 1992.

<sup>41</sup> According to interviews with Comvik managers.

<sup>42</sup> Three other owners are Spectra-Physics, Volvo and Trelleborg who each have 10% in Nordic Tel Holding, who owns almost all shares in the operating company Nordic Tel (with the brand name European).

<sup>43</sup> According to interviews with managers at Nordic Tel.

<sup>44</sup> Comvik Skyport started in 1986, Tele2 in 1991.

<sup>45</sup> Communications Week International, April 19th, 1993.

<sup>46</sup> Will increase to approx. 70 because of an order received from the government administration in May.

<sup>47</sup> Communications Week International (1992).



BT is another potential new entrant into the long-distance telephony segment in Sweden, with their Cyclone project, which most probably will be a part of their European telephony strategy to be launched in late 1993 or early 1994.<sup>48</sup> Through VPN services, they ought to be in telephony already, but still not to a large extent.

AT&T and MCI will, though, most probably remain in their existing segment, according to their official European intentions, focusing on the large EC countries in central Europe. Even though Sweden and the Nordic countries in general are an important hub in their global networks, the Nordic countries remain a small market, however with large interesting MNCs. Transpac and France Telecom will also most probably remain in the data services segment, unless obvious opportunities are opened up through technology development, for integrating telephony into their existing Swedish network.

Finally, there is, rather surprisingly, no new entrant in mobile data, which ought to have a potential in Sweden, judging by growth figures in Germany and the UK. Similarly, there is no new entrant in paging.

#### 4. FOREIGN ACTIVITIES AND INVESTMENTS BY TELIA AND KINNEVIK

The foreign investments by Telia and Kinnevik are considered as the only foreign investments made from Sweden in telecom services. Kinnevik owns approximately 49% of Millicom International Cellular (a Luxemburg-based company) and 100% of Comvik GSM through Korsnäs (Kinnevik owns more than 90% of Korsnäs). Thus, the international activities by Millicom International Cellular and Comvik GSM ought to be included in the activities by Kinnevik. Below, the activities are separated into a period of technology and network cooperations and a period of commercial cooperations.

##### 4.1 Technology and network cooperation activities

Kinnevik has not been found to have any of these activities, while Telia certainly has. Until the late 1980s, there was an open-minded and cooperative environment between the PTTs.

Swedtel, a subsidiary of Telia, sells Telia's knowhow outside Sweden. Africa and Eastern Europe are examples of geographical areas which they work in. The foci of the activities are, for example, planning, consultation and operative management.

The Nordic countries have been the major focus of Telia. Already in 1969, the idea of building a Nordic mobile telephony system was accepted at a Nordic telecom conference. In 1975 the specifications of the NMT450 system were decided on and in 1981 the system was introduced. The market development was exponential and the system or its derivatives (including the NMT900 system starting in 1986) was later introduced and openly spread in 30 other countries (in addition to the Nordic countries) (Granstrand, 1993). A similar cooperation (Nordtel) between the Nordic telcos was set up in 1980 to coordinate planning and modernization of networks and introduction of new services.

In 1990, Telia further expanded its international datacom network by investing 5.38% in Infonet. Other examples of cooperations in the same manner of network cooperations are: EMO (European Mobile Operations) for the Nordic countries and recently also for PTT Telekom and the Swiss PTT; Nordframe (1991), a regional frame relay public data network

<sup>48</sup> Telephony (1992).

service on leased lines jointly by the Nordic telcos; a European EDI interconnectivity license (1992) to Telefónica Services, Ireland Post GEM and to Infonet; and a European cooperation (in 1993) where the European PTTs will test an ATM network in early 1994.

##### 4.2 Commercial cooperation activities

Millicom International Cellular has received several cellular licenses<sup>49</sup> (either on their own or through a consortium) over the last decade. They have focused on small developing countries, where small networks are implemented with a potential short pay-back period. Millicom has, however, also received PCS licenses in two US cities (1990) and a "wireless to the home"<sup>50</sup> license in the UK (1992). Moreover, Millicom has also owned a service provider in the UK, which they sold to Hutchison in 1991. Kinnevik also owns 33% of the second Norwegian operator Netcom GSM AS (Ameritech and Singapore Telecom are also part-owners of this operator).

Telia has extended its international activities from technology and network cooperations to commercial cooperations in the early 1990s. In 1987, however, a cooperation called STS Telecom was set up by the Nordic PTTs (Telia 48%) in order to supply a high-quality datacom network. However, the commercial cooperation was faced with competition from its domestic networks at the same time as it leased capacity at market price. The cooperation ended its activities in 1991.

Starting with a training program for the Estonian PTT, Telia and the Finnish PTT obtained an agreement to install NMT450, NMT900 and GSM systems. Later on, the telcos were also given the responsibility for reconstructing, partially owning and operating the national and international networks in Estonia, while a similar agreement for the fixed network in Latvia is still pending. Telia has also several interests in GSM ventures, such as a 12.74% stake in a venture in St Petersburg (Russia) and a 14% stake in the Pannon consortium in Hungary, while the GSM license in Italy through the Omnitel venture (Telia 9.8%) is still pending. In mobile data (the Mobitex system), Telia has obtained licenses in France (10% in the TDR venture) and in the UK (5% in the RAM Mobile Data venture).

During the last half of the 1980s Telia started to cooperate with PTT Telecom BV (the Netherlands) and British Aerospace through a VSAT agreement (Vesatel) in order to operate datacom services such as satellite news. They were, however, blocked from services in the UK and later British Aerospace withdrew from the venture.

In October 1991, PTT Telecom BV and Telia announced the joint company Unicom (later changed to Unisource) which today supplies pan-European value-added network services. In late 1993, a mobile subsidiary (as well as three others) was also created. The Swiss PTT<sup>51</sup> joined the satellite business (Unisource Satellite Services) in 1992 and will also (when regulations are set) have an equal share of the holding company. At this stage, value-added datacom services are focused on by Unisource, even though voice services will be offered in early 1994. Unisource has created a network triangle in Europe between Sweden, the Netherlands and Switzerland, which is the base for the world's third largest carrier in terms of outgoing minutes. In addition, Unisource has a service agreement with Sprint's SprintNet.

<sup>49</sup> Bolivia (Millicom 46%, Comvik 23%), Chile, Costa Rica, El Salvador, Guatemala, Hong Kong, Mauritius, Mexico, Pakistan, Sri Lanka, Philippines, Latvia, Macau, China (the Guandong province), Russia (Moscow), Ghana along with two PCS licences in the US.

<sup>50</sup> This system is intended to be based on the CDMA modulation technique (which is chosen for PCS in the US).

<sup>51</sup> The Swiss PTT and PTT Telecom BV had already cooperated for two years.

Tele2 (60% owned by Kinnevik and 40% by Cable & Wireless) made a similar agreement with Sprint in 1991, which means that both Unisource Business Networks in Sweden and Tele2 have a datacom service agreement with Sprint.

Unisource became a reality mainly due to close business relationships together with common visions and values between top executives of PTT Telecom and Telia. Both countries (as well as Switzerland) have a high share of multinational companies (20% of the world's 500 largest) which form an important revenue base for the telcos. These factors, in combination with economies of scale, made it possible and maybe also necessary to cooperate.

The cooperation between Telia and PTT Telecom was deepened in mid-1992, when the local telephony districts in Sweden and the Netherlands were linked closer to each other. By benchmarking each other's business and exchange point of views, the two companies aim at increasing efficiency and effectiveness in operations, while at the same time aiming at merging their networks through common equipment and standards.

Another aggressive task has been the application of international voice services to and from the UK. In October 1993, Telia finally got a license to operate this service between the UK and Sweden via leased lines and a separate switch in the UK. In addition, Telia (like AT&T for instance) has started to offer "reverse calls" from Europe, where an international call to Sweden is established in the reverse direction in order to circumvent high call rates from, for instance, Belgium.

Table 4.1

Summary of key data for foreign investments in telecom services by Telia and Kinnevik  
Sources: Annual reports and interviews

Telco	Entry market	Entry area	Entry strategy	Year of entry
Telia	Nordic	Datacom	Joint venture (48%)	1987 EXIT 1991
	Global	E-mail, EDI, VPN etc.	Stake Infonet (5.38%)	1990
	Europe	Datacom	Joint venture (50% in Unisource)	1991
	Estonia	Cellular	Joint vent (24.5%)	1991
		Int'l teleph.	Joint vent. (24.5%)	1991
	Latvia	Cellular	Joint vent. (24.5%)	1991 EXIT 1994
	France	Mobile data	Joint venture (10%)	n.a
	UK	Mobile data	Joint venture (5%)	1991
		Int'l teleph.	License	1993
	St Petersburg	Cellular	Joint vent. (12.74%)	1992
Hungary	Cellular	Cellular	1993	
Kinnevik (Millicom)	Costa Rica	Cellular	Joint venture (75%)	1989
	Mauritius	Cellular	Joint venture (50%)	1989
	Sri Lanka	Cellular	Joint venture (46%)	1989
	China	Cellular	License	1990
	Guatemala	Cellular	Joint venture (45%)	1990
	Pakistan	Cellular	Joint venture (59%)	1990
	US	Cellular	License	1990
	UK	Cellular	Joint venture (n.a)	1990 EXIT 1990
		Paging	n.a	n.a EXIT 1991
		Service provider	n.a	n.a EXIT 1991
		Wireless home	License	1992
	Bolivia	Cellular	Joint vent. (Millicom 46%, Comvik 23%)	1991
	Chile	Cellular	Joint venture (50%)	1991
	Hong Kong	Cellular	Joint venture (28%)	n.a EXIT 1991
		Telepoint	n.a	1991
	Mexico	Cellular	Joint vent. (37.5%)	1991 EXIT 1993
	Moscow	Cellular	Joint venture (30%)	1991
	Norway	Cellular	Joint venture (33%)	1991
	Philippines	Cellular	Joint venture (40%)	1991
	El Salvador	Cellular	Joint venture (80%)	1992
Ghana	Cellular	Joint venture (90%)	1992	
Lithuania	Cellular	Joint venture (49%)	1992	
Luxembourg	"Clearing house"	n.a	1992	
Macau	Cellular	License	1992	
Paraguay	Cellular	Joint venture (n.a)	1992	

## 5. DISCERNIBLE PERIODS IN THE INTERNATIONALIZATION OF THE SWEDISH MARKET

Are there any corresponding patterns in the way that former nationalized and mostly monopolized markets gradually become internationalized through FDIs? This question can naturally not be answered on the basis of a single case like the Swedish telecom services market alone. However, a few summary features could be extracted from the observations so far and tentati-

vely arranged in periods or stages in the evolution of the Swedish market, in order to facilitate further comparative analysis with corresponding market evolutions in other countries.

A few current features that distinguish the Swedish market deserve to be summarized first. The Swedish market in 1993 is small, not particularly fast growing, fairly advanced in terms of technology and customers (with a sizeable segment of MNCs), sparsely populated with medium-sized rural areas, highly liberalized, on average low-priced with a dominant and efficient telco (Telia) in an international comparison, having a long-standing close supplier relation to a large, internationalized equipment manufacturer (Ericsson). Sweden attracts a significant degree of foreign interest as a trial market, an interest that has been reinforced to the extent that it has been considered a precursory market in many regulatory, technological and customer developments.

In the century-plus history of the Swedish telecom service market the following features, sometimes constituting periods or stages, can be discerned. *First*, when the radical new technology of telephony came along there was a fairly short period of mixed international and national competition between the Bell Company and local telephone companies.<sup>52</sup>

*Second*, the market then became nationalized, i.e. without foreign players. A service monopoly (in 1993 named Telia) became established as a state company/agency hybrid with a preferred supplier (Ericsson). Telia partially integrated backwards into manufacturing in order to gain cost control and bargaining power against its preferred supplier. National geographic expansion and integration of local networks became significant, as did automation later, while service differentiation outside basic telephony remained insignificant. Postal services were traditionally organized as a separate state company/agency. A few user networks were built but of minor importance on the whole, although they could be considered as niche entries by domestic entrants.

A *third* period, one of isolated new niche entries, began in 1967 when an entry by a foreign entrant, GEIS, was made in a new special service, datacom, based on a new technology (mainframe computers).

A second isolated new niche entry was made in 1981 by a mainly domestic entrant, Comvik, in a new special service, land mobile public telephony, based on new technology (cellular radio). Like GEIS, Comvik was not a traditional telco viewed from their parent company's point of view, as they were diversifying into telecom services. However, in contrast to the entry by GEIS, the entry by Comvik was fiercely challenged by the incumbent Telia, who had been a prime mover of the new service and the new technology.

A *fourth* period, one of multiple and sequential trial entries, began in the second half of the 1980s with a first real, although small, wave of new entries and inward FDI in the Swedish market. In this period several of the major PTTs entered the Swedish market (AT&T, BT, France Telecom, Pacific Telesis) plus a few other telcos (Vodafone, Cable & Wireless, MCI). The leading entrants were almost all foreign, with an Anglo-Saxon dominance. DBP Telekom and NTT have not yet (1993) entered the Swedish market.

The PTTs made it mostly on their own, while the other telcos mainly allied themselves (at least initially) with domestic majority partners, primarily large users (so far equipment suppliers had refrained from integrating forwards).

<sup>52</sup> The Bell Company missed taking out telephone patents in Sweden.

The initial entry market segment was the large user group, especially domestic and foreign MNCs, and the infrastructure firms,<sup>53</sup> especially the railway company and the energy distribution companies. The preferred entry service area was datacom, being a weak point of the incumbent Telia in the mid-1980s with capacity and quality problems. The preferred entry mode was "soft and low key"—not to compete head on right away and/or unnecessarily trigger retaliatory actions by the incumbent and/or regulatory bodies.

The entry was mostly just a part of what appeared as a sequential entry strategy with steps to be taken later when opportunities arose towards attractive parts of the incumbent's core business (e.g. international calls) from some market position in adjacent business areas (e.g. datacom) and/or from some advantageous technology position (e.g. calling cards and their handling). Conceivably subsequent steps could also be taken towards entirely new businesses once a customer base was secured.

One may note here that Telia's strong position in analog mobile telephony most likely has deterred foreign entry (although an alliance between a foreign entrant and Comvik would have been a possibility). Given the by-pass possibility and other possibilities of wireless (e.g. land mobile, satellite and cordless) communication, it appears to be highly important for the future evolution of the Swedish telecom service market as well as for the future evolution of Telia how it manages transitions to new mobile communication technologies (e.g. digital).

This fourth period signifies substantial internationalization of the market in terms of FDI. To some extent the FDI pattern has followed the simple 'establishment chain model', predicting an FDI progression from agents, to sales subsidiaries, to production and possibly also R&D operations. That is, what are essentially foreign sales office establishments and leased-lines arrangements have been followed by increased establishment of network ownership and control. Note in this context that the traditional arrangements in international telephone traffic could quite reasonably be viewed as export activities carried out by a web of PTTs operating essentially as each other's agents, which makes the establishment chain model quite fitting. The same model then also predicts that in the future some foreign telecom R&D will be established in Sweden, something which is quite conceivable in some form, e.g. an R&D consortium.

Another observation regarding the FDI pattern in telecom services in general (i.e. not only Sweden) is that it may have followed, rather than led, FDI in manufacturing industries, as has been observed by Dunning (1991) for FDI in service industries in general, but then perhaps only to some extent initially. As for Sweden, with a generally small flow of inward FDI since long ago in manufacturing industries, her telecom inward FDI seem to have been caused mostly by other factors.

What will happen after the fourth period must largely be speculated about. Patterns from other industries suggest a period of continuing entries, possibly crowding, shake-out, specialization, consolidation and temporary stabilization. The alliance propensity, which for several reasons is high in telecom, may lead to somewhat other period characteristics, however. Alliance formation will dilute national identities, perhaps to the point of denationalization (i.e. loss of a single national identity) of a player, the mere prospect of which would probably provoke regulatory action. It is also possible that the regulatory pendulum, possibly influenced by the incumbent, will swing back, at least to some level of competition perceived as acceptable and controllable (Bohlin and Granstrand 1991). Table 5.1 summarizes features and periods in the past, as well as hypothesizing some of the future. The transitions to a 5th and

<sup>53</sup> The term infrastructure firm is here used to mean firms with some kind of a network, e.g. energy distribution companies, gas companies, water supply companies, railway companies etc.

possibly a 6th period are gradual. What especially marks the transition from a 4th to a 5th period is the change from defensive to offensive moves by Telia, which is a fairly natural chain of reactions by a challenged incumbent.

Table 5.1  
Actual and hypothetical stages in the internationalization of the Swedish national telecom service market<sup>1)</sup>

Period	Characteristics	Illustrative starting years for the case of Sweden <sup>3)</sup>
1st	Mixed international and national competition	1880s
2nd	Nationalization. Local monopolization	1890s
3rd	Isolated new niche entries by domestic and/or foreign entrants through greenfield operations or acquisitions (Entries typically made in areas with weak, unclear or absent regulation <sup>4)</sup> )	1960s
4th	Multiple and sequential trial entries (Entries typically made in response to liberalization) Domestic entrants being complemented by foreign entrants Defensive moves by Telia	1980s
5th <sup>2)</sup>	Restructuring of Telia and shift towards offensive moves (Typically internationalization and subsequent service specialization, plus alliance formation Also e.g. change of legal status, reorganization and privatization) Limited market invasion and restructuring by domestic and foreign competition	1990s
6th <sup>2)</sup>	Appearance of major proprietary service innovations and subsequent but limited creative destruction Telecom service branding Integration with foreign markets Network disintegration and reintegration Challenge of dominant firm positions Emerging denationalization Integration with other information service markets Restructuring of supplier relations (possibly increasing quasi-integration)	?

1) Variations in pace and scope for different service areas are understated. A steady pace of liberalization without major, persistent anti-competitive regulation is assumed.

2) Hypothetical stages. To some extent the 5th stage has been entered.

3) The time division in periods is approximate, especially since some of the characteristics refer to processes with gradual change rather than to events.

4) The absence of regulation was in some cases due to a narrow conceptualization of telecom industry and services on behalf of regulators.

What especially marks the possible transition to a 6th period is the appearance of entrepreneurial entries made on the basis of proprietary service innovations, thereby fostering Schumpeterian competition, based on proprietary new technologies. The role of R&D and close relations to advanced users and suppliers thereby increases. At the same time various integration among actors, markets, networks and other services is likely to proceed. In this period the real challenges to a domestic, dominant firm will develop.

Finally, it is largely an open question how much competition is, to use a typical Swedish term, "lagom" (i.e. moderate, "middle way", appropriate). This question has not least been reopened by the new international trade theorists, advocating strategic trade policies, rather than "pure" free trade. On the other hand, the general answer 'as much as possible' has been received for a long time from the free trade liberalists with Sweden as one of their strongholds, but then certain areas have been excluded, e.g. service areas like telecom.

## 6. CONCLUSIONS

The Swedish telecom service market became subjected to international competition already in the early days of telephony. The 1890s signified the beginning of a 2nd period in which by and large a national monopoly/duopoly became established on a mixture of regulatory and de facto grounds. The first foreign entry was then made in the 1960s outside the core regulatory areas, signifying a 3rd period of isolated new niche entries, followed by a 4th period in the 1980s, in which multiple foreign entries were made.

Significant de facto competition in telecom services in Sweden was established when Comvik Skyport, AT&T and later on BT set up offices in the mid and late 1980s. At that time digitization reached 20-30%, which could be seen as a minimum level of required installed digital central offices in order to attract larger volumes of FDI. Today, the degree of digitization (and fiberization) calls for low technical network barriers to entry, while the wide distribution of main lines in Sweden calls for relatively higher economic network barriers to entry. Moreover, cost-based pricing of telecom services will yield even higher entry barriers to Sweden (where prices already are relatively lower).

Entries into the Swedish telecom services market may be separated into those who have acquired a network with customer access and those who gradually have invested in a new network. The acquisitions by France Télécom in European datacom networks illustrate the trend towards increasing local network control (multi-domestic) which gives direct customer access. Another example of this is AT&T who bought McCaw, the cellular telco in New York, obviously in order to get direct customer access. In Sweden AT&T, MCI and Tele2 have (although to various extents) invested in new networks or just used leased lines connected to their own international switches (gateways).

It seems difficult to enter a new market without the *fast* establishment of a customer base in the targeted market. This has not really been proved yet, since most new entrants have been protected by regulations, such as Mercury in the UK. In Sweden, however, there is a case of an early (in 1981) second cellular operator, Comvik GSM, who did not succeed and who gradually only got some small percent of the cellular market. They were simply not aggressive enough. Since the needs of the business customers seem to be more diverse and difficult to fulfil with a single service (or even a single supplier of services), services have to be more customized, which makes it more interesting for customers to look for a new supplier of services, implying lower barriers to existing customers for new entrants. This will also call for

a closer look at customer segmentation by telcos. There are no longer only business customers and residential customers. In addition, there is a trend towards a separation of service providers (telcos) and teleshops selling equipment and subscriptions.<sup>54</sup>

Apart from the large MNCs in Sweden, who will be monitored by the telcos with international coverage, it is difficult to identify distinct market segments apart from the traditional business-residential ones. It seems instead clear that different telcos will concentrate on different segments to a larger extent than in 1993. There are some examples, however, such as home-country related customers (MCI and AT&T seem to focus on American firms in Sweden for instance), large domestic companies and central & local governments (BT and Transpac) and metropolitan customers in general (this is obvious for all new entrants, whether they provide telephony services or datacom services).

There are some different service focuses among the telcos on the Swedish market. There are a group of value-added network service providers (e.g. EDS, GEIS, IBM), a group of cable-TV operators (e.g. Svenska Kabel TV, Kabelvision etc.), cellular telcos (Telia Mobitel, Nordic Tel, Comvik GSM) and EDI/E-mail providers (e.g. Scandinavian Infolink). These telcos have, thus, a low scope of activities, even though Telia Mobitel is a part of the Telia group. Furthermore, potential fast-growing services segments in Sweden ought to be mobile data, e-mail, EDI and toll-free voice services.

It seems reasonable to believe that there will most probably be new and different kinds of telcos in Sweden. There appear to be telcos concentrating on international network coverage without direct customer access and telcos concentrating on domestic coverage with direct customer access. In Sweden it seems reasonable to forecast that BT, MCI, AT&T and Unisource will belong to the former group (where Sweden or the Nordic countries may form an important hub in a larger international network) while Telia, Transpac (and probably also BT) and the cellular telcos presumably will belong to the latter group. In addition, we believe that there will probably be a third domestic group of telcos, providing by-pass opportunities to Telia's network. An example of such a telco is the potential entrant Dotcom, the telecommunication subsidiaries of the energy distribution companies and cable-TV operators. Finally, strategic alliances (network cooperation) in order to get geographic coverage (and direct customer access) are anticipated. Examples are the cable-TV providers and the cellular telcos cooperating with each other or with a telco with by-pass capacity, such as Tele2 potentially cooperating with Kabelvision.

Turning to outward foreign investments, Telia has changed its early phase of technology and network cooperation activities, and turned into a phase of commercial cooperation activities. They have started a close cooperation with PTT Telecom through the formation of Unisource and joined several joint ventures, mainly in cellular but also international switched telephony. Examples are cellular ventures in Estonia and Hungary. Kinnevik, on the other hand, has joined a large number of joint ventures through the company Millicom. They have focused their activities on small developing countries, where small networks are implemented with a potential short pay-back period.

Finally, it seems clear that the telcos in Sweden providing data services in 1993 will, within a short period of time, also provide telephony services, when their networks and their marketing departments are ready. In addition, it may be hypothesized that the relatively higher competition in cellular along with the relatively more advanced technology used in the GSM networks will make the implementation of personal numbers through calling cards (including

<sup>54</sup> This is seen in the UK and is forecasted e.g. by GEAB, a large Swedish distributor of mobile phones.

the SIM-card) faster in cellular networks in Sweden. This may be a major threat for Telia since the traffic through the cellular networks will increase substantially with new personal calls going through the cellular network apart from the calls to and from the cellular terminals.

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## Internationalisation of the Norwegian Telecommunication Market\*

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Within a European context, the Norwegian telecommunications policy is characterised by a quite liberal position with respect to market deregulation. Telecommunications traffic is clearly internationally oriented. This is reflected in Norway's status as a small nation with an economy directed towards export, opening up interesting opportunities for foreign operators. Furthermore, the entry process is relatively easy to accomplish since the telecommunication infrastructure is largely digitised and as fibre is widely introduced.

### 1. INTRODUCTION

Within a European context, the Norwegian telecommunication policy is characterised by a quite liberal position with respect to market deregulation. The markets for terminal equipment and value-added services were deregulated in the late eighties, resale of leased lines is now allowed, and competition in mobile communication is introduced. However, as regards the organisational structure of the telecommunication administration, the policy is clearly more conservative. Norwegian Telecom remains a public corporation. But it seems clear that, over a period of time, the process of internationalisation will force a separation between the State and Norwegian Telecom.

The potential for competition in the Norwegian market is improving with time. Technical change is modifying the scale problems of a "small country". The traffic is clearly internationally oriented, reflecting the country's status as a nation with an economy directed towards export. Independent networks exist (for instance cable television and transmission capacity connected to the railway, and within energy distribution). Furthermore, significant capacity based on leased lines is accumulated in private hands. Finally, several private suppliers of various services are already established within the liberalised market segments.

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