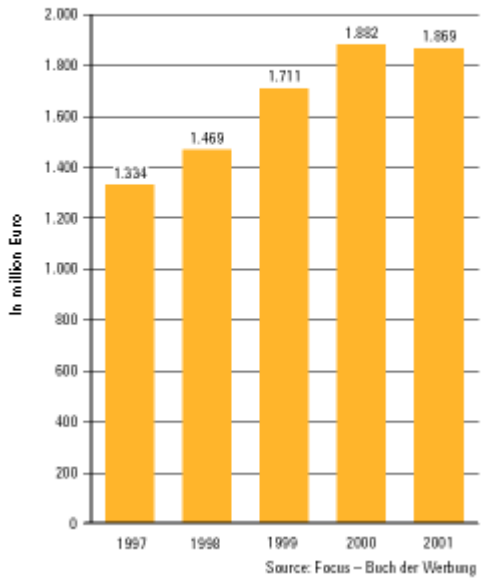
4.1 The Austrian media markets

4.1.1 General remarks on the Austrian media year 2001

After almost one decade of disproportionate growth rates of advertising expenses, the media market in Austria was characterised in 2001, in a very special way, by stagnation as well as declining developments. The gross advertising expenses, regularly surveyed by Focus Media Research, increased in the period 1997 to 2001 from € 1.334 billion to € 1.869 billion and thus by 40.1%, while, on the other hand, the advertising spendings, compared to the extraordinary year of growth in 2000 with an all-time high of € 1.882 billion, declined in 2001.

Figure 18: Overall development of advertising expenses



This "dent in growth" in the development of the advertising industry is undoubtedly due to several factors: a general lull in growth or a stagnation in many essential markets that are of relevance to the global economy, the end of the advertising hype in the telecom and online services sectors and, eventually, the historic effects of 11 September 2001.

On the supplier and product sides, there were no new media companies that might have changed the Austrian information market sustainably. With regard to the diversity of opinion and the variety of products, the market in 2001 was characterised, as in previous years, in the field of electronic media by the ORF and in the field of print media by the "Kronen Zeitung" (and the products in the range of influence of Mediaprint), as well as by the magazines of the publishing group News that was strengthened due to the merger with the trend-profil Group[1].

In 2001, the statutory requirements were created for the provision of terrestrial private TV. On the basis of the PrTV-G, which took effect on 01.08.2001, licences for nationwide private TV as well as for regional private TV (in particular, conurbation area TV) were put out to tender for the first time. The deadline for the submission of bids was 07.11.2001. As the procedure for issuing the licence was initiated directly after the end of the submission period, none of the applicants for private TV was able to start television operations during the period under review.

In the field of radio broadcasting, the ORF with its four radio channels (Ö1, Ö3, FM4 as well as the regional programmes Ö2) maintained its dominant market position also in 2001. Although the programme offers of 58[2] private radio broadcasters were competing with the ORF, mostly in regional and local service areas, the market share of all private radio broadcasting stations taken together was only 19% in the target group, age 14 to 49, that is relevant to advertising (Radiotest 2001). In spite of the fact that the first private radio stations took up operation in 1995 and that blanket coverage of all Austrian provinces with private radio programmes was reached from 1998 onwards, the establishment of a "dual broadcasting market" in the field of radio broadcasting has not been completed.

In the field of print media, the "Kronen Zeitung", 50% of which is owned by the German WAZ Group and 50% by Hans Dichand, has a unique market position in Europe. According to the survey of the Media Analysis, on an annual average, it reached 44.1% of all Austrians over 14 years of age every day. The dominant market position of the publishing group News in the magazine sector was further strengthened in 2001, following the merger with the trend-profil Group. Despite numerous political discussions and concerns regarding this merger, it was neither prohibited nor cancelled retroactively.

With regard to the Austrian print media, in particular, daily papers and magazines, it has to be also noted that a considerable number of titles that are published and relevant to the market are under the influence of non-Austrian owners who are established within the EU (especially Germany). This applies, for example, to the following publications:

- the market leader among the daily papers, the "Kronen Zeitung", with a 50% share of the German WAZ Group,
- the daily paper "Kurier" (share of WAZ 49.4%),
- the "Tiroler Tageszeitung" (65% Springer Publishing Group),
- the daily paper "Der Standard" (49% Süddeutscher Verlag - Süddeutsche Zeitung),
- the "WirtschaftsBlatt" (50% Bonnier Group).

By international comparison, the Austrian media market can be described as a small market which is, however, characterised by marked tendencies of concentration and dominant market positions. In television, there were only the two channels of the ORF, i.e. ORF 1 and ORF 2, in addition to the (mostly local) private Austrian TV programmes that are exclusively distributed via cable networks and are therefore available only to a very limited extent. These two TV channels of the ORF are, in fact, in fierce competition with a large number of international private and public-law TV programmes which are available in the Austrian households that are supplied via cable networks and have satellite reception (according to the Media Analysis of 2001: 78.6% of all Austrian households and 80.7% of all TV households).

The TV programme offers which are available as "Austria windows" exclusively in households supplied via cable networks are a platform that is of relevance to the adverting industry. However, as they have almost no independent programme parts, they are (currently) of no importance as programme providers to the viewer market or with regard to the diversity of opinion. Another special feature is that the providers of "Austria windows" (with the exception of SAT.1 Austria) are legally "no established broadcasters" in Austria.

The publishing group News, which meanwhile dominates the Austrian magazine market with the titles "News", "Format", "trend", "profil", "tv-media", "e-media" and "woman", is owned indirectly (56.03%) by the German publishing group Gruner + Jahr that belongs to the Bertelsmann Group.

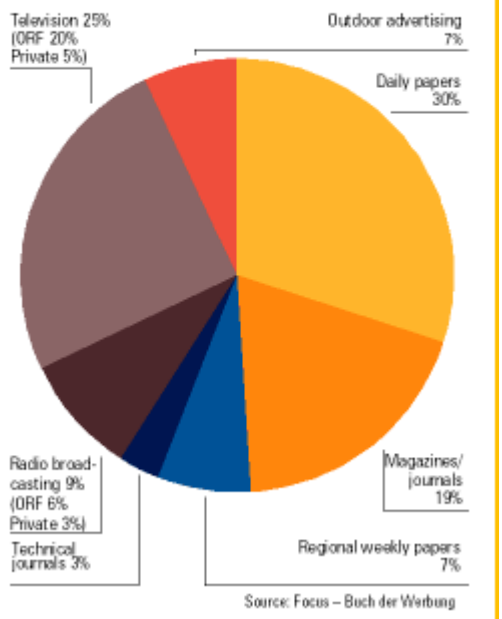
With regard to the overall number of persons employed in the field of electronic media (television and radio broadcasting), it can be noted that the vast majority of them was employed in company segments of the ORF. In 2001, the ORF had 2,630 employees and about 2,000 freelancers, who worked in the programme sectors of radio and TV, both in the central offices in Vienna and in the nine provincial studios, as well as in the technical and commercial areas. The private radio broadcasters, 55 in total, operated with about 600 employees or freelancers in 2001. About 250 persons were employed in a large number of medium-sized and small companies that offer TV programmes for distribution in cable networks.

1 Kurier Magazine Verlags GmbH
2 55 regular radio broadcasters and three event radio broadcasters

4.1.2. Advertising expenses

With regard to the structure of the advertising expenses in 2001, it has to be noted that the majority of the overall advertising expenses, i.e. 59%, (classical advertising expenses: € 1.869 billion) accounts for the print media (€ 1.103 billion): 30% (€ 561 million) of the overall advertising expenses are attributable to the daily papers, 7% (€ 131 million) to the regional weekly papers, 19% (€ 355 million) to magazines and journals, and additional 3% (€ 56 million) to technical journals.

Figure 19: Advertising expenses 2001



Exactly one fourth (€ 467 million) of all advertising expenses is attributable to the TV sector, of which 20% (€ 374 million) are attributable to the ORF and 5% (€ 93 million) to private TV broadcasters[3].

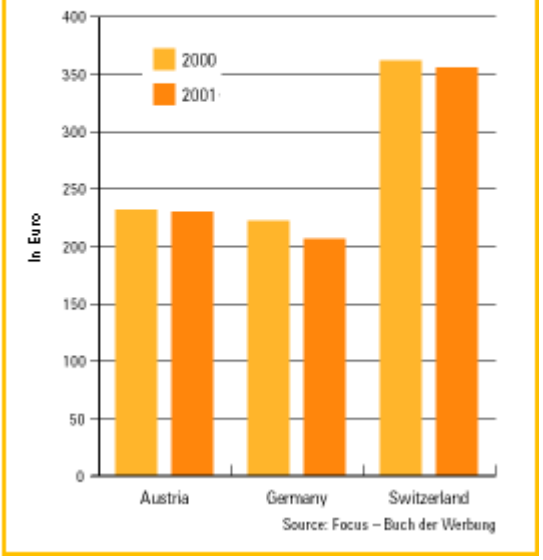
9% (€ 168 million) of the advertising expenses (ORF: 6% / € 112 million, private radio broadcasters: 3% / € 56 million) fall to the radio sector.

Finally, 7% (€ 131 million) of all advertising expenses are invested in the field of outdoor advertising (billboards, electric signs, advertising on public transportation).

Compared to the Federal Republic of Germany, the largest media market in Europe, which has a considerable impact on the situation in Austria due to its geographical and economic proximity, the share of print advertising is particularly high and that of TV advertising is clearly capable of development. This is due to the fact that, with the sustainable establishment of many private TV stations in Germany during the 1990's, the advertising revenues as a whole, and those of the television broadcasters in particular, increased enormously. The share of TV advertising in the highly competitive German advertising market is 45%, while all print media taken together reach a share of 47%.

In advertising expenses per inhabitant, the Austrian advertising industry reached, and even exceeded, the level of the Federal Republic of Germany in the course of the past decade. In 2001, the per capita advertising expenses in Austria were € 230 (2000: € 232), while in Germany they were only € 207 (2000: € 222). This comparison of the per capita advertising expenses and the significantly decreased figure in Germany, compared to 2000, shows clearly that the advertising industry suffered much greater declines in growth in Germany than in Austria.

Figure 20: Per capita advertising expenses in (Austria, Germany, Switzerland)

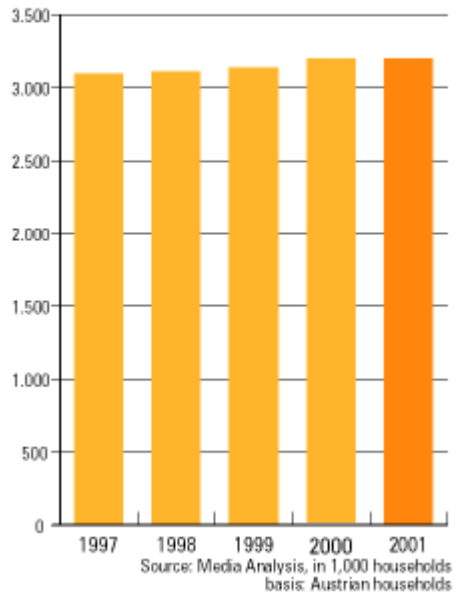


3 Almost exclusively attributable to the so-called "Austria windows" which are embedded in different German programmes that are distributed via satellite.

4.1.3 Television

The use of the TV programmes available in Austria via terrestrial transmitter systems, TV satellites or cable networks constitutes an essential factor with regard to the forming of public opinion, in particular, to the forming of public opinion in respect of the television programmes of the ORF, which account for about half of all market shares in television. Especially, the information channels of the ORF (not only the news broadcasts in the narrower sense) are regarded as very important also for the political forming of opinion.

Figure 21: Development of households with TV sets

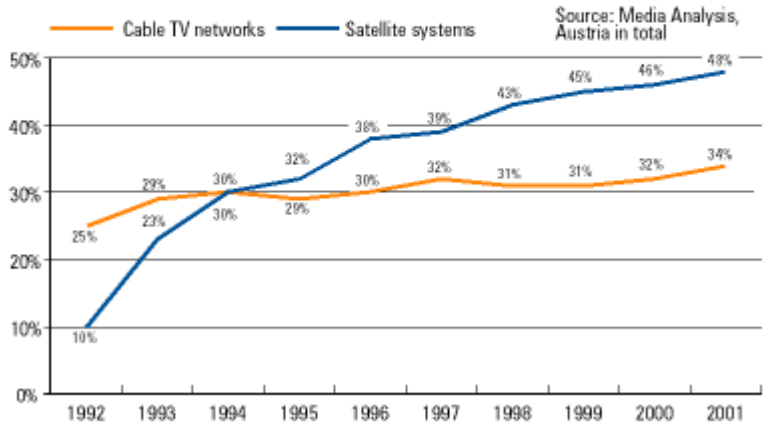


Source: Media Analysis, in 1,000 households basis: Austrian households

The importance of television for social and communications policies goes hand in hand with the households being equipped with TV sets. In 2001, 3.198 million households were found to be equipped with at least one, in many cases also with several TV sets. This overall figure corresponds to a degree of saturation of 97.4% of all households (Media Analysis 2001). The development axis of the past five years clearly shows that any further increase in the degree of saturation with regard to the availability of TV sets is almost impossible, as a rise of only 3.3% to 3.198 million households had been achieved since 1997 (3.096 million households equipped with TV sets).

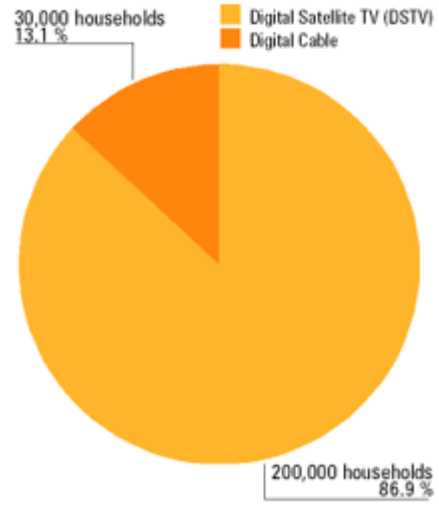
The Austrian TV consumers receive the TV signal via three different platforms. In the 1960's and 1970's TV was introduced by distributing the programmes and signals exclusively via terrestrial transmitter systems; in the 1980's, especially in Vienna but also in the provincial capitals and in smaller urban areas of Austria, the distribution of the programmes via cable TV networks was added. The essential benefit for the customer, from the providers' point of view, was the steadily increasing number of programmes that were distributed, in addition to ORF 1 and ORF 2, as well as the fact that detached houses or housing developments could be spared the rather unattractive antennas on the roofs. In the 1990's, it became more and more popular to receive TV programmes via so-called broadcasting satellites, especially on the outskirts or outside of the cities that, until then, had not been reached by the cable TV networks.

Figure 22: Degree of coverage of cable TV networks and satellite systems



The number of Austrian TV households that received their programmes via broadcasting satellites drew even with the number of households

Figure 23: Digital TV market in Austria

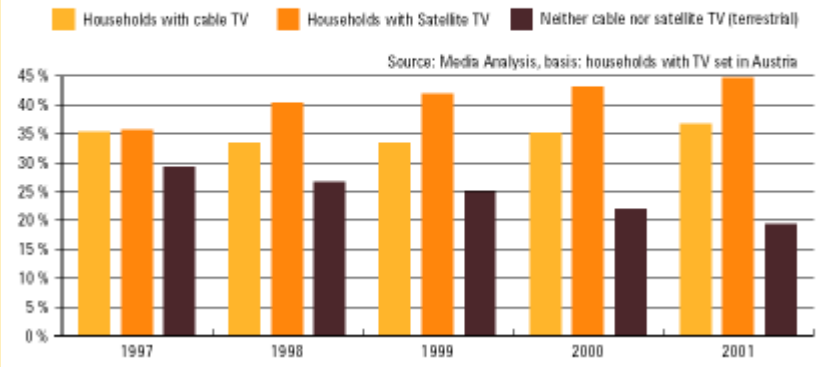


Source: SES ASTRA, Austrian Satellite Monitor, Fessel-GfK

supplied via cable networks only in 1994. 30% each of all TV households received their television signals from a broadcasting satellite or a cable network. Since 1994, the number of households with satellite supply increased to 48%, while the degree of coverage by cable TV remained almost unchanged at 34%.

The detailed development of the five years from 1997 to 2001 makes it clear that the significant increase in households supplied via broadcasting satellites led to a substantial reduction, in particular, in the number of households that were exclusively supplied via terrestrial transmitter systems (house antennas). In percent, the households that were exclusively supplied via terrestrial transmitter systems declined from 29.3% (1997) to 19.3% (2001), while over the same period the percentage of satellite supplied households increased from 35.7% (1997) to 44.7% (2001). It has to be noted in this respect that the households supplied with broadcasting satellites, as a rule[4], depend on the terrestrial transmitter systems in order to be able to receive the two ORF TV channels. The same applies to the second and third TV sets in households that are also equipped for satellite reception. 44% of all TV households have a second or several TV sets (Source: Media Analysis 2001).

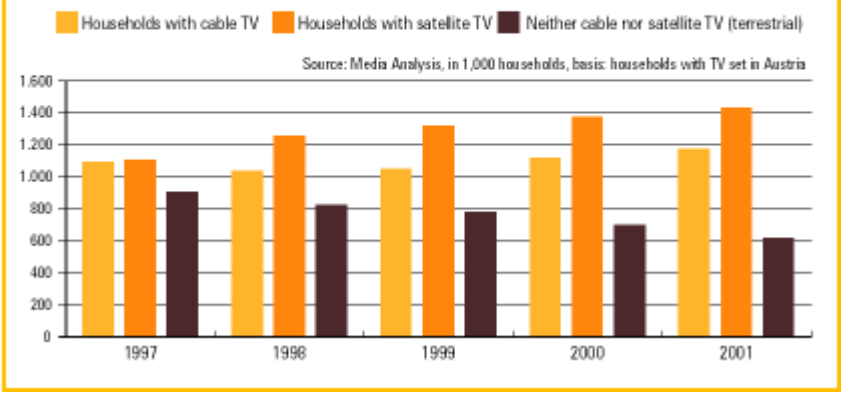
Figure 24: Development of reception situation in %



On the satellite and cable network transmission platforms, TV programmes are also transmitted digitally. According to SES ASTRA, Austrian Satellite Monitor, 230,000 households received also digital television programmes in 2001, 200,000 of which via the ASTRA broadcasting satellite and 30,000 via cable networks. The digital TV programmes that could be received were, in particular, those of "Premiere World" (pay TV) as well as those of the ORF.

The average daily TV consumption in Austria (viewing time) increased steadily, though not dramatically in recent years. Although the daily viewing time did not come close to American viewing habits by far, it corresponded to the average usage in other European countries. This increase over the past few years was due to the considerably larger number of TV programmes, on the one hand, and the increased amounts of time available for leisure time activities of the average total population (working time, degree of occupation, retirement), on the other.

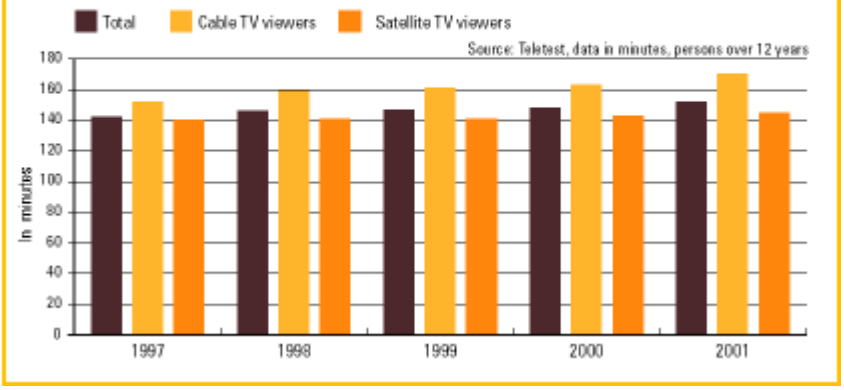
Figure 25: Development of reception situation



From 1997 to 2001, the average viewing time in all TV households increased by 7%, from 142 minutes to 152 minutes a day. TV consumption in households with a wider range of programmes due to satellite or cable TV was almost the same; it increased by 7.6% from 145 minutes to 156 minutes a day.

Only when comparing households with cable TV and satellite TV, it can be seen that cable consumers spent significantly more time in front of the TV: customers of cable TV operators watched their programmes for an average of 170 minutes a day, while viewers of satellite TV watched "only" for 145 minutes a day.

Figure 26: Development of viewing times



The viewing habits of the Austrians are recorded within the framework of the "Teletest". The "Teletest" is an electronic type of data collection, which is regularly carried out by the Fessel-GfK market research institute on behalf of the ORF to provide information about viewing times and concrete usage of programmes, on the basis of 1,500 test households that were selected according to demoscopic criteria. According to the "Teletest", 67.9% of all Austrians over 12 years of age watched at least one programme daily during the period under review (regardless of how long the programme was watched). Since 1997, this share increased from 66.3% of all Austrians by only 1.6%, which shows that the television medium has a very stable daily service range.

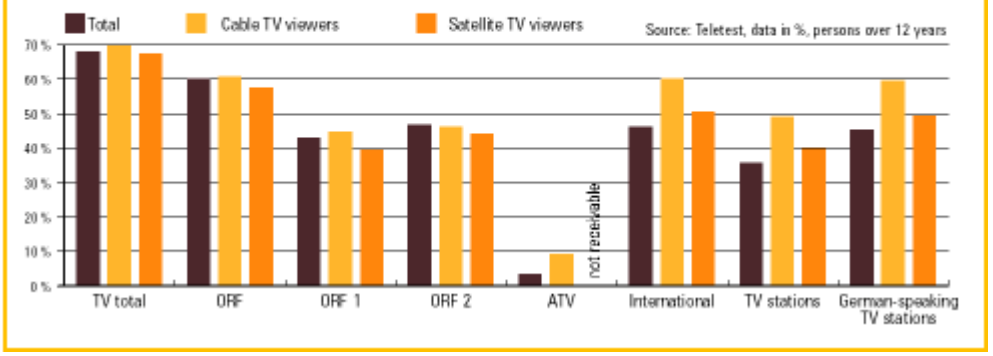
The channels of the ORF (ORF 1 and ORF 2) reached the highest daily service ranges among the overall population (persons over 12 years). During the period under review, ORF 2 reached clearly

Comparing the TV programmes of the ORF with international TV programmes, the daily service ranges of both programme groups were shown to be equally high. The ORF programmes reached 60.8% of the Austrians, while the international programmes reached 60.2%. In the cable TV households, the German TV programmes that also offered so-called "Austria windows" were watched extremely frequently: 48.9% watched a "window programme" (RTL, RTL II, Super RTL, ProSieben, Kabel 1 and SAT.1) for at least one minute a day.

With regard to the total daily service ranges, the ranking of the German TV channels that offer an "Austria window" was as follows: RTL (19.8%), SAT.1 (17.2%), ProSieben (16.8%), RTL II (13.3%), Kabel1 (10.8%), Super RTL (7.1%). For cable TV viewers, the daily service ranges were higher by a few percent each (see Fig. 28). The ranking, however, was the same for households with cable and satellite TV.

higher service ranges (ORF 1: 42.9%, ORF 2: 46.7%). Since another Austrian channel, ATV, could be received only by cable TV users, it achieved a daily service range of only 3.3%.

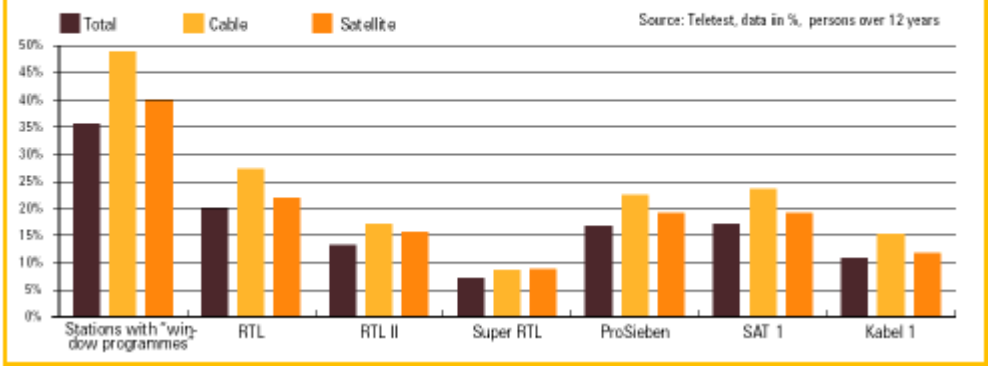
Figure 27: Television daily service ranges 2001



The TV habits and daily service ranges resulting from the "Teletest" showed a special characteristic with regard to ATV. With a daily service range of 15.2%, the ATV channel is watched by the cable TV users in Vienna significantly more often than by the Austrian average of cable TV users (9.3%) and by the average of all TV users (3.3%).

The higher daily service range of ATV in the Vienna cable network is probably related to the "privileged" position with regard to frequency assignment provided by the cable operator[5], in addition to the image as "Viennese" channel that is being created. This example illustrates the special importance of non-discriminatory access or equal access to the communications platforms.

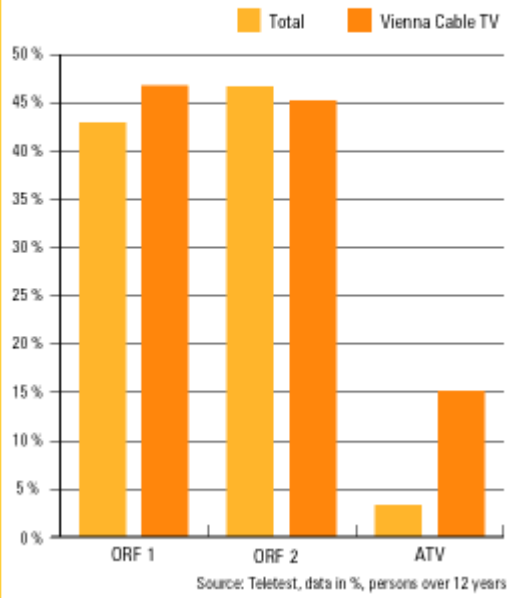
Figure 28: Television daily service ranges 2001: stations with "window programmes"



The market shares of the respective TV broadcasters are of particular importance to the advertising industry. Related to all Austrians over 12 years of age, the ORF with its TV programmes had a market share of 55.5%, whereas the international stations taken together reached 43.4%. However, in the households with cable TV the situation was quite the opposite: the non-Austrian programmes taken together reached a market share of 53.5%, while ORF 1 and ORF 2 had a market share of 44.4%.

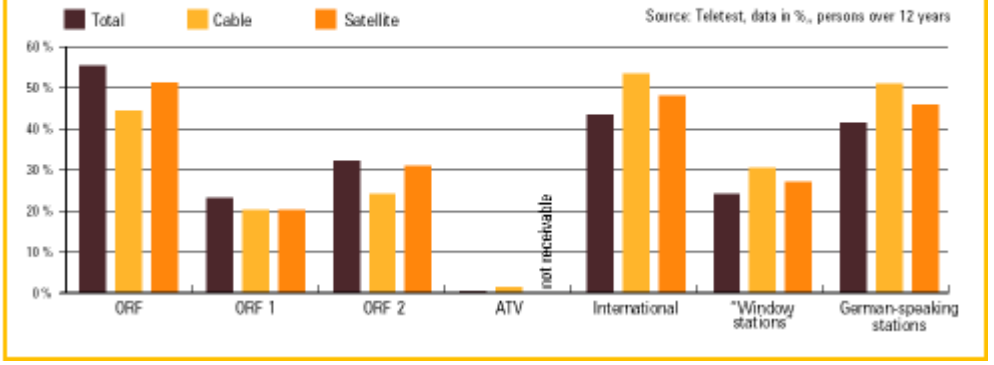
With international TV programmes, the vast majority of the market shares was attributable to the German-speaking stations. Here, once again, the providers of so-called "Austria windows" accounted for the major part. ATV reached a market share of 1.3% in the Austrian cable networks. It has to be noted that, similarly to the

Figure 29: Television daily service ranges 2001 in Vienna cable TV households



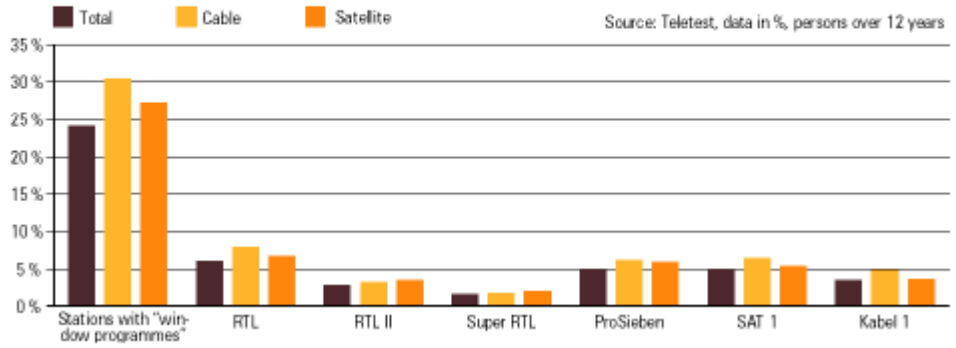
daily service ranges, the ATV channel in the Vienna cable network, with 2.1% of the market shares, reached a clearly higher value than in the average of all cable networks in Austria.

Figure 30: Market shares 2001



The private TV broadcasters of the Federal Republic of Germany who provide so-called "Austria windows" for the Austrian market (RTL, RTL II, Super RTL, ProSieben, SAT.1, Kabel 1 and, only in Vienna, VIVA) which, as platforms of the Austrian advertising industry, are exclusively distributed via cable networks, had a high rank in the overall programme offer. With Austrian TV viewers, they had a market share of 24.1%, in households supplied via broadcasting satellites they reached 27.2%, while in the cable networks they reached a market share of 30.4%, which may be due to the additional advertising and programme offers. Among these programmes, RTL, SAT.1 and ProSieben had the highest market shares with figures between 7.9% and 6.2% (in the cable TV households).

Figure 31: Market shares 2001: stations with "window programmes"



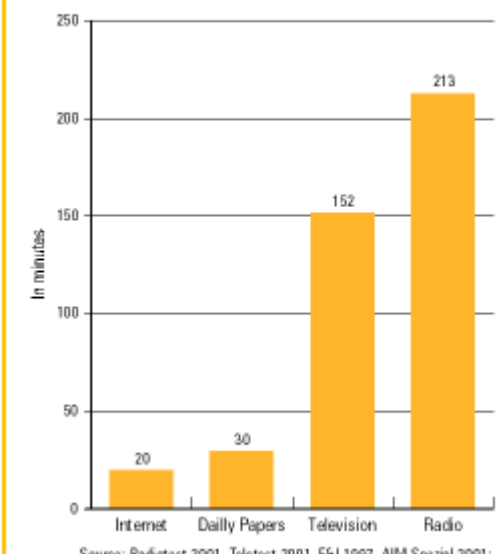
4 Exception: the digital programme of the ORF
5 In the Vienna cable network ATV is presented on channel position 3.

4.1.4 Radio broadcasting

The listening habits of the Austrian media consumers with regard to radio broadcasting are recorded by the "Radiotest". This is a recognised form of consumer survey, using the means of market research, specifically a type of telephone survey [6], which is conducted by the Fessel-GfK market research institute on behalf of the ORF and private radio stations. Evenly distributed among all days of the year, 24,000 interviews are conducted in all Austrian provinces and political districts.

The results of the "Radiotest" are published every six months. The data on the listening habits in the two half years, as well as in the whole year, in particular, facilitate the operative decisions mainly of the programme makers in the radio broadcasting companies with regard to the correctness of their formats and the necessity of making adjustments. For the advertising industry, the results of the "Radiotest" are an important basis for deciding in which radio broadcasting companies or in which radio groups advertising campaigns will be booked.

Figure 32: Daily usage time

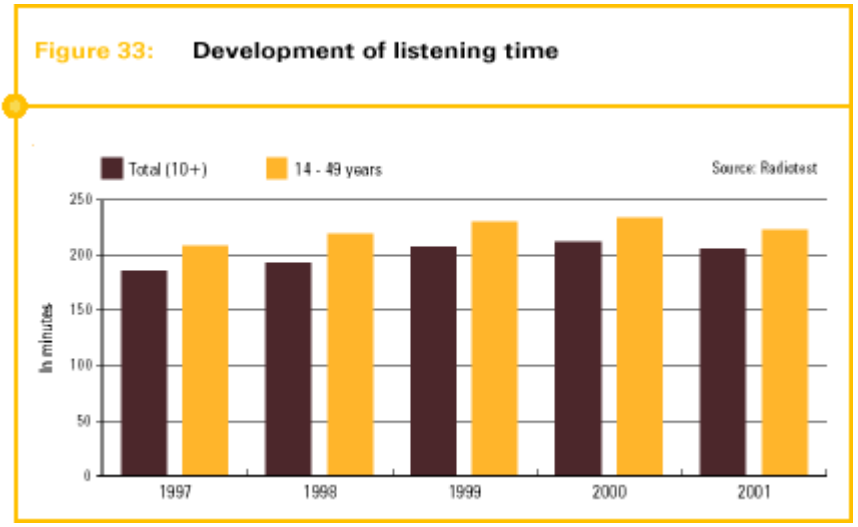


Source: Radiotest 2001, Teletest 2001, EGI 1997, AIM Spezial 2001; basis: persons over 14

With regard to overall usage, it has to be noted that radio, of all media types, has the longest usage time per day. On average, the Austrians (age group 14 years and older) listen to one or different radio programmes for 213 minutes a day (often in the car, the office, at home or also in bars and shops); compared to that, the Austrian average TV consumption is 152 minutes a day, Austrians dedicate an average of 30 minutes to reading the daily papers and the Internet ranks on place 4 with a usage of 20 minutes.

Since 1999, the daily listening time has been stable. It can be noticed that the listening time increased significantly with the nationwide introduction of private radio as from the 2nd quarter 1998, due to the increased programme offer. Among all radio listeners (over 10 years) the daily listening time increased from 186 minutes (1997) to 206 minutes (2001). Also in the target group of younger and employed persons, the daily listening time increased from 209 (1997) to 223 (2001) minutes.

Figure 33: Development of listening time



Already before the private radio broadcasting companies entered the market, the coverage of the media type radio was extremely high. Already in 1997, 78.8% of the Austrians (over 10 years) listened to one or several radio programmes, until 2001 the daily service range of all radio programmes increased to

The special market power of the radio station that is most important for the ORF also commercially, i.e. Ö3, can be seen, when comparing Ö3 and the total of private radio stations. In the 14-49 year target group, which is especially important for the advertising industry, Ö3 achieved a daily service range of 55.8%, while the group of private national

84.3%. In other terms, this means that only slightly more than one seventh of the population do not switch on the radio once a day. In the "Radiotest", daily service range means that radio consumption is at least 15 minutes.

radio stations (without radio stations radiating into Austria) achieved a daily service range of 27.4%.

Figure 34: Radio: development of daily service ranges

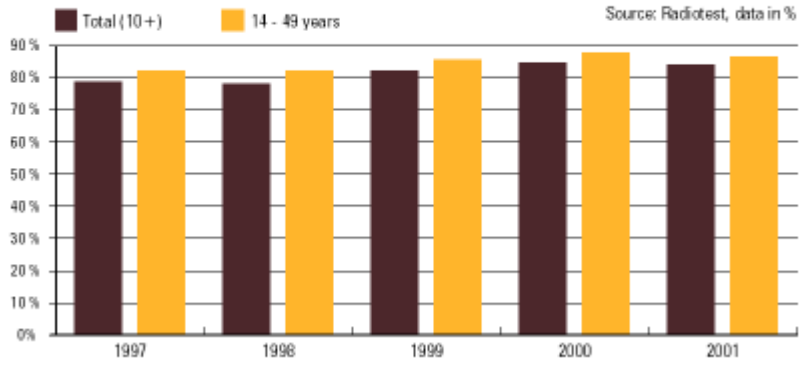


Figure 35: Ö3 vs. private radio stations: development of daily service ranges

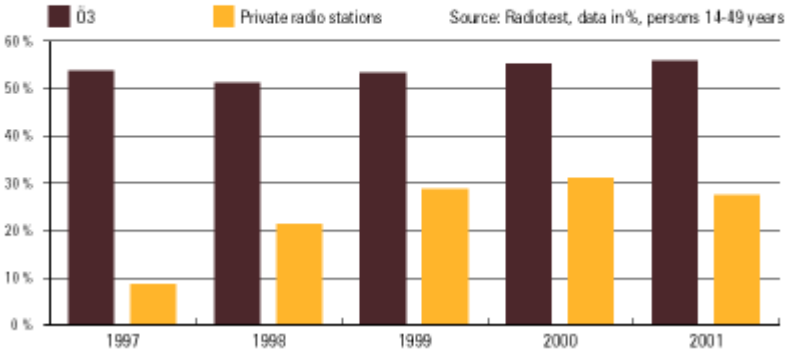
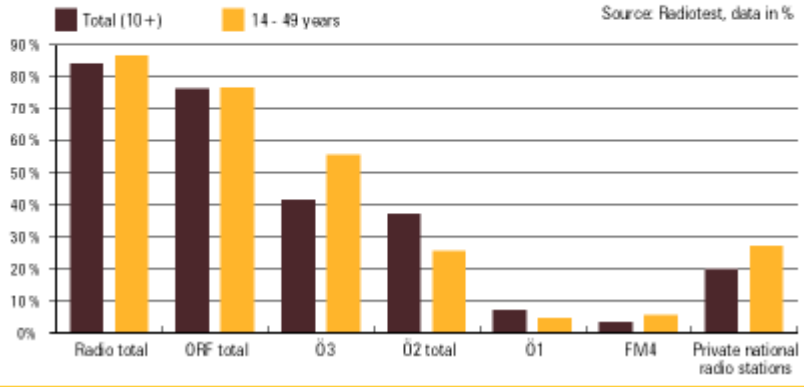


Figure 36: Radio daily service ranges 2001



The ORF operates a total of three nationwide programmes (on VHF) as well as nine

The market shares give information as to the percentage of the minutes that people listened to

regional programmes, from "Radio Burgenland" to "Radio Vorarlberg". Ö3 was ahead with the highest daily service range of 41.7%, followed by the regional radio programmes with 37.4%, Ö1 with 7.4% and FM4 with 3.6% in the group of Austrians over 10 years. The results clearly show that Ö3 and FM4 are positioned to attract young listeners, while the regional radio channels of the ORF, but also Ö1 (no advertising), attract rather older target groups.

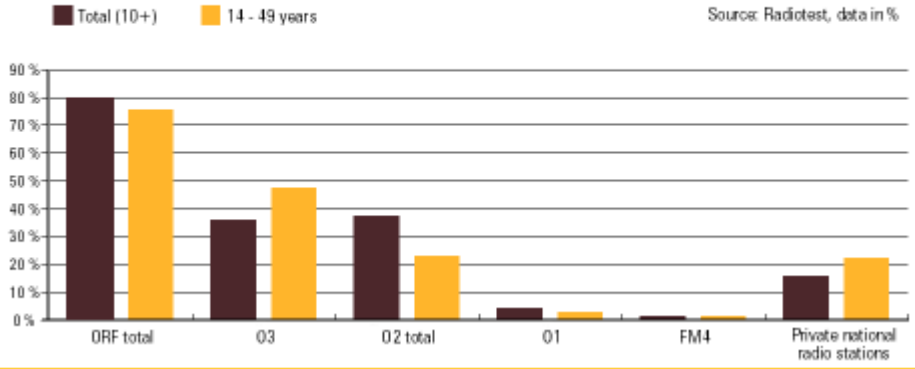
the radio in total, which is attributable to a specific radio broadcaster or individual groups of broadcasters. According to market shares, Ö3 and the regional radio programmes of the ORF were predominant. Ö3 had a market share of 37%, the regional radio programmes of 38% (all ORF radio programmes taken together achieved a market share of 80%), while the private radio channels achieved 17%. In the 14-49 year target group all ORF radio programmes taken together reached 75%, while the private radio programmes reached 22%.

Figure 37: Daily service ranges of ORF radio programmes and selected private stations, listeners in 1,000

	Total	Vienna	Lower Austria	Burgen-land	Styria	Carin-thia	Upper Austria	Salz-burg	Tyrol incl. East Tyrol	Vorarl-berg
Total daily service range										
Radio total	5,976	1,142	1,158	214	902	417	1,013	383	497	249
ORF total	5,407	989	1,071	200	818	397	909	343	449	230
Private national stations total	1,430	321	257	42	236	67	244	104	121	39
Other stations total	290	59	33	7	22	17	62	29	34	27
Daily service range ORF										
Ö1	526	165	89	11	65	30	74	35	40	16
Ö3	2,955	502	595	102	440	230	519	188	251	127
FM4	253	75	40	7	26	16	41	16	22	11
ORF regional radio total	2,651	435	532	120	426	208	439	168	210	113
Radio Wien	307	216	83	8	-	-	-	-	-	-
Radio Nieder-österreich	657	191	433	8	6	-	20	-	-	-
Radio Burgenland	251	84	43	109	14	-	-	-	-	-
Radio Steiermark	435	-	7	7	413	4	2	2	-	-
Radio Kärnten	210	-	-	-	3	202	-	1	3	-
Radio Ober-österreich	431	-	22	-	3	-	402	4	-	-
Radio Salzburg	212	-	-	-	4	2	41	165	1	-
Radio Tirol	212	-	-	-	-	1	-	1	209	0
Radio Vorarlberg	114	-	-	-	-	-	-	-	1	113
Daily service ranges of private radio stations										
Krone Hit R@dio	310	57	101	26	28	6	68	19	5	-
88,6 Der Musiksender	193	132	56	4	-	-	-	-	-	-
Antenne Wien 102,5	65	47	16	2	-	-	-	-	-	-
Radio Energy 104,2	139	105	32	2	-	-	-	-	-	-
Radio Stephansdom	29	25	4	0	-	-	-	-	-	-
digi Hit	26	-	25	-	-	-	0	-	-	-
106,7 Party FM	10	-	8	2	-	-	-	-	-	-
Antenne Steiermark	197	-	2	9	178	5	2	1	-	-
Antenne Kärnten	51	-	-	-	1	49	-	0	0	-
Life Radio	177	-	11	-	2	-	163	1	-	-
Antenne Salzburg	84	-	-	-	1	0	20	61	2	-
Welle 1 Salzburg	39	-	-	-	-	-	10	29	-	-
Antenne Tirol	56	-	-	-	-	1	-	1	54	0
Radio Arabella Tirol	46	-	-	-	-	-	-	-	46	-
Welle 1 Tirol	13	-	-	-	-	-	-	-	13	-
Antenne Vorarlberg	35	-	-	-	-	-	-	-	0	35

Source: Radiotest 2001

Figure 38: Austrian radio broadcasters: market shares 2001



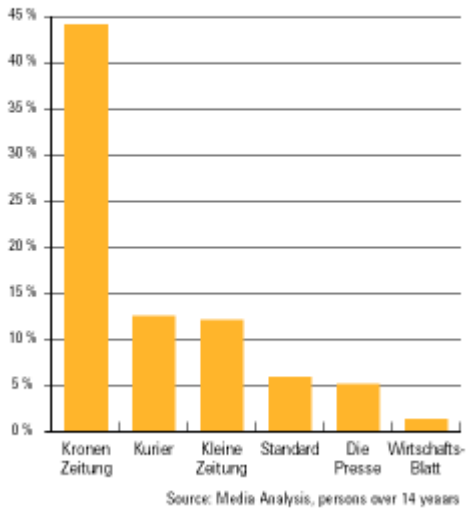
6 CATI method: "Computer Aided Telephone Interviews"

4.1.5 Print media

Even though daily and weekly papers, as well as magazines, are not directly affected by the regulatory activity of RTR-GmbH, a short overview shall be given of the newspaper and magazine markets after all. On the one hand, in particular in radio broadcasting, print media and broadcasters are often closely interlinked, in terms of company law, while, on the other hand, all media groups jointly compete for the advertising budgets. Therefore, a strict separation of the individual sectors would not produce a realistic picture of the Austrian media market. As already stated in section 4.1.2, 59% of the Austrian advertising expenses are attributable to the print media. Traditionally, the national (print) media publishing houses have a great influence on the market and on politics.

The most obvious characteristic of the Austrian print media market is the extreme market concentration which again intensified during the period under review.

Figure 39: Austrian nationwide daily papers: daily service ranges 2001



In the field of daily papers, the "Kronen Zeitung" has a unique leading position, with a daily service range of 44.1% (Media Analysis 2001). No other daily paper reaches such a large amount of the total population of a country every day. In the fields of distribution, advertising marketing and administration, the "Kronen Zeitung" is linked via Mediaprint to the second largest daily paper (according to Media Analysis 2001), the "Kurier". The "Westdeutsche Allgemeine Zeitung" (WAZ) holds interests both in the "Kronen Zeitung" (50%) and in the "Kurier" (49.4%) and, indirectly, in the Mediaprint distribution company.

In addition to the SMP position of Mediaprint with regard to the daily papers, there exists the News publishing group, a publishing house that dominated the magazine market during the period under review. During the first half of 2001, the merger between the two largest magazine groups of the country, the News publishing group ("News", "Format", "tv-media", "e-media") and ZVB, a subsidiary of Kurier/WAZ, ("trend", "profil", "auto revue" and others) was finally agreed on and established on the market. Indirect owners of the "new" publishing group are Gruner + Jahr/Bertelsmann (56.03%) and Kurier Magazine Verlags GmbH (25,3%)[7], which, in turn, is indirectly owned by the WAZ (49.4%). The rest of 18.67% is held by the founders of the News publishing group, Wolfgang and Hellmuth Fellner. Despite concerns in terms of cartel law that were expressed by various sides, the merger was permitted. Few months later, the women's magazine "woman" was launched, which was the first new magazine of the recently merged News publishing group.

Circulation and range of the Austrian print media show a relatively stable development during the period under review. However, the ranges of the magazines, recorded in the Media Analysis, showed losses, which gave rise to heated controversy over the interviewing methods used by the Media Analysis association. Also for the print media, the year 2001 marked the end, at least for the time being, of a real period of boom. The fact that the advertising budgets of numerous economically weakened Internet and telecom companies were breaking away and the first short-term consequences of the terror attacks of 11 September 2001 caused severe losses in sales to newspapers and magazines. In addition, higher prices for paper and the abolition of state subsidies for the delivery of papers by the Austrian Post drastically aggravated the overall economic environment of the print media.

Figure 40: Austrian daily papers - circulations and ranges

Title	Weekly average	Copies distributed in Austria	Copies sold	Range in %	Readers in 1,000	Readers per copy
Der Standard	Monday-Saturday	90,089	68,734	6.0	401	4.5
Die Presse	Monday-Saturday	103,020	76,127	5.2	351	3.4
Kleine Zeitung	Monday-Saturday	277,664	253,746	12.2	818	2.9
Kleine Zeitung Graz	Monday-Saturday	183,393	166,778	8.0	534	2.9
Kleine Zeitung Klgf.	Monday-Saturday	94,270	86,968	4.2	285	3.0
Kronen-Zeitung Gesamt	Monday-Saturday	924,112	876,303	44.1	2,958	3.2
Kurier Gesamt	Monday-Saturday	203,316	180,898	12.6	846	4.2
NEUE Vorarlberger TZ	Tuesday-Saturday	12,797	7,031	0.8	51	4.0
OÖNachrichten	Monday-Saturday	118,957	102,330	5.3	354	3.0
SN/Sbg. Nachrichten	Monday-Saturday	88,741	76,410	4.6	306	3.4
Tiroler Tageszeitung	Monday-Saturday	107,928	89,719	5.0	336	3.1
VN/Vbg. Nachrichten	Monday-Saturday	69,492	66,370	3.5	234	3.4
WirtschaftsBlatt	Tuesday-Saturday	44,312	31,702	1.5	100	2.3

Source: ÖAK - Austrian Circulation Control 2001/Media Analysis 2001 (persons over 14 years)

Figure 41: Austrian magazines - circulations and ranges

Title	Publication	Copies distributed in Austria	Copies sold	Range in %	Readers in 1,000	Readers per copy
Die Ganze Woche	weekly	367,448	362,621	19.5	1,309	3.6
e-media	every 2 weeks	182,167	179,024	9.1	613	3.4
Format	weekly	92,435	89,286	6.1	409	4.4
News	weekly	283,619	279,110	18.2	1,219	4.3
profil	weekly	89,461	85,668	8.9	599	6.7
Sportwoche	weekly	66,725	53,835	3.5	234	3.5
tv media	weekly	293,871	291,136	15.4	1,036	3.5
woman	every 2 weeks	272.156	268,531	not yet contained in the Media Analysis 2001		
Alles Auto	monthly	56,348	48,776	4.9	330	5.9
Autorevue	monthly	51,215	49,088	8.0	537	10.5
Gewinn	monthly	80,179	65,940	8.5	572	7.1
trend	monthly	68,482	65,017	8.0	535	7.8
Wiener	10 times a year	72,601	35,879	4.5	302	4.2
Wienerin	monthly	70,988	55,503	5.3	356	5.0
Auto Touring	monthly	1,265,838		32.4	2,178	1.7
Freie Fahrt	10 times a year	396,109		10.9	735	1.9
Visa Magazin	6 times a year	544,039		10.2	686	1.3

Source: ÖAK - Austrian Circulation Control 2001/Media Analysis 2001 (persons over 14 years)

7 According to a statement from the company register, the share of the Kurier Group in the NEWS Group is 25.3%, rather than 30% as ruled by the Higher Regional Court Vienna of 26.01.2001.

4.2. The Austrian telecommunications markets

4.2.1 Fixed network voice telephony market

4.2.1.1 Market entry

Liberalisation, which was begun in 1998, was the logical answer to a gradual change in demand and supply conditions in the field of telecommunications. On the one hand, internationalisation and liberalisation of the economy led to a greater and qualitatively different demand for telecommunications services. On the other hand, technical progress facilitated a number of innovations on the supply side, which made it feasible, for example, to own sub-networks or to separate, from an organisational point of view, the physical network and the services provided via that network.

Against this background, it is also the task of the regulatory authority to keep the barriers to market entry for new providers low, as well as to create the prerequisites for fair competition, and subsequently, to maintain it. In the meantime, following a number of market entries, after about four years of liberalisation and in accordance with the current discussion of the market phases, consolidation processes can be noticed in some sub-markets. This is underlined by withdrawals from the market and mergers of companies, which were observed in the past and accompany a consolidation phase.[8]

Depending on the type and scope of the network infrastructure used, the licensees can be divided into three categories:

- Telekom Austria, the former monopolist, plays a special role because it is the only telecommunications company having a nationwide infrastructure and holding the largest market share by far, regarding voice telephony and leased lines. As it would have the possibility, on account of its market power, to keep new market entrants away from access to its customers, and thus to restrict competition to a large extent, Telekom Austria was determined to be an operator with significant market power. As such, it is subject to special controls regarding tariffs and business conditions, and it is also obliged to grant other competitors non-discriminatory access to parts of its network. Since it is possible to achieve interconnection on a lower network hierarchy level and, in particular, to unbundle subscriber access lines, companies who would not benefit from direct access to the carrier networks of the new operators now also have the choice between several operators.
- Some of the alternative telecommunications providers have their own carrier networks and/or regionally limited access networks. In order to reach
- In the last few years, the so-called carrier selection operation on the fixed network market has proved to be a very effective instrument to promote competition. Carrier network operators accept incoming calls from the originating network and forward them to the terminating network, where origination and termination may take place in the same network. As the existing infrastructure is used, there is no need to have one's own access network all the way to the customer – rather, one's own carrier network will be usually interconnected with the telecommunications network of the incumbent and pre-selected by the end-user by means of a four-digit selection code. The operator collects the charges directly from the end-user and must compensate the other operator(s) for their origination, transit and termination services. In connection with the selection of carrier network operators, call-by-call and pre-selection have to be distinguished. Call-by-call means that the caller selects the carrier network operator for every single call by pre-dialling a specific network operator code. If the subscriber does not dial a network operator code, the call is handled and billed by Telekom Austria. In case of pre-selection, a subscriber's entire traffic (with the exception of calls to value-added services and services in the public interest) is routed via the carrier network selected by him, on the basis of a permanent pre-setting of the network operator code. This means that, as a rule, he will use one specific other carrier network without having to dial a network operator code.

In the first two years after liberalisation, the fixed network market was opened almost exclusively via the carrier network operators. The reason for this development was that the relatively easy market entry, on account of the low investment input, resulted in a large number of applications for licences. The stimulation of competition by the emergence of new providers caused pressure on Telekom Austria to lower prices and led to a reduction of tariffs throughout the industry, which resulted in significant savings of telephone costs on the part of customers (see Fig. 47 to 50).

As a consequence of the fierce price competition, it can be seen that mainly those providers are likely to be successful, in the medium term, who either have a parent company with major financial resources (or other cooperation partners) and/or can resort to their own infrastructure. The operators who lack these prerequisites are exposed to increasing pressure, as they are completely dependent on other networks and,

subscribers in other networks they must resort to the interconnection services of Telekom Austria. As one's own infrastructure provides more independence from the intermediate services of the SMP operator, on the one hand, and also offers the possibility, on the other hand, to provide a more comprehensive range of services with greater flexibility, as compared to pure carrier network operators, subscriber network operators make every effort to build up new networks or to expand existing ones. On account of the high investment requirements, the owners will often be bigger (foreign) companies that have the necessary financial strength and the required know-how (for example Tele2, eTel, Telekabel; example to show the opposite: UTA). Despite the importance of investments in telecommunications infrastructure for the national economy, the conclusion – the more investments, the better – would be wrong, because, from an economic point of view, the extent of investments in infrastructure can be both, too high or too low. Increasing investment expenditures in the telecommunications industry cannot be regarded as positive at every given point of liberalisation and in every geographical dimension. The local access networks, for example, still have a sub-additive cost structure, i.e. the entire demand in the local loop area can be handled by one provider of infrastructure more cost-efficiently than by two or more. As long as alternative access technologies, such as energy supply networks and WLL, still lack technological sophistication to reach the state of marketability and cable TV networks have substitution potential only in conurbation areas, the natural monopoly will largely continue to prevail in the local network[9]. At least from the perspective of static efficiency, in this case, multiplying of local infrastructure would be economically inefficient.

thus, their margins depend decisively on their interconnection costs. Significant competitive advantages, for instance, by innovative products, can be achieved by such companies only to a limited extent. As a whole, the overall trend shows that the major providers are developing, or have already developed, into integrated and, in part, also convergent providers. Apart from speech, data and Internet, also services, such as Server Hosting, Application Service Providing or mobile services are offered to customers. Only the providers who can offer the total range of products and services ("one-stop shopping") have good chances of surviving on the market in the long term. Smaller providers, on the other hand, have to try to find niches, because telephone minutes alone do no longer yield sustainable profits.

8 The situation on the German market is quite similar, in particular, in the field of fixed network telephony. In this respect, the reader is advised to refer to the second special expert opinion of the Monopoly Commission (2002), "Development of Competition in Telecommunications and Post 2001".

9 Of course, the mobile sector as a whole can be regarded, to a certain extent, to substitute the fixed network.

4.2.1.2 Market development
4.2.1.3 Market data
4.2.1.4 Tariffs
4.2.1.5 Austria by international comparison

4.2.1.2 Market development

The fact that voice telephony is perceived by customers largely as a homogeneous product is one major reason for the intense price competition in the fixed network sector. Whenever consumers can compare prices easily because goods or services have the same or very similar features, the price will be the decisive parameter for decision-making on the demand side and an essential competition parameter on the supply side.

In order to reduce pressure from competition, operators will therefore try to differentiate their rates according to consumer groups, to expand their range of products and to develop it further towards data communications, value-added services, services etc. By way of differentiating their products, individual operators may be able to succeed in increasing their scope of pricing and in achieving higher margins.

4.2.1.1 Market entry

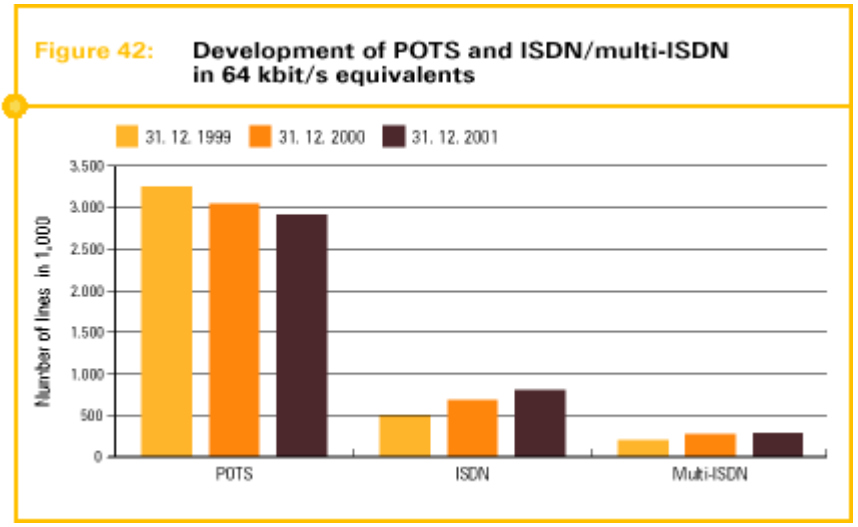
4.2.1.3 Market data
4.2.1.4 Tariffs
4.2.1.5 Austria by international comparison

4.2.1.3 Market data

Although it is expected that the expansive subscriber development on the mobile communications market will slow down the demand for fixed network lines, there was even a slight increase in the demand for transmission capacity, measured in 64 kbit/s equivalents, during the period under review (1999-2001). When looking more closely, it is revealed that the change differed considerably, depending on the line technology. The slight decrease in analogue POTS lines was more than compensated by the sharp increase in ISDN and multi-ISDN lines, measured in 64 kbit/s equivalents (see Fig. 42). However, when the number of telephone lines is considered, a clear increase can be seen only with ISDN lines. The substitution between fixed network and mobile telephony is therefore taking place, as expected, rather in the field of household customers and small companies.

While the sales figures on the fixed network market still showed an upward trend in 1988 (+3.6%), there was a moderate and relatively steady decline (of about -3% each) over the remaining period (1999-2001) (see Fig. 43). Against the background of the overall trend observed and the stabilisation of the market shares of Telekom Austria in the same period (see Fig. 45), a relative consolidation of the incumbent can be seen.

Figure 42: Development of POTS and ISDN/multi-ISDN in 64 kbit/s equivalents



The access of new operators and their gains in market shares is also reflected in a decreasing concentration on the fixed network voice telephony market. The concept of high concentration on a market is used, when, at a certain point in time, almost the entire reference amount (such as sales, subscriber figures, traffic values) is concentrated with few operators or distributed unevenly among the individual operators.

The HHI, shown in Fig. 44, indicates decreasing concentration rates varying in extent for the individual reference parameters, i.e. sales, traffic minutes and subscribers, in the course of time. The high concentration regarding subscribers is not surprising, as the overwhelming majority of subscriber lines is concentrated at Telekom Austria and only few alternative network operators have their own access network which allows them to connect subscribers directly (see Fig. 45). The low concentration rate in traffic minutes is primarily due to the carrier network operators whose customers are not counted as subscribers (of their networks), but who carry large volumes of traffic via their networks. The concentration rate for sales decreases more or less to the extent to which

Info-Box 22: Calculation of sales on the fixed network end-user market

On the fixed network market, sales figures refer to:

- Connection charges Austria regional zone
- Connection charges Austria long-distance zone
- Connection charges Austria mobile network
- Connection charges international
- Connection charges from public telephones
- Connection charges directory inquiry services
- Connection charges services numbers
- Connection charges online services
- Sales from selling calling cards and minutes to resellers
- Basic charges
- Charges for special tasks of service provision
- Charges for the installation of lines

Info-Box 23: Hirschman-Herfindahl Index (HHI)

One of the most common measures of concentration is the Hirschman-Herfindahl-Index (HHI), which is calculated as the sum of the squares of the reference

traffic services are also provided by other operators. Sales from monthly basic charges and installation charges, however, continue to remain with the subscriber network operator. The fact that the concentration rate for sales is steadily higher than that for traffic minutes is explained by the tariffs of TA that are, on average, slightly higher (see section 4.2.1.4).

parameters (here, specifically, the market shares in %). The value of this index is between 0 and 10,000. A value near 0 stands for a low concentration and will appear if there is a large number of market players who are all more or less of the same size. The highest value of the index is near 10,000, which means that there is a monopolist operator and therefore complete concentration of the reference amount.

Figure 43: Development of sales on the fixed network market (voice telephony) 1997- 2001

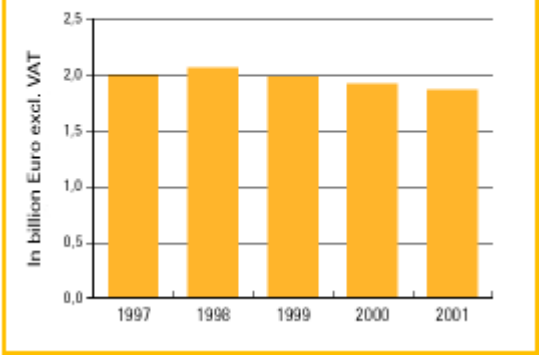
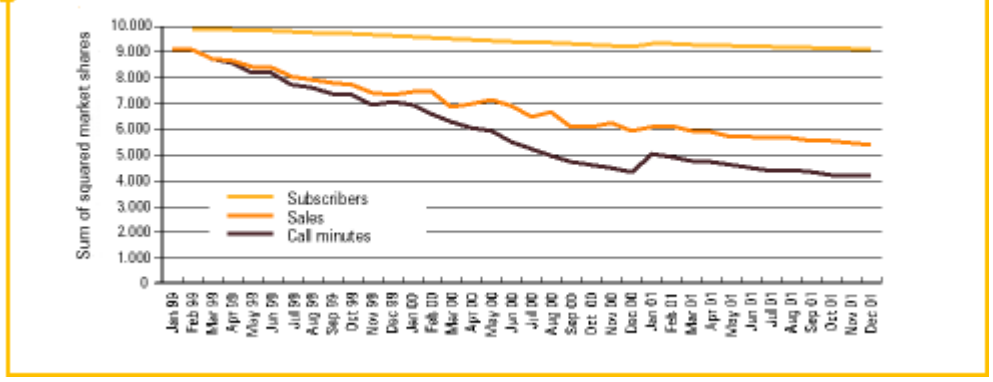


Figure 44: Hirschmann-Herfindahl Index for fixed network voice telephony



The extent to which alternative network operators (carrier network operators and subscriber network operators) were successful in 2000 – 2001 in the individual segments of fixed network telephony can be seen indirectly in the market shares of Telekom Austria illustrated in Fig. 45.

The introduction of carrier selection led to a drastic reduction in end-user tariffs during the first years of liberalisation and showed the most significant effect that liberalisation had on the fixed network. It is therefore one of the major instruments for market liberalisation, as it introduces competition quickly and allows alternative network operators, who do not have their own infrastructure in the local loop, to enter the market. As they can resort to the existing infrastructure of Telekom Austria, they can offer their services quickly without having to undergo the cumbersome process of building their own nationwide network first. In 2000 and 2001, the number of carrier network operators engaged on the market was, without doubt, streamlined because smaller companies tended to have problems to maintain their positions on this fiercely

Another important instrument to promote competition was introduced in Austria, i.e. carrier pre-selection (CPS), where customers no longer have to dial the four-digit pre-selection code. As a result, it became possible for the customers of the alternative network operators to make all their calls via their network on a permanent basis, which will also improve the relations to the customer. By means of CPS all calls (with the exception of services numbers and numbers in the public interest) are handled by the pre-selected operator. Carrier pre-selection found wide acceptance in Austria, as can be seen in Fig. 46. Until the end of 2001, more than 700,000 subscribers decided to use an alternative network operator to carry all their calls.

competitive market.

Figure 45: Market shares according to fixed network segments (data published by Telekom Austria)

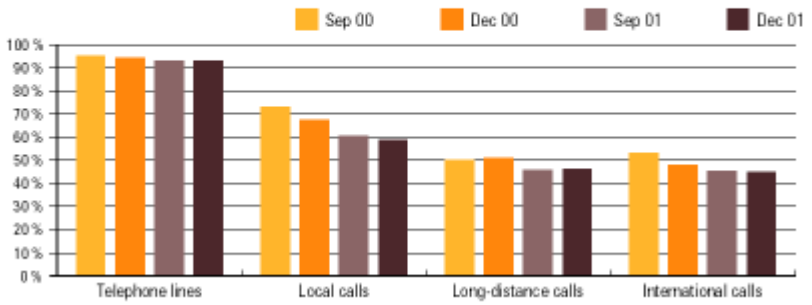
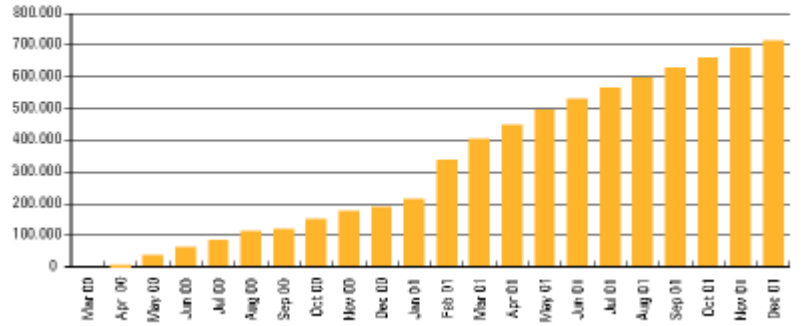


Figure 46: Number of subscribers using carrier pre-selection



4.2.1.1 Market entry
4.2.1.2 Market development
4.2.1.4 Tariffs
4.2.1.5 Austria by international comparison

4.2.1.4 Tariffs

The trend towards price reductions, which had set in with the liberalisation of the telecommunications sector, also continued in the following years (1999-2001) in all areas and forced Telekom Austria, still the largest operator by far, to adjust the tariffs in the downward direction. Although the differences in tariffs became increasingly smaller, Fig. 47 to 50 show clearly that the published tariffs charged by Telekom Austria (basis for comparison: standard tariff) are, as a rule, still higher than those of its competitors. Assuming that the services provided are of equal quality, this suggests a certain extent of "pricing power", which may be explained with customer ties, customer loyalty, image benefits and other costs related to a change of operator.

In fact, the price reductions must have been even higher than is shown in the following figures, since, in particular, business customers often get favourable tariffs/rebates for their large traffic volumes.

The competition in the fixed network sector is also reflected in an increasing number of tariff models. In addition to Telekom Austria, with its current business customer tariffs, the various "Tik-Tak" tariffs, as well as the minimum and the standard tariffs, all other subscriber network operators and the carrier network operators offer several tariff models.

Currently, a number of tariff options are available on the market, which combine, in particular, different basic charges with different usage charges, thus taking account of the typical usage structure of various customer groups (contract term, size of the company etc.). This makes it possible for the individual customers to choose a tariff model which allows them to minimise their telephone expenses in line with individual telephone habits.

From an economic point of view, fixing optional tariffs is a form of price differentiation which is based on the principle of orienting prices at the consumers' readiness to pay. In contrast to non-differentiated prices, this allows, as a rule, for an increase in sold quantities and the opening of new markets. This helps to accommodate customer groups that would have no or only little demand if prices were non-differentiated.

With this in mind and with a view to efficiently handling the problem of peak loads, the complex, historically grown price differentiation models can be also rated positive from a welfare economic point of view.

Figure 47: Tariff development: fixed network voice telephony under 50 km

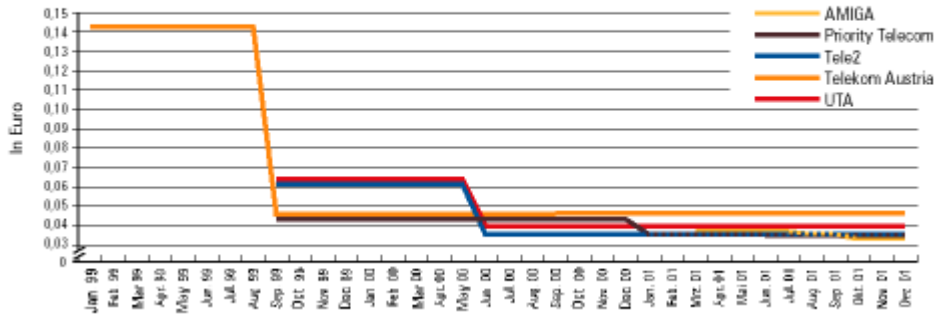


Figure 48: Tariff development: fixed network voice telephony local

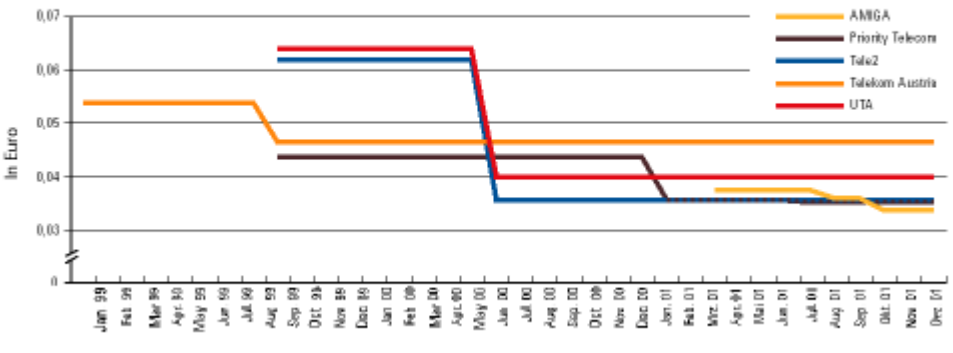


Figure 49: Tariff development: fixed network voice telephony over 50 km

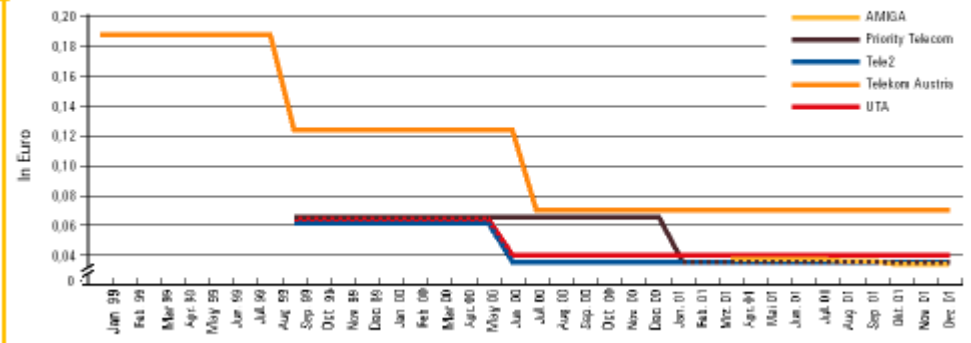
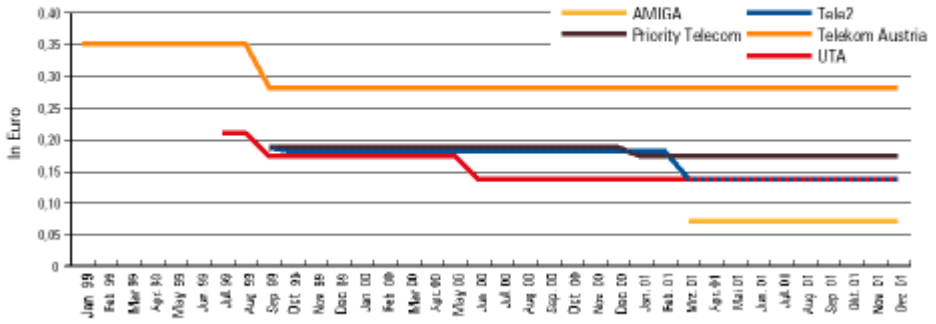


Figure 50: Tariff development: fixed network voice telephony international (Germany)



4.2.1.2 Market development
4.2.1.3 Market data
4.2.1.4 Tariffs
4.2.1.5 Austria by international comparison

4.2.1.5 Austria by international comparison

A comparison of tariffs, conducted in the 7th Implementation Report of the European Commission[10] both for private and business customers, shows that Austria ranks in the middle of the EU member states (see Fig. 51 and 52). The basket for expenses of private customers shows Austria slightly above the European average, whereas the basket for combined expenses of business customers is slightly below.

Both are based on the respective tariffs of the national incumbents in August 2001. The market baskets, on which the comparative values are based, contain the basic charges and the traffic charges. The prices of the market baskets were converted into purchasing power parities to allow for international comparability and adjustment of effects of inflation (all values inclusive of VAT)[11].

Figure 51: EU comparison of tariffs for private customers

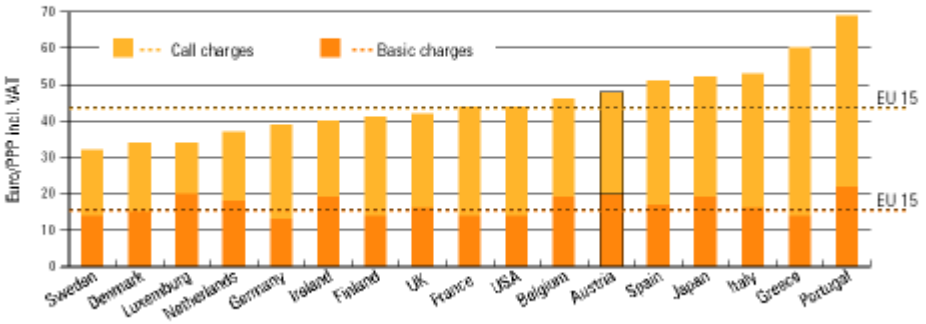
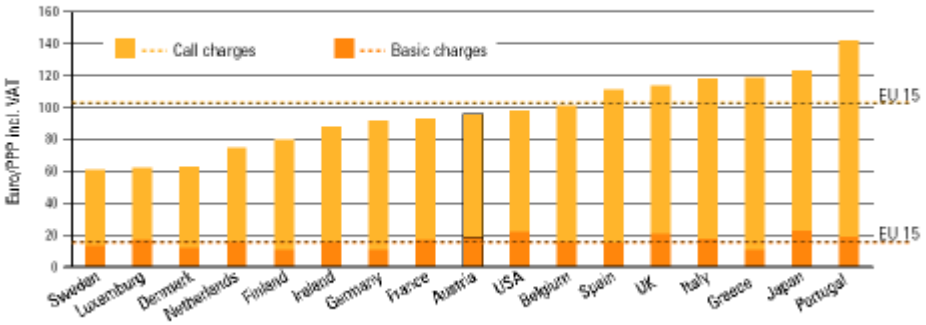


Figure 52: EU comparison of tariffs for business customers



10 Seventh Report on the Implementation of the Telecommunications Regulatory Package: Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions.

11 The last comparative values of OECD (August 2000) available basically confirm the results (see "telecommunications report 2000" of RTR-GmbH, p. 85-86, Fig. 27 and 28).

4.2.1.1 Market entry
4.2.1.2 Market development
4.2.1.3 Market data
4.2.1.4 Tariffs

4.2.2. Mobile telephony market

4.2.2.1 Market entry and market development

As the number of frequencies is limited, there are much fewer market players on the mobile telephony market, which has been liberalised since 1996, than on the fixed network market. A company may, at present, enter the market only by way of a licensing procedure and after having been allocated frequencies. At the time when this report was prepared, the following companies had the necessary licences: Mobilkom had a license for the provision of analogue mobile communications services (D network)[12] ,

Mobilkom, T-Mobile, Connect and tele.ring had a licence for the provision of second generation mobile communications services (GSM) and Mobilkom, T-Mobile (until 08.03.2002 max.mobil.), Connect, EKOM[13], Hutchison and 3G Mobile had a licence for the provision of third generation mobile communications services (IMT-2000/UMTS). The respective frequency spectrum packages are contained in section 6.2.5.4.

Figure 53: Overview of operative mobile networks in Austria[14]

Operator	System	Licence award	Licence fee (in million €)	GSM-1800 auction 2001 (in million €)	Start of operation
Mobilkom (D network)	TACS				1990
Mobilkom (A1)	GSM-900 and GSM-1800		290.691	36.41	1994
T-Mobile	GSM-900 and GSM-1800	January 1996	290.691	11.63	October 1996
Connect	GSM-1800	August 1997	167.148	21.87	October 1998
tele.ring	GSM-1800	May 1999	98.108		April 2000

Currently, a total of five mobile communications networks and four operators are operative (see Fig. 53) who concentrated on the introduction of GPRS and mobile data services in 2001. The commercial launch of the first 3G mobile network is expected to take place already in 2002.

In order to create as transparent and stable framework conditions as possible for the market entry of the licensees, the TKK took several decisions. The most important of these was the publication of a position paper on infrastructure sharing of network elements in 3G networks.

12 Mobilkom returned the licence for the D network at the beginning of 2002. The pertaining frequencies were dedicated to GSM and will be probably assigned in October 2002.
13 Formerly, Mannesmann 3G Mobilfunk GmbH
14 The licensee of the Trunked Radio System TETRA, master-talk (master-talk Austria Telekom Service GmbH, formerly TetraCall Bündelfunk Errichtungs- und Betriebs-GmbH), is not considered here for reasons of clarity although it is a mobile communications service.

4.2.2.2 Market data
4.2.2.3 Tariffs
4.2.2.4 Austria by international comparison

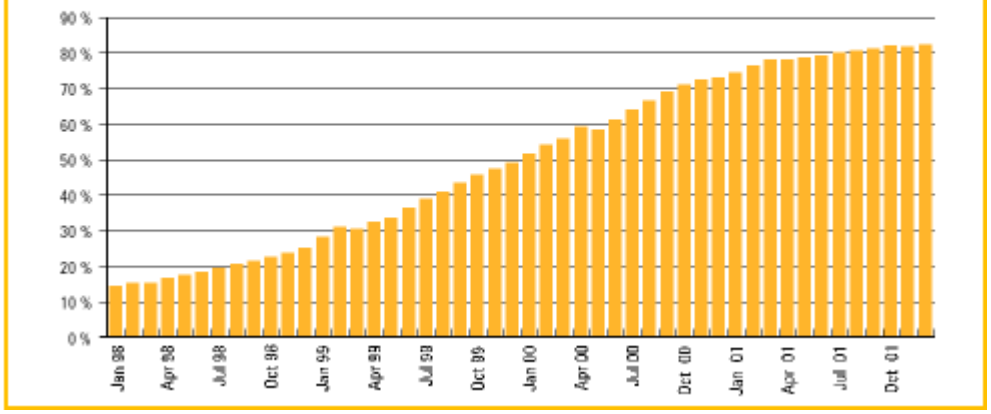
4.2.2.2 Market data

4.2.2.2.1 Market development according to subscribers

At the end of 2001, the number of activated subscribers (SIM cards) was 6.76 million. This corresponds to a penetration rate of 82.3%. With this figure, Austria still has one of the highest penetration rates of Europe. In 2001, the mobile communications market grew by 640,000 subscribers, from 6.12 million to 6.76 million subscribers. This corresponds to an increase of 10.5%.

The development of the subscriber figures[15] levelled off, after having grown strongly between 1998 and 2000, which indicates that a transition to the phase of market maturity is taking place (see Fig. 54). The average monthly growth rate dropped from 5% and 3.5% in 1999 and 2000 to currently about 1%.

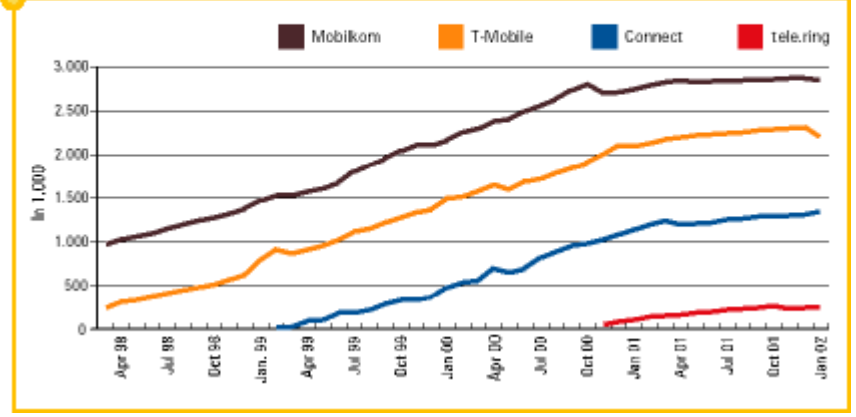
Figure 54: Penetration rate in the field of mobile telephony in Austria



During the period under review, Mobilkom increased its number of subscribers by 128,000, from 2.75 million to 2.878 million. The largest increases took place between January and March. As a whole, the growth in the number of subscribers levelled out further. The average monthly growth rate dropped from 1.45% in the first quarter to approx. 0.3% in the fourth quarter. During the period under review, T-Mobile experienced an increase in customers of about 10%. With approx. 18,000 new subscribers per month, T-Mobile was able to increase its subscriber rate by 210,000, from 2.1 million subscribers at the beginning of the year to 2.31 million at the end of 2001.

As in the case of Mobilkom, the growth rates were declining in the course of the year. Connect raised its number of customers by 170,000, from 1.15 million customers at the beginning of 2001 to 1.32 million at the end of 2001. This corresponds to a monthly average of 14,000 new subscribers. tele.ring more than doubled its number of subscribers during the period under review, from 120,000 to 250,000. This corresponds to an average monthly growth of about 11,000 subscribers.

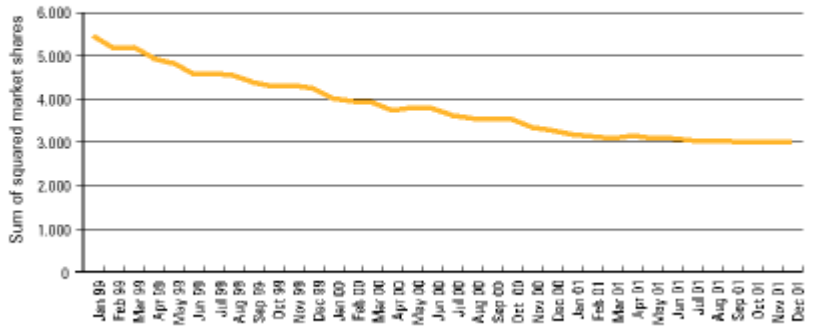
Figure 55: Subscriber figures for mobile telephony (prepaid and contract customers)



Altogether, also in 2001, a decrease in market concentration, even if it was only slight, can be seen (see Fig. 55 and 56). The HHI for subscribers dropped from 3,553 to 3,378 during the period under review. In December 2001, Mobilkom (A1 and D networks) had a share of 42.6%, T-Mobile of 34.2%, Connect of 19.5% and tele.ring of 3.7% of all subscribers. Accordingly, during the period under review,

Connect and tele.ring increased their market shares according to subscribers from 18.8% to 19.5% and from 1.96% to 3.7%, respectively. The market shares of Mobilkom dropped from 44.9% to 42.6%, those of T-Mobile from 34.3% to 34.2%.

Figure 56: Hirschman-Herfindahl Index for subscriber figures in mobile communications



4.2.2.2.2 Development of sales and call minutes in mobile communications

With an average annual growth rate of almost 40% in the past four years, the mobile communications market is the sector of the telecommunications industry, which shows the most dynamic development. If the market volume was only approx. € 560 million in 1997, total sales increased already to € 1.846 billion in 2000. In 2001, sales accumulated by all operators, were € 2.189 billion (see Fig. 57). However, the growth rate decreased from 57.5% in 1999 and 38.6% in 2000 to 18.55% in 2001.

Info-Box 24: Calculation of sales and traffic minutes on the mobile communications end-user market

On the mobile communications market, sales figures refer to:

- Connection charges in one's own network (without SMS and online services)
- Connection charges from one's own network to other national and international mobile and fixed networks
- Roaming charges for one's own customers abroad
- Roaming charges for subscribers of other networks in Austria (only outgoing calls)
- Charges for services numbers
- Charges for directory inquiry services
- Charges for online services
- Basic charges
- Activation charges
- Charges for SMS

The traffic volumes (call minutes), aggregated from all mobile operators, increased in the period January 2001 to December 2001 from 648 million to 705 million minutes (see Fig. 58). This corresponds to a growth of 9%. This means that also the traffic volumes were declining. In 2000, the growth rate was still 32%. As in 2000, an increase above average in the areas of "mobile calls to one's own network" and "mobile calls to other Austrian mobile networks" can be seen, with growth rates of 10% and 23%. Meanwhile, almost half of the call minutes were attributable to intra-network calls. Compared with this, the number of calls to the fixed network was declining slightly. The share of calls to the fixed network was now about 20%.

On the mobile communications market, figures on traffic minutes refer to:

- Traffic minutes in one's own network (without SMS and online services)
- Traffic minutes from one's own network to other national and international mobile and fixed networks
- Traffic minutes for one's own customers abroad
- Traffic minutes for subscribers of other networks in Austria (only outgoing calls)
- Traffic minutes for services numbers
- Traffic minutes for directory inquiry services
- Traffic minutes for online services

Figure 57: Development of sales on the mobile communications market

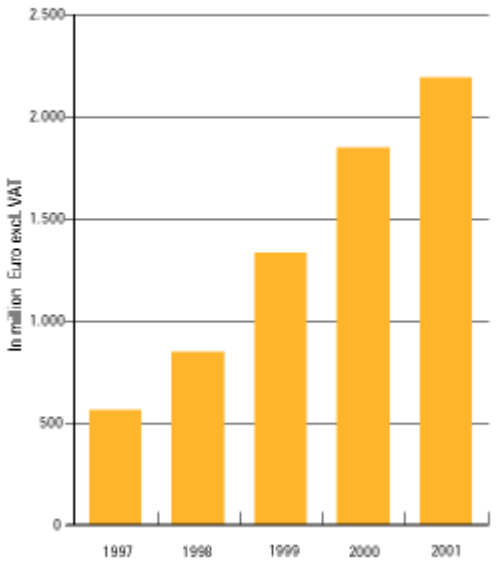


Figure 58: Development of billed call minutes on the mobile communications market according to destination networks

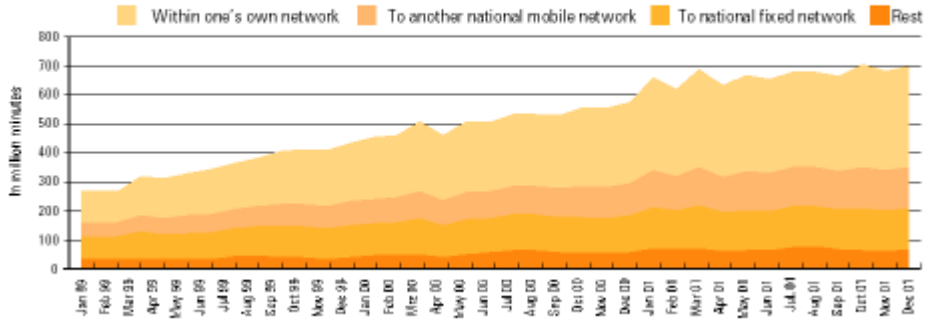
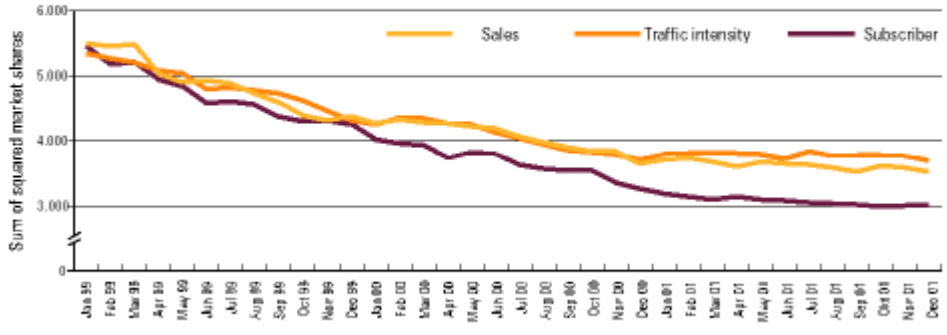


Figure 59: Hirschman-Herfindahl Index for mobile communications



The decline in concentration, which had started with liberalisation, continued also in 2001, even if in a somewhat diminished form (see Fig. 59). During the period under review, the HHI for sales fell by 177 points, from 3,714 to 3,537, that for traffic volumes by 95 points, from 3,806 to 3,711.

It is worth noting in this respect that the concentration was lower for the reference parameter "number of subscribers" than for the parameters "sales" and "call minutes". This suggests that the market leaders had a disproportionately high share of profitable customers.

15 The source of all diagrams in Section 4.2.2.2.1 is the "Mobile Communications" journal published by Informa Group PLC.

4.2.2.1 Market entry and market development
4.2.2.3 Tariffs
4.2.2.4 Austria by international comparison

4.2.2.3 Tariffs

During the period under review, the network operators Mobilkom, T-Mobile, Connect and tele.ring that were operative on the market offered similar tariff structures which, essentially, aimed at four criteria:

- distinction between customers making many calls and few calls through a combination of basic charges and traffic charges,
- duration of a call,
- time of day of a call,
- destination of a call.

In addition to these criteria, further special offers were launched in order to maintain or expand market shares. For example, the subscribers of other competitors were offered incentives so that they would change operators, terminal equipment was subsidised and offers combining fixed network and mobile services were launched. On the other hand, network operators tried to create subscriber loyalty through systems of points and bonuses.

During the entire period under review, network operators subsidised the terminal equipment of new customers, thus lowering the barrier to entry into mobile communications. Operators thereby succeeded in making mobile telephony affordable not only for the upper income brackets. "Mobiles" became a genuine consumer product. At the end of the period under review, a change in thinking regarding this subsidisation policy can be noticed, which must also and especially be seen against the background of a mature market.

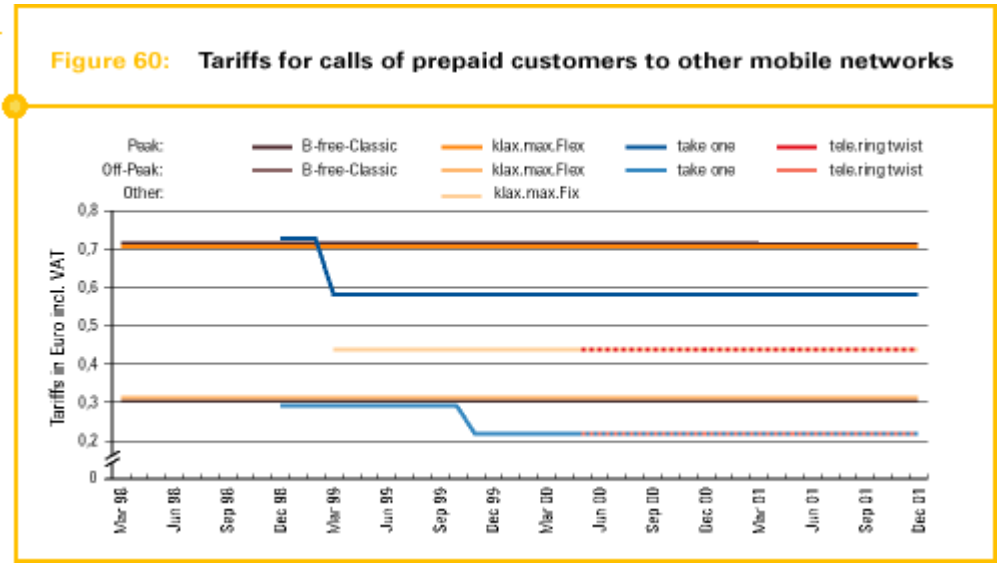
As can be seen from the following explanations and diagrams, in 2001 there was more or less no change in tariffs[16]. The late market phase, the competitive intensity that had been achieved may be an explanation for that. However, looking beyond the period under review, Connect and T-Mobile, in particular, used the Euro changeover to fundamentally restructure their tariff models, which, on average, also entailed tariff reductions.

In general, the massive price reductions since the beginning of liberalisation, as well as the variety of tariffs offered, from which the consumers can choose according to their preferences, can be rated as extremely positive in welfare economic terms. However, this is in contrast with the increasing complexity of the tariff scene and the resulting intransparency from the perspective of the customers.

4.2.2.3.1 Prepaid

As can be seen in Fig. 60, there was no change in the selected or essential tariff segments in the prepaid sector in 2001, as compared to the relatively marked price reductions in the previous years, in particular in 1999. As already suggested, this seemed to be due mainly to the intensive competition that had been achieved and to the fact that there was no further market entry in 2001.

Figure 60: Tariffs for calls of prepaid customers to other mobile networks



4.2.2.3.2 Contract customers

The following diagrams illustrate the development of the mobile telephony tariffs in the course of time. The tariff options of the operators that have the same or similar basic charges were used in order to ensure comparability of the offers. The amounts

The structure of the mobile communications market is characterised by a small number of operators, which suggests a high response capability. The price reductions observed in the years 1998 to 2000 (on the end-user

charged as basic charge in the tariff packages used for the comparison varied between € 14.46 und € 21.80.

Analogous to the prepaid segment, the selected tariffs for contract customers for 2001 were steady throughout, for calls to one's own network, to other networks and to the fixed network.

In Fig. 64 all destinations discussed above are presented in condensed form (arithmetic mean) as average prices. This diagram shows at least three interesting aspects: first, the general price reduction in the years 1998 to 2000, and, second, the market entries by Connect (October 1998) and tele.ring (May 2000) that caused these reductions. Third, as already indicated in 2000, the tariffs continued to be on the same level in 2001.

market) are mainly due to the expansive development of the market. In this phase, in particular, the entries by Connect and tele.ring gave rise to a substantial intensification of (price) competition.

These observations from the past, however, cannot be extrapolated linearly to the future. Issues like saturation of the market, cross-subsidisation of tariffs resulting in associated strategies directed at customer loyalty, steady tariffs in 2001 and the uncertain development in the structure of the GSM market will require the attention of the regulatory authority also in the future.

Figure 61: Tariffs for calls within one's own network

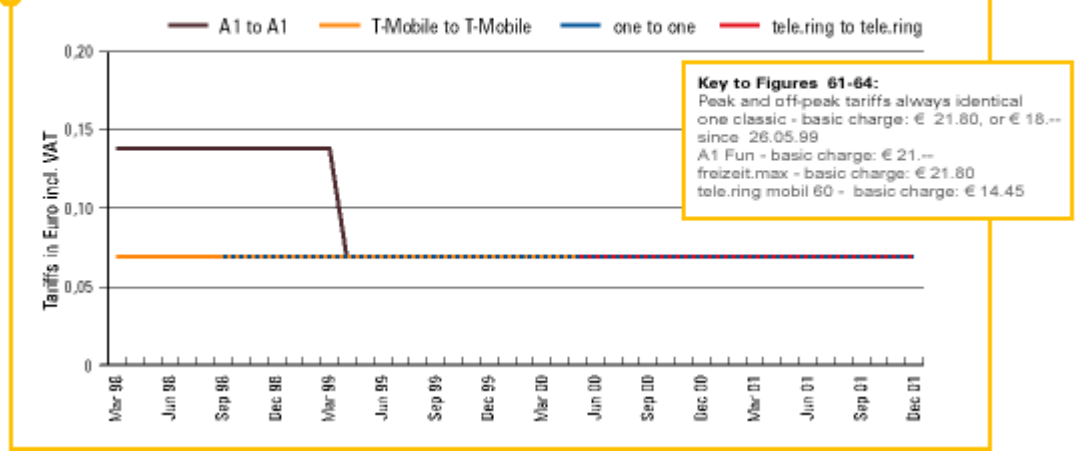


Figure 62: Tariffs for calls to other mobile networks

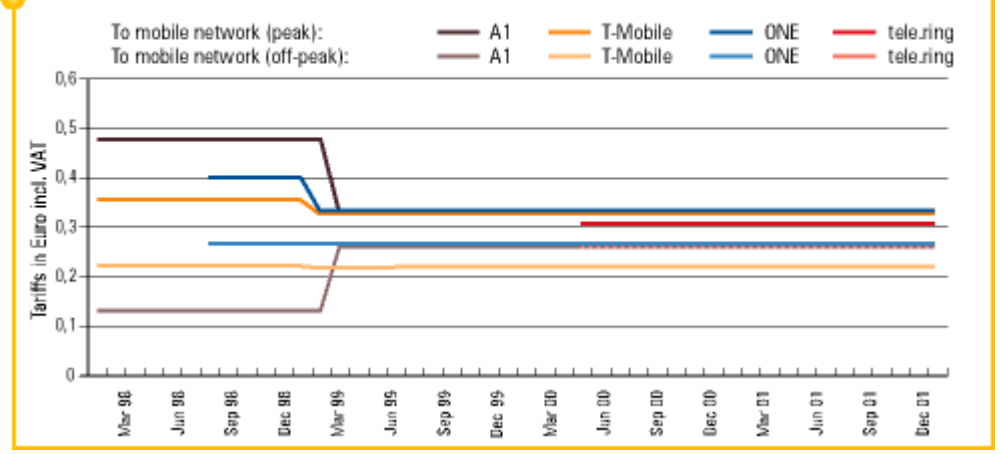


Figure 63: Tariffs for calls to fixed networks

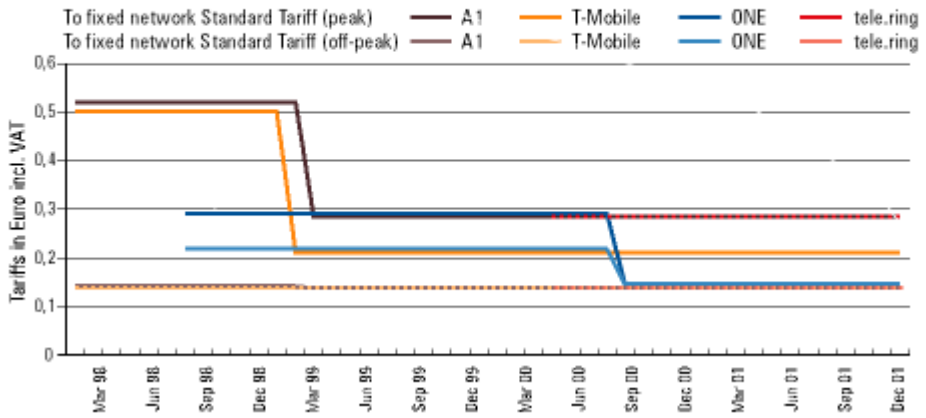
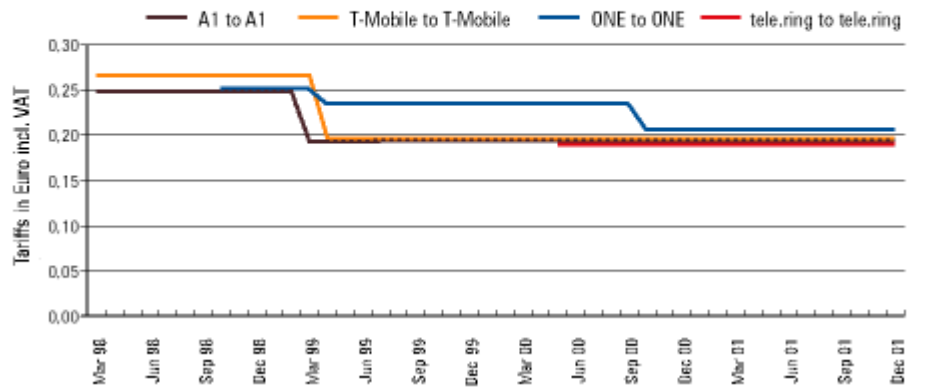


Figure 64: Comparison of price baskets on the basis of basic charges



16 Due to the complexity of the tariff structures, the diagrams can reflect only (essential) parts of the actually existing tariff landscape.

4.2.2.1 Market entry and market development

4.2.2.2 Market data

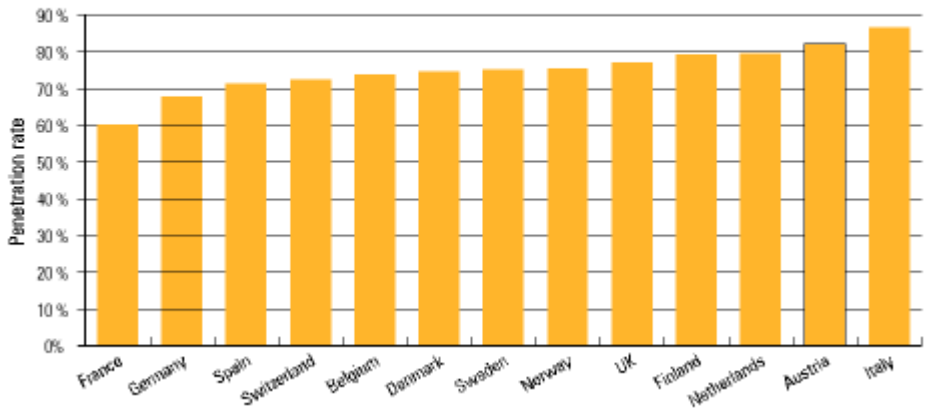
4.2.2.4 Austria by international comparison

4.2.2.4 Austria by international comparison

In previous years, Austria was ahead of all European countries with its penetration rate several times. This development can also be seen Fig. 65 in a comparison with selected European countries [17].

The OECD regularly publishes studies regarding the development of tariffs on the mobile communications market. The most recent OECD data available relates to the status in August 2000[18].

Figure 65: Penetration rates of mobile communications in some European countries



As can be seen in Fig. 66 and 67, the OECD establishes a comparison of tariffs for two different "baskets", one for the business sector and the other for private customers. The latter shows the total costs of an average usage of 50 minutes a month including the monthly basic charge and VAT. The business basket shall illustrate the average costs of 300 connected minutes, which include 60 international traffic minutes. The values which include monthly basic charges comparable to the private basket are shown here without VAT. For both baskets a representative tariff product of the incumbent is used for a cross-sectional comparison.

Fig. 66 confirms Austria's leading position also with regard to tariffs in the business area.

According to the OECD in August 2000, business customers had more favourable average mobile communications costs only in Norway, after Austria (compared product: "Mobilkom, A1 Business)". Subsequently, the national index is significantly below OECD or EU average.

With regard to private customers, the situation is different (see Fig. 67). Here, the tariff of "Mobilkom, A1 Fun", used for the comparison, places Austria only in the middle, actually slightly above the OECD average value and quite clearly above EU level. However, the OECD comparison of tariffs takes account only of the tariffs of the incumbent and does not reflect the special offers which characterise the Austrian market.

Figure 66: OECD comparison of business tariffs (August 2000)

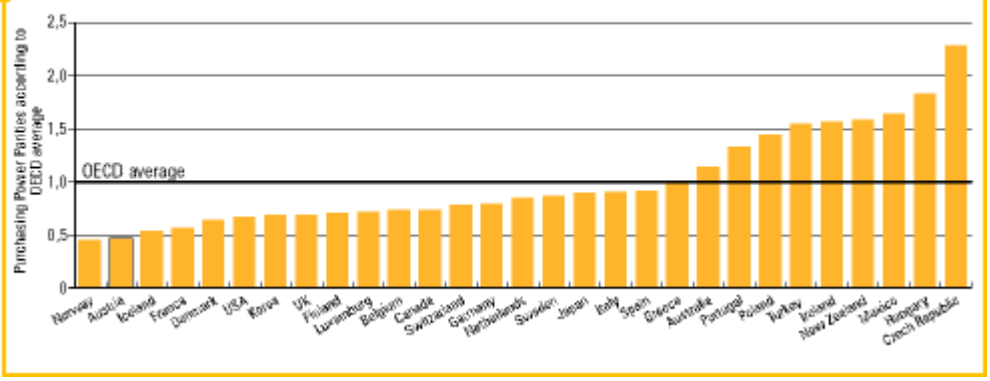
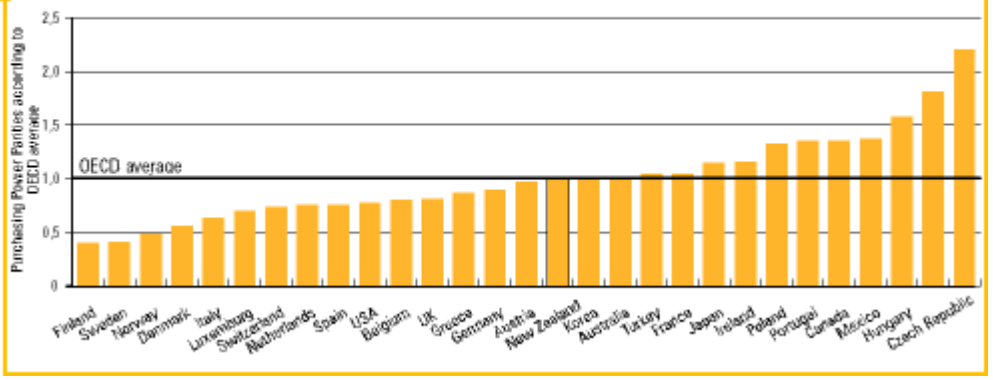


Figure 67: OECD comparison of private tariffs (August 2000)



17 The source of Fig. 65 is the "Mobile Communications" journal published by Informa Group PLC.
18 See OECD Communications Outlook (2001).

- *4.2.2.1 Market entry and market development*
- *4.2.2.2 Market data*
- *4.2.2.3 Tariffs*

4.2.3 Leased line market

4.2.3.1 Market entry

The leased line market is of particular importance because it provides the basis for many telecommunications services. Leased lines provide transparent transmission capacities between defined points, without providing for switching functions. They are used for speech and/or data transmission as well as for the provision of supplementary services. The advantages compared to public switched lines are, among other things, reflected in the price, the transmission capacity, security and reliability.

Pursuant to the TKG, the provision of leased lines is subject to a licence, as is the provision of public voice telephony. On the other hand, the provision of dark fibre is not subject to a licence, since only pure optical fibre without equipment is provided, which, in its "raw form" cannot be used for transmission.

Basically, the requirement to obtain a licence should not be an obstacle, neither with regard to the licence fee nor concerning the required qualifications. It is the infrastructure that either exists already or has to be newly created that is in the focus of investment considerations in connection with leased lines. Often, already existing networks are technically upgraded or new lines are installed.

Info-Box 25: **Dark Fibre**
Dark fibre is an optical fibre without electrooptical infrastructure. To be able to use dark fibre for the transmission of signals, an appropriate line terminating equipment, such as a transmitter, receiver or repeater, needs to be installed. This is then called lit fibre.

Providers that were able to use an existing network entered the market quickly and operated, mainly locally, in urban areas or used long-distance lines. In this respect, *inter alia* , the energy supply companies should be mentioned, which already have an infrastructure and now provide this to the public.

Providers without infrastructure install their lines mainly in conurbation areas, e.g. in the area of Vienna, where the density and the target groups to be reached warrant such installation. In some cases, leased line providers are backed by larger foreign companies which can provide the required investment capital.

4.2.3.2 Market development
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4.2.3.5 Austria by international comparison

4.2.3.2 Market development

Leased lines are in demand by business customers (usually, companies or organisations) who need to be connected to exchange speech and data volumes between company sites, and by other telecommunications operators who need leased lines to provide their services. For example, e-commerce, Internet and corporate networks are based on the use of leased lines.

Leased lines are also necessary intermediate products for the set-up and expansion of telecommunications networks, as long as telecommunications providers do not have sufficient infrastructure of their own. On the one hand, end-users can be connected to a provider's own network by linking the last part of the connection between the long-distance network and the user by means of leased lines. In addition to being directly relevant to the end-user market, leased lines are also particularly important, when network operators build up their infrastructure. In many cases, lines are required to connect network nodes, thus facilitating interconnection in the first place, or to connect base stations of mobile communications networks by means of leased lines. ISPs also use leased lines to connect customers and set up their backbone networks.

The profile of leased lines in demand is currently subject to major changes. Originally, leased lines were used for the transmission of speech and data, for which smaller bandwidths were sufficient. This is now being increasingly replaced by services which require higher bandwidths. The trend towards more demand for leased lines with high bandwidths results in an increased expansion of high-bit-rate leased lines and regional and nationwide optical fibre networks. Alternative operators, in particular, specialise on the provision of leased lines at bit rates over 2 Mbit/s. In some areas, the supply outstrips the demand; optical fibre capacities, in particular, carry only low workloads in some regions and on some lines.

The decision by the TKK of March 2001 on unbundling, which provided explicitly for the use of unbundled local loops as leased lines, may give rise to additional movements on the market.

4.2.3.1 Market entry

4.2.3.3 Market data
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4.2.3.3 Market data

As mentioned before, leased lines are a fundamental element of networks and services that are offered in a liberalised environment. In line with this importance, the leased line market experienced a dramatic growth in recent years. It is encouraging, in this respect, that new operators entered the market, allowing for competition and new service offerings, while the prices moved downwards. More than 25 providers account for competitive impulses on the market, some of them being limited only to regional operation. From among the providers with a nationwide licence only few have a nationwide infrastructure.

The fact that the competitors are urging towards the market is reflected in their increasing market shares. The market share of Telekom Austria's competitors in total sales figures increased to more than 35% at the end of 2001. Taking the number of leased line termination points, measured in 64 kbit/s equivalents, as a basis, the competitors were able to increase their share to more than 55%. However, these figures overrate the actual development of the capacities, since a large leased line provider operating on the regional market cannot distinguish between his own usage and capacities offered on the market.

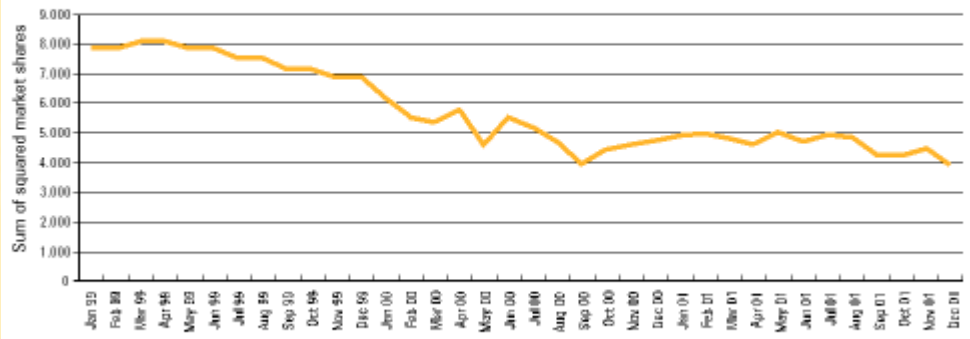
The second largest provider with regard to sales, UTA, had a share of under 15% at the end of 2001. It has to be taken into account that dark fibre lines and sales from higher-level data services, which are generated by "refinement" (value added, e.g. frame relay protocol), are not considered in this calculation.

Info-Box 26: 64 kbit/s equivalents

A leased line termination point is a calculated quantity which results from a comparison of the data transmission capacity of a specific leased line with a 64 kbit/s leased line. A 2 Mbit/s line, for example, fully located in Austria, corresponds to 2 x 32 = 64 termination points.

The change in market shares can also be shown by means of the HHI (see Info-Box 23). The HHI, related to the sales in 1999 and 2000, sharply declined, which is mainly due to the reduction of the market share of Telekom Austria. In 2001, gains in market shares of the competitors were relatively lower.

Figure 68: Hirschman-Herfindahl Index
Sales, leased lines

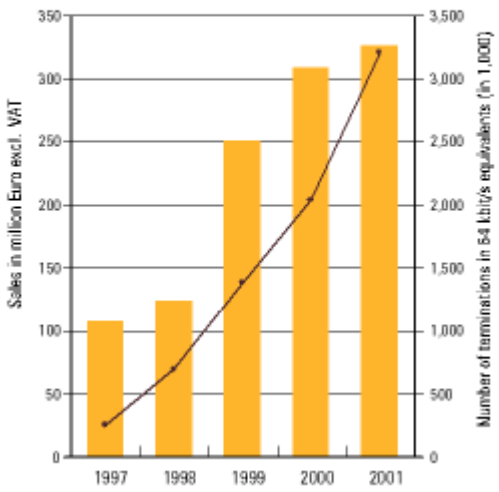


During the period under review, the market for leased lines grew steadily. With regard to capacities in demand (converted into 64 kbit/s equivalents) there was an increase of almost 60% in 2001, compared to 2000. This means that, at the end of 2001, more than 3.2 million leased line termination points (again broken down into 64 kbit/s equivalents) were offered in Austria. Total sales in 2001 were € 326.6 million.

While the growth in sales decreased, the number of leased line termination points located in Austria, measured in 64 kbit/s equivalents, increased markedly. This is illustrated in Fig. 69 by comparing the number of leased line termination points, measured in 64 kbit/s equivalents, at the end of the year to the annual sales. The increase in

termination points was due to an increase in leased lines with higher transmission capacities.

Figure 69: Sales in leased line termination points



4.2.3.1 Market entry
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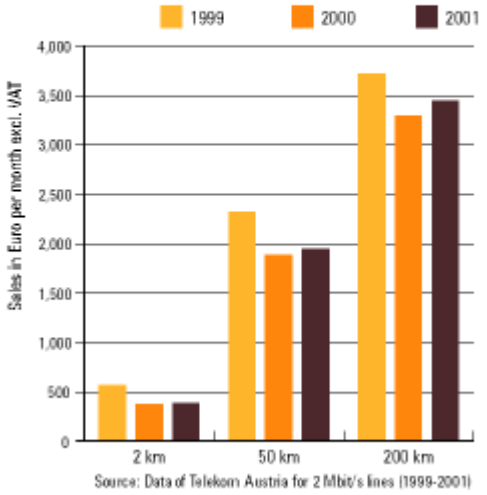
4.2.3.4 Tariffs

The price development for leased lines is therefore of relevance to the entire telecommunications market, as the costs for leased lines constitute a major intermediate input, in addition to the interconnection charges, and may account for a high share of the total costs (not only of a new entrant). It is a positive sign for the overall economy that the tariffs for leased lines continued to decline. According to the TKG, only the SMP operator is subject to regulation of the tariffs. In proceedings M 1/01, Telekom Austria was found to have SMP on the leased line market and is therefore subject to price regulation according to § 18 (6) TKG. This regulation provides that the tariffs for the provision of leased lines must be approved, taking into consideration cost-orientation of the end-user tariffs. During the period under review, in June 2001 one tariff approval case for leased lines was completed, in the course of which new tariffs were approved for S0 lines, Digital Data Line Local High Speed (DDL-LHS), national analogue and national digital transmission lines of Telekom Austria.

An essential change in the new tariff schedule, which took effect on 01.09.2001, was the new classification into city tariff and standard tariff. With a few exceptions, in both tariff types there were price reductions for leased lines at higher bit rates from 34 Mbit/s onwards, compared to 2000. The standard tariff for a 2 Mbit/s line increased for a few line lengths, compared to 2000, but was still clearly below the price of 1999. Fig. 70 shows the development of the standard tariff of a digital 2 Mbit/s line.

Figure 70: Tariff development for 2 Mbit/s lines (1999-2001) Standard tariff



Source: Data of Telekom Austria for 2 Mbit/s lines (1999-2001)

Tariffing with leased lines differentiates more or less between the demanded bandwidth, the distance as well as the position of the termination points. Mostly, an installation fee and a monthly basic charge, consisting of a basic amount and a tariff that depends on the length and the bandwidth, are charged. In the higher bit rate segment, in particular, also flat rates are offered now and then.

4.2.3.1 Market entry
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4.2.3.5 Austria by international comparison

4.2.3.5 Austria by international comparison

The 7th Implementation Report of the European Commission, which compares the tariffs for national leased lines of all EU states (except for Finland), allows for a wide international comparison. This comparison shows that the Austrian tariffs – the city tariff of Telekom Austria was used – rank in the middle throughout.

In the interpretation, it shall be taken into account that the tariffs show the status of 01.08.2001 and that therefore the aforementioned tariff change was not considered. If this were the case, *ceteris paribus*, Austria would reach a top position with 2 Mbit/s lines of 2 and 50 km length.

Figure 71: International comparison of tariffs: 2 Mbit/s lines

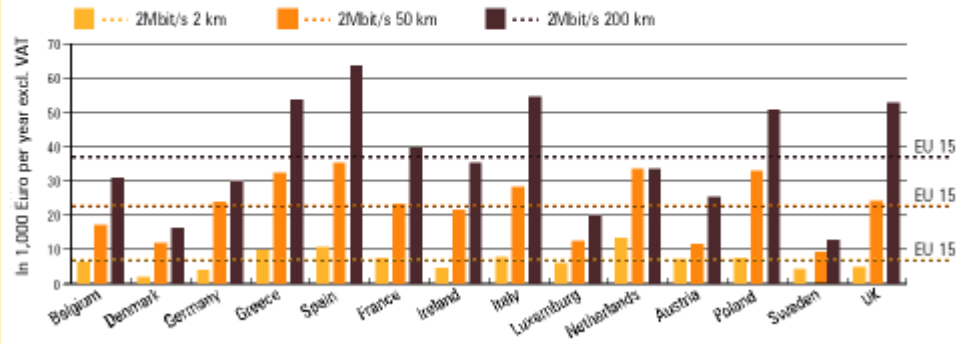
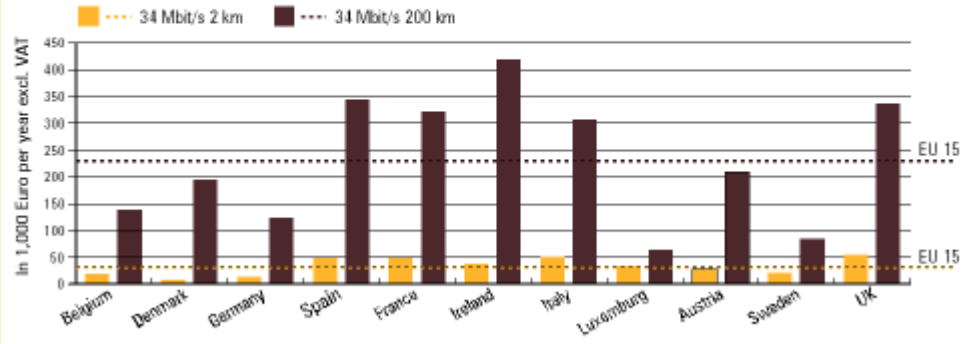


Figure 72: International comparison of tariffs: 34 Mbit/s lines



4.2.3.1 Market entry
4.2.3.2 Market development
4.2.3.3 Market data
4.2.3.4 Tariffs

4.2.4 Internet services market

4.2.4.1 Market entry

To become operative on the Internet services market, a newcomer neither has to comply with specific legal conditions nor with specific requirements as to capital. Nevertheless, an Internet Service Provider (ISP) that has to open up an end-user market is faced with barriers to market entry at several levels. In particular, companies that have gained a reputation as providers of voice telephony services and are now doing business also in the Internet sector, enjoy goodwill advantages over newcomers. While the customers have practical experience with regard to the performance quality (e.g. transmission capacity, frequent overload situations, redundancy, accuracy and reliability of bills) of established companies, such as Telekom Austria, the customer of a new ISP will need to use its services for some time to find out about the quality characteristics that are decisive for him. The subjective feeling of a customer that he may risk giving up a known and familiar quality standard, possibly, for something worse makes it more difficult for new ISPs to acquire customers. To build up goodwill and to overcome habits that the potential demanders may have formed, requires time and marketing investments, which, from the perspective of the new ISPs has the effect of a barrier to market entry.

In the field of contact to the end-users, the market entry of new ISPs can also be impeded, due to the economies of scale and the economies of scope of established providers. Economies of scale are generated by the fact that providers with a large customer stock have lower proportionate average costs, as the provision of services and the handling of activities that involve a high share of fixed costs, such as the procurement of billing software, administrative activities, such as invoicing, or the operation of call centres, can be divided among a greater number of customers. In multi-product companies that provide both telecommunications and Internet services, economies of scope may be noticed. For example, all customers will obtain information from the call centre, regardless if they are only Internet customers or, maybe, also telephone customers of the provider. In addition, multi-product companies are in a position to offer product packages (e.g. voice telephony and Internet services) that are more attractive than the isolated provision of the respective services.

Similar economies of scale occur at the level of switching technology, where high fixed costs are incurred by the operation of network access nodes and the necessity of procuring routers, modem pools, servers etc. Established ISPs incur lower average costs which can turn into competitive advantages in the form of lower tariffs, because the fixed costs are distributed among a greater number of Internet customers. It may be necessary to upgrade the network access nodes or increase the number of nodes to be able to

First, the customer is not connected to the ISP, in a technical sense, by the ISP itself but via the telephone line of (at least) the telecommunications operator that provides the infrastructure between the subscriber and the network access node (Point of Presence) of the ISP. Second, some ISPs also resort to the transmission lines of another network operator to forward the data traffic from the Points of Presence to the Internet backbone.

For broadband and, thus, fast Internet access, leased lines as well as connections based on cable technology and on the various DSL technology variants (ADSL, SDSL, HDSL, VDSL) are offered on the market. With Internet access via a leased line, the operator provides to the customer a line at a fixed data rate between geographically defined network termination points on a permanent basis. In addition to Telekom Austria, alternative telecommunications operators act as providers of leased lines. Cable network operators offer their customers, mainly in Vienna and other provincial capitals, broadband access to the Internet via their cable television networks. With more than 220,000 customers at the end of 2001 (compared to 129,000 at the end of 2000), this form of broadband access is the most important in terms of quantity. While cable technology is available as access technology only in regional conurbation areas, Telekom Austria can provide almost 70% of the Austrian households with DSL based Internet access and Internet services via its access network. For Telekom Austria, which owns the major part of the access network, DSL technology provides the opportunity to provide the existing network infrastructure for other services without large-scale upgrading investments.

The new competitors, on the other hand, have no incentive to install their own access network based on copper wires, as they would have to bear the high costs incurred from the required digging and cable laying work if they wanted to develop their own access to the local loop, which largely would be lost costs. To give also the ISPs and the alternative telecommunications operators the opportunity to provide DSL based Internet services to their customers, Telekom Austria, after intervention of RTR-GmbH and negotiations with the association of the ISPA, made a standard wholesale offer which provides ADSL access to all ISPs. Fig. 73 shows the development of ADSL lines and their distribution between Jet2Web and the wholesale offer applicable to all other ISPs.

Despite this arrangement, the *de facto* monopolist position of Telekom Austria in the local loop gives rise to a potential market behaviour which, in fact, hinders the implementation of opening the network. By repeatedly impeding the standard wholesale offer for bit streaming as well as the provision of collocation spaces and handover of the copper pair, thereby delaying the market entry of its competitors

maintain a specific quality of service (e.g. fast dial-up), only when customer figures increase sharply.

Competition problems in the Internet sector often arise from the fact that ISPs depend on intermediate services, as the necessity of resorting to the infrastructure of fully integrated telecommunications providers - in particular Telekom Austria - frequently imposes a strong limitation on their freedom of action on the market (fewer tariffing options, disadvantages in product differentiation).

When Internet access and services are provided on the basis of the telephone network via an analogue or ISDN modem, ISPs often depend on the intermediate services of other companies in two ways with regard to providing interconnectivity towards the end-users.

for broadband Internet, Telekom Austria gained a first mover advantage (see the distribution of ADSL lines in Fig. 73). The first company that offers an innovative product to its customers will profit from this competitive edge, as its competitors still have to catch up and the full attention of the media will be attracted to this company. If the presence of the first mover causes all other competitors to increase their advertising budgets in order to make customers remember them, this strategy has the effect of a market barrier.

The difficulties of the ISPs to gain a foothold on the market and to stand up against the telecom Internet providers in competition are reflected in a loss of market shares as well as in an increasing dominance of multi-product companies (keyword "one-stop shopping") (see Fig. 74).

Figure 73: Development of ADSL lines of Telekom Austria

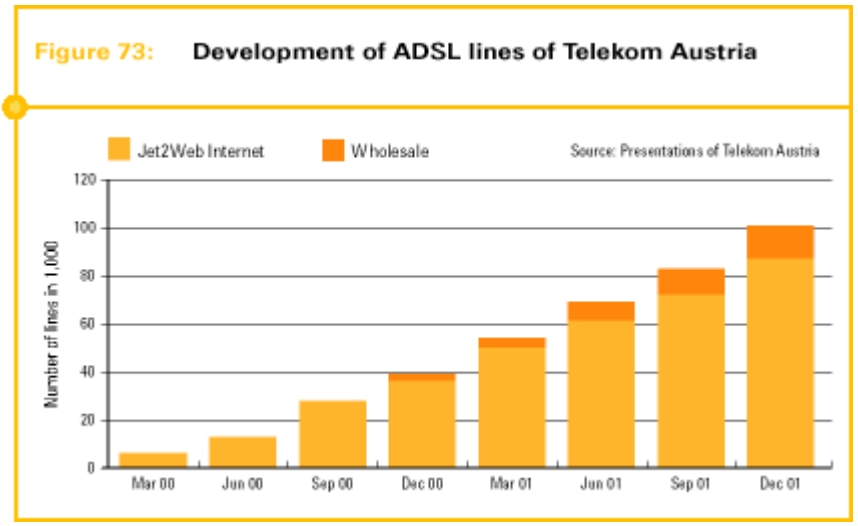
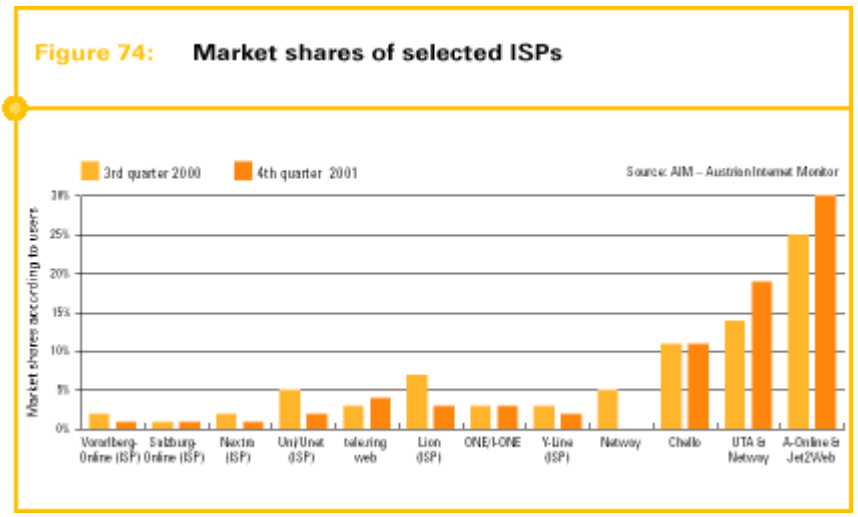


Figure 74: Market shares of selected ISPs



Vorarlberg Online: Teleport Consulting und Systemmanagement GesmbH

Salzburg-Online: Salzburg AG für Energie, Verkehr und Telekommunikation

Nextra: Nextra Telekom GmbH

Uni/Unet: Zentraler Informatikdienst der Universität Wien

tele.ring web: tele.ring Telekom Service GmbH & Co KG

Lion: Libro AG

One/I-ONE: Connect Austria Gesellschaft für Telekommunikation GmbH

Y-Line: Yline Internet Business Services AG

Netway: Netway AG für Internet Applikationen (jetzt UTA)

Chello: Chello Broadband GmbH

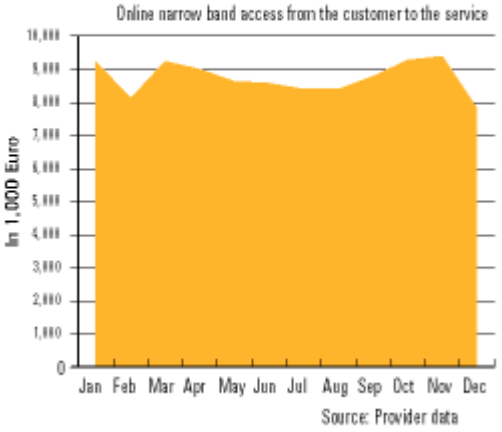
UTA: UTA Telekom AG

A-Online & Jet2Web: Jet2Web Internet Services GmbH

Because of the large number of operators and the non-existing obligation to provide data, reliable data from the provider side is hardly available. In addition, Internet services are not a homogeneous product group but may comprise many different services, such as the mere provision of access to the Internet by ISPs, the services of a

telecommunications operator and additional services, such as web space. As regulatory authority, our main attention is directed at Internet access using the telecommunications infrastructure. The sales for this kind of access were quite steady in 2001, but they showed heavy fluctuations in the individual months (see Fig. 75). The figures do not contain the sales from broadband access.

Figure 75: Sales from Internet access (2001)



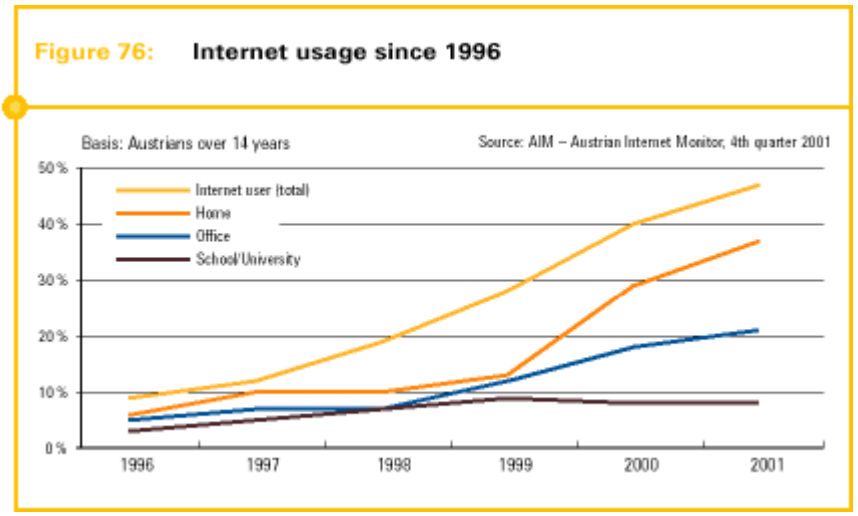
4.2.4.2 Market development
4.2.4.3 Tariffs
4.2.4.4. Austria by international comparison

4.2.4.2 Market development

The increasing importance of the Internet sector in Austria can be illustrated by means of Fig. 76. Accordingly, the total number of Internet users increased almost sixfold, between the end of 1996 and the end of 2001. The fast expansion of the user circles and the associated rapid diffusion of Internet technology are due to several factors:

- As the data is immediately accessible and available in great quantities, users are able to retrieve the requested information on a real-time basis, irrespective of time and place. Both, private persons and associations, as well as public administrative bodies can put their information on the Internet. Companies are in a position to present product innovations via the Internet and communicate their latest offers to potential consumers immediately. Consumers, in turn, are able to save time when comparing the products of different suppliers and take their decisions on the basis of clearly better information. Economically, the Internet thus leads to a significant reduction of the transaction costs.
- The interactivity of the Internet opens up new forms of human communication. The fact that it is possible to communicate simultaneously in subject-related electronic forums ("chat rooms") as well as to use different services, such as e-mails and SMS free of charge, are the deciding factor for many customers to get access to the Internet.
- Also, the multimedia character of the Internet offerings makes the Internet especially attractive to users and potential users. The significance of these forms of usage will continue to rise with the distribution of broadband access technologies, such as cable and DSL. The higher transmission speeds of these technologies can be noticed, in particular, when videos, music, radio and TV programmes ("streaming media") as well as comprehensive software are downloaded. Unlike narrowband transmission technology, they also allow real-time critical applications, such as interactive games, tele-learning, video conferencing or product presentations.
- Finally, the diffusion of Internet technology takes on special dynamism on account of so-called positive externalities. This means that the benefit and, thus, the attractiveness of the specific product basically increases with the number of subscribers connected to the network. Communication via e-mail is the best example in this respect; its value depends decisively on the number of persons having access to the Internet. Through getting access to the Internet, every subscriber does not only create a benefit for himself but also for all other subscribers, as his accessibility improves, which further enhances the diffusion process of the technology.

Figure 76: Internet usage since 1996



A recent study relating to the most common forms of Internet usage confirms the aforementioned forces that drive Internet diffusion from the demand side. Almost 60% of the users resort to the Internet for information research on a specific subject. When looking at the aggregate, however, the Internet is most frequently used for various forms of interactive communication, such as the sending of private and business e-mails, SMS, visiting chat rooms etc. An analysis of the Internet usage according to age groups shows that applications, Internet usage is most wide-spread in this segment of the population. Senior staff members, free-lance professionals and staff members in non-managerial positions come next. The proportion of Internet users among housewives and retirees is significantly lower, i.e. 24% and 9%, respectively. It can be seen that, in the course of time, Internet usage increased in all occupational groups – even though to a different extent.

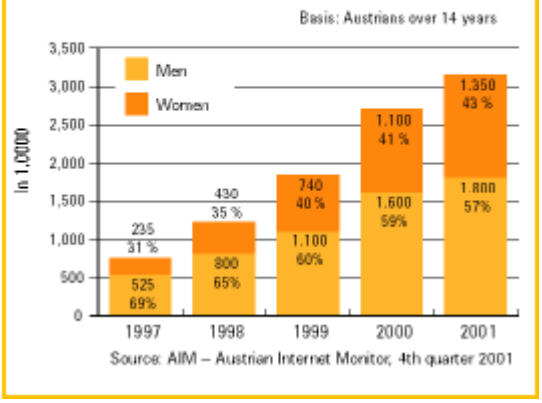
These values, which are quite different for

such as sending SMS, visiting chat rooms as well as downloading music, are extremely popular with young people and that the intensity of using these options decreases clearly as people become older. While the handling of banking transactions in electronic form is gradually finding acceptance, the so-called on-line shopping is still of relatively small significance. The electronic signature will make a decisive contribution to the secure handling of e-commerce and thus enhance the attractiveness of e-commerce.

In addition, usage of the Internet clearly correlates with demographic parameters, such as sex, occupation and net income. Men use the Internet more frequently than women, although the share of female Internet users has gone up steadily in recent years. While there were still twice as many men as women in 1997 who were familiar with the Internet, the current distribution of users between men and women is 57% to 43% (see Fig. 77).

Looking at the patterns of usage according to criteria, such as professions, age groups, income bracket or level of education, is also highly informative. The share of Internet users among students, which amount to 95%, is the highest by far.

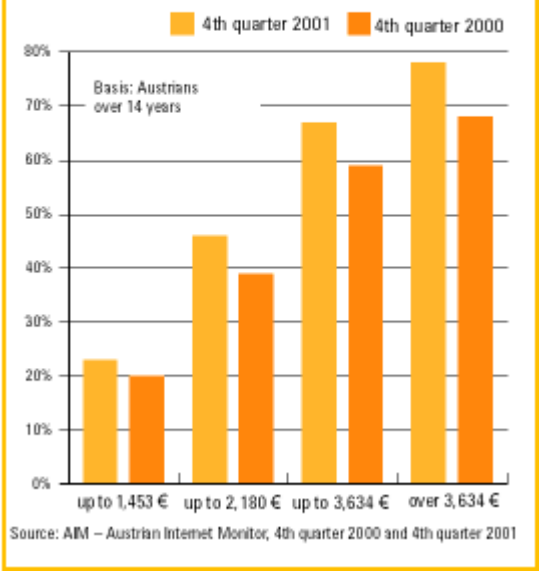
Figure 77: Structure of Internet users



individual sociodemographic groups, can and/or must be seen as an indication that the buzzword of a "digital divide" is more than just a buzzword. It hides the real danger that the non-usage (which all too often is due to a lack of access) of this new medium will open a social gap between those groups of the population that are able to (courageously) face up to the constantly increasing pressure of change and those that give up when faced with the accelerated change in their environment, such as increasing digitisation.

The following conclusion can (already today) be drawn as an illustration and a consequence: there is a clear connection between the net income of a household and the familiarity of using the Internet (see Fig. 78). As the net income level goes up, Internet access is available more often and usage of the Internet seems to become a matter of course. Compared to 2000, this development remained stable in the period under review but now tends to aggravate.

Figure 78: Internet usage according to income categories



4.2.4.1 Market entry

4.2.4.3 Tariffs
4.2.4.4 Austria by international comparison

4.2.4.3 Tariffs

ISPs usually offer different tariff models to meet the widest possible spectrum of customer needs. This shall take account of the fact that customers use the Internet to different extents and that their willingness to pay varies. A widely differentiated tariff structure takes better account of this individual behaviour of users and can better accommodate different degrees of willingness to pay. Price differentiation with Internet access is characterised mainly by the following four criteria:

- time criteria (e.g. price per minute, peak and off-peak),
- quantitative criteria (e.g. free minutes in case of a higher time volume),
- technical criteria (e.g. access technology, download volume),
- additional services (e.g. different web spaces, e-mail).

In the case of dial-up Internet access, the tariff models have a two-component tariff structure, analogous to voice telephony, with a fixed amount that is independent of usage and a variable component depending on usage.

In the field of broadband lines, the so-called flat rates are the most common tariff model. Flat rates, which are payable on a monthly basis, allow access to the Internet with a specific bandwidth and are independent of the transmitted data volume. The ISPs meet the risk of excessive Internet usage, which is due to the fact that the tariff is, in principle, calculated regardless of usage, by introducing maximum download times, which, if exceeded, incur additional costs.

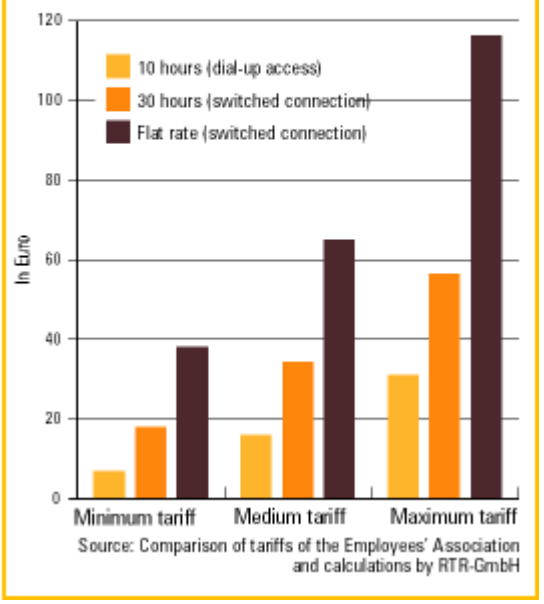
For customers, flat rates have the advantage that the costs for Internet usage can be calculated in advance and that it is not necessary to consider time-dependent patterns of usage. Customers with relatively steady and, at the same time, intensive usage patterns will have considerable cost savings through flat rates, compared to other tariff models. For the customer, the disadvantage of flat rates is mainly the risk that he might not use the Internet to a sufficient extent, because even then he has to pay. This might result in comparably high average costs in the event of irregular and low usage.

Flat rates have also advantages for ISPs, as they allow them to plan safely with regard to revenues to be expected, cause low accounting efforts and the individual items of the bill need not be explained in detail. If customers pay the Internet access charges in advance, the loss from outstanding debts can be kept low.

Flat rates have the disadvantage that they facilitate wasteful handling of network resources, that they do not exhaust the differences that result from the fact that specific customers display a varying willingness to pay, and that, in this respect, almost no impulses are possible to control the kind and the time of the demand for Internet services. If the demand were to rise drastically because of flat rates, as a consequence, capacity bottlenecks might occur not only during peak hours.

Fig. 79 compares the online tariffs charged for Internet access by dial-up (switched connection) for a time volume of 10 and 30 hours, respectively, and the flat rates that are usually offered for broadband Internet access. Within these categories, the respective lowest and highest tariffs offered on the market, as well as the average tariff value for all ISPs are presented. The most cost-efficient ISP, for example, charges € 7 for 10 hours of Internet surfing, while the most expensive ISP charges € 31.10, and on average € 16 are charged. In the case of dial-up access, the large differences within the categories compared are partly due to additional registration fees and monthly basic charges, and partly also to the web spaces of different sizes, which are provided by the ISPs on their servers for the customers' home pages. Likewise, the price differences in flat rates are due to the varying sizes of the provided web spaces, as well as to restrictions in data transfer. Fig. 79 shows that users who resort to the Internet services of an ISP whose tariffs rank in the middle would have to pay less if they changed to an ADSL provider, already with a time volume of more than 30 hours.

Figure 79: Comparison of tariffs for narrowband and broadband Internet



Source: Comparison of tariffs of the Employees' Association and calculations by RTR-GmbH

4.2.4.1 Market entry

4.2.4.4 Austria by international comparison

4.2.4.2 Market development

4.2.4.4 Austria by international comparison

Throughout Europe, the switched connection to the Internet is still the prevailing form of Internet access, whereas broadband technologies are coming up only slowly.

Fig. 80 shows the percentage of households with Internet access, without distinguishing between the different access technologies. With an Internet penetration rate of nearly 46%, Austria is clearly above the EU average of 36%[19].

With regard to the distribution of broadband Internet lines, Austria is not only above average but leading throughout Europe.

In the comparison of the costs of access and Internet usage, conducted by the European Commission in the 7th Implementation Report, Austria ranks in the middle, both in the business and customer segments. The 157 analysed tariff models in the 15 member states comprise models by incumbents and by alternative providers. Fig. 82 and 83 show the most cost-efficient tariff models in each member state for the business and private customer segments.

Figure 80: Penetration rate of households with Internet access by European comparison

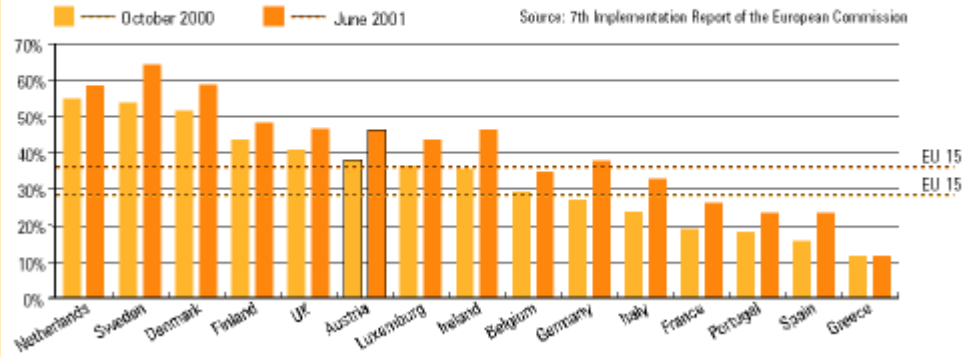


Figure 81: Penetration rate of broadband technology (per 100 inhabitants), June 2001

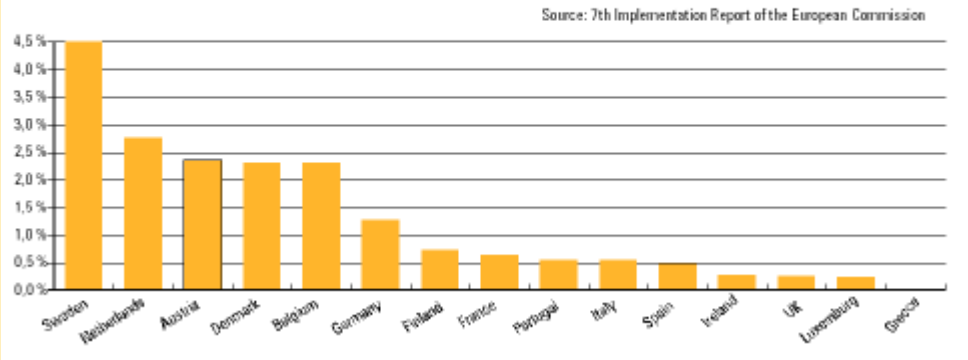


Figure 82: Costs of Internet access for 40 hours, peak time (business customer segment), August 2001

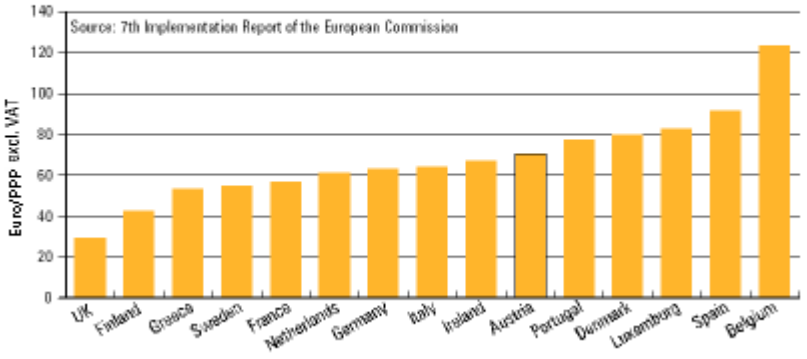
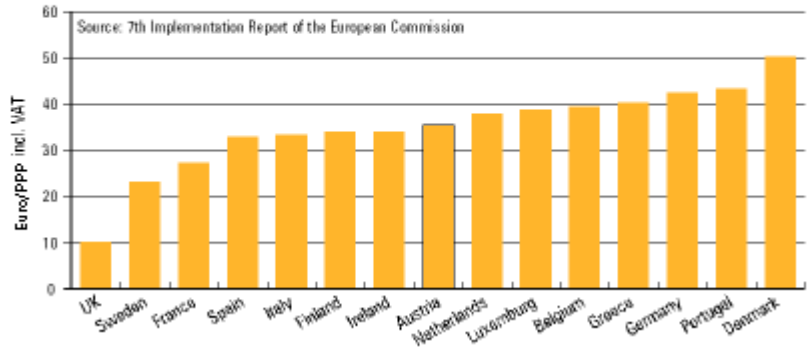


Figure 83: Costs of Internet access for 20 hours, off-peak time (private customer segment), August 2001



19 The 7th Implementation Report of the European Commission shows an EU average of 36%, more recent surveys of the Austrian Internet Monitor (AIM), however, show already an average penetration rate of 39%.

4.2.4.1 Market entry
4.2.4.2 Market development
4.2.4.3 Tariffs

4.2.5 Interconnection market

4.2.5.1 Market entry and market development

The markets previously described are mainly end-user markets; only on the leased line market both end-users and operators act as demanders. The interconnection market, however, is a mere wholesale market between operators. As in all markets, where intermediate products have to be supplied, size, structure and development are closely linked to the corresponding end-user markets so that interactions between the supply markets and subsequent markets need to be taken into account.

The interconnection market got major impulses from liberalisation of the end-user markets. Interconnection is an essential requirement for the alternative providers so that they can offer their own products to end-users by using the infrastructure of the former monopolist. Only through interconnection of mobile and fixed voice telephony networks is it possible for subscribers of different fixed networks to communicate with each other. Every operator, either in the mobile network or in the fixed network, who wants to forward the calls of his customers to another network, depends on the network service of other operators. Of course, for the provision of these services charges, the interconnection charges, are incurred. On the market, prices are usually formed by the interaction of supply and demand. The special characteristic of pricing on the interconnection market is that, on the one hand, the operators are obliged to provide interconnection, according to the TKG, and, on the other hand, the negotiating power is distributed extremely unevenly among the operators. There is therefore the risk that the SMP operator achieves excessive prices by abusing his market power and forces his competitors from the end-user markets. Basically, the number of directly connected subscribers and the traffic generated by them determine the negotiating strength of the operators. In view of this uneven distribution of power and the obligation for interconnection, the legislator granted to the regulatory authority the competence to intervene in cases of disagreement and/or in the case of an SMP operator, and to fix cost-oriented charges for operators with SMP as defined in § 33 TKG. With this, the legislator ensures interoperability and, thus, that any subscriber can be reached by any other subscriber, on the one hand, and lays the foundation for a lasting liberalisation of the telecommunications markets, on the other.

On the interconnection market, basically, three types of traffic services are carried out:

1. Termination
   Termination is call forwarding in the network of the called subscriber. If a subscriber of network A calls a subscriber of network B, the

The interconnection services that a network operator will, in fact, provide or additionally buy depend basically on his business model. Three models can be distinguished:

- Subscriber network operator:
  for calls from other networks which a network operator forwards to his subscribers, he will charge termination charges. On the other hand, he has to pay termination charges to others if his own subscribers make calls to other networks. In addition, he will charge origination charges, if his subscribers make use of carrier network operators or services numbers of other networks.
- Carrier network operator:
  these operators pay both origination and termination charges to the subscriber network operators involved, but do not generate revenues from interconnection services, as they have no subscribers that are directly connected to them.
- Transit network operator:
  to be able to provide a transit service, the operator must be interconnected with two or more networks. For forwarding a call from one network to another, he can charge a transit charge.

The number of subscriber network operators slightly increased in 2001, compared to 2000, and there were also some changes in the interconnection sales of the companies. The sales of a few operators increased almost tenfold, while those of others stagnated or even declined in 2001. The carrier network operators who act on the fixed network market by means of carrier selection and carrier pre-selection considerably contributed to the growth of the interconnection market. As they have no directly connected customers, they depend on origination and termination for each call on the intermediate market. Thus, a one-minute end-user call generates two minutes of interconnection service.

The mobile operators (except for tele.ring which was in a growth phase) showed a relatively stable development of interconnection sales in 2000 and 2001.

The market structure of the interconnection market is characterised by the end-user markets, and changes in these end-user markets affect the interconnection market. If the end-user sales increase, mostly also an increase in interconnection revenues can be noticed.

Free pricing on the interconnection market, on the basis of supply and demand, is mainly out of function, as almost no agreements can be reached due to differing interests and obligations for interconnection, and the regulatory authority is frequently invoked to settle disputes and to fix the prices. In numerous proceedings (see section 3.6),

network operator A will have to pay a termination charge to the operator of network B.

2. Origination
   Origination is call delivery from the network of the calling subscriber. The origination charge is due to the network operator to whose network the subscriber is connectedand is incurred with two types of calls:

   - Services number
     i f a subscriber of network A dials a services number (such as 08xx or 09xx) in network B, network B will have to pay an origination charge to A.
   - Carrier network operator
     a carrier network operator who receives a call from network A and forwards it to network B, will pay an origination charge to network operator A (and a termination charge to network operator B, whereas he will get the entire end-user charge).

3. Transit
   If two networks are not directly interconnected, the call is carried via a transit network operator who accepts the call from one network and hands it over to the other network. For this service he is entitled to receive a transit charge.

the interconnection charges for fixed and mobile networks were determined, which then pointed the way for the conclusion of interconnection agreements.

The major share of the interconnection sales is generated by interconnection between fixed networks and/or mobile networks. The market for the interconnection of leased lines is far less important. This can be explained as follows: if an operator can provide to his customer only a part of the requested leased line, he has to lease the missing part from another operator to be able to provide to his customer the whole leased line. The other operator will receive revenues from the interconnection of leased lines for leasing the remaining part. This type of interconnection is of only marginal importance and has, so far, not been subject to regulation[20].

When looking at the market data in the next section, one should always keep in mind the overall market in order not to come to wrong conclusions. The amount of the interconnection sales depends, as already mentioned, on the number of connected subscribers, the traffic volume and the interconnection charges, where the amount of the interconnection charges for calls to the mobile network is many times the amount of those to the fixed network. As the traffic volume increased, therefore also the corresponding interconnection sales increased.

Info-Box 27: Calculation of sales and traffic intensity on the interconnection market

Data on sales and traffic intensity on the interconnection market refers to:	**Fixed network operators**	**Mobile network operators**	**Leased line operators**
■ Charge for the initial set-up of the PoI			
■ Periodic charge for the joining links			
■ Traffic-dependent origination charge			
Origination to carrier network operator (incl. online services)			
Origination to services numbers			
■ Traffic-dependent transit charge			
National transit[21]			
International transit[22]			
■ Traffic-dependent termination charge			
Termination of international networks			
Termination of national fixed networks			
Termination of national mobile networks			
Termination to online services (from other mobile/fixed networks			
Visitor roaming (incoming calls)			
■ Monthly revenues for interconnection			

20 For more information, see the document of the European Commission DG XIII of 12.11.1999: "Commission recommendation on leased lines interconnection pricing".
21 Both PoIs in Austria
22 One PoI abroad

4.2.5.2 Market data

The figures show only the interconnection charges earned as well as the traffic intensity, but not the expenses for interconnection incurred by the companies.

As expected, Telekom Austria had a predominant position on the fixed network market also in 2001, with more than 80% of interconnection sales. This high level is due especially to the obligation to perform carrier selection and carrier pre-selection, which produces increasing origination and termination sales. Although its absolute sales remained quite stable, as compared to 2000, its market share decreased by more than 5%. This is an indication that the subscriber lines in the fixed network are provided by alternative operators to an increasing, though still relatively small extent.

The interconnection sales in the fixed network grew by a total of approx. 9% in 2001 (see Fig. 84). However, the growth rate of 66%, measured in call minutes, was much higher (see Fig. 85), which was mainly due to the increase in carrier pre-selection. The fact that the high increase in origination and termination services was not reflected in corresponding sales increases was only in part due to the reductions of the interconnection charges ordered by the regulatory authority. To a far larger extent, it was due to changes in tariffs and volumes from termination of international calls, which clearly compensated for the volume-induced sales increase from carrier pre-selection.

Also, the structure of the interconnection services changed drastically. In particular in 2000 and 2001, regional interconnection was gradually substituted by local interconnection. At the same time, national interconnection continued to lose importance. This development is the result, on the one hand, of the incentives that the regulatory authority offers with lower interconnection charges on the local level and, on the other hand, of the fact that alternative operators have become established on the telecommunications market. The operators continuously expand their networks so that they depend less and less on interconnection on a higher network level and can interconnect on a lower network level. At the end of 2001, the traffic volume on the local interconnection level reached a share of 60% and thus clearly exceeded the traffic volume on higher network levels.

For the mobile operators, Telekom Austria is the most important interconnection partner by far. However, its importance was put into perspective in 2001, on account of the fact that the transit traffic between the mobile operators that had so far been carried indirectly via Telekom Austria was increasingly carried over direct interconnections. Indirect interconnection plays a subordinate role between the mobile operators, insofar as it is mainly used to meet the overflow. Only with tele.ring, traffic was still carried indirectly. Mobilkom, with more than 40% of the overall sales in this segment, is of paramount importance with regard to interconnection in mobile communications. During the period under review, all mobile operators saw an increase in interconnection traffic, with an overall growth in traffic minutes of 22% (see Fig. 85). The interconnection sales in mobile communications increased by 15% from 2000 to 2001 (see Fig. 84).

Figure 84: Interconnection sales 2000 and 2001 (without intra-network traffic) according to network types

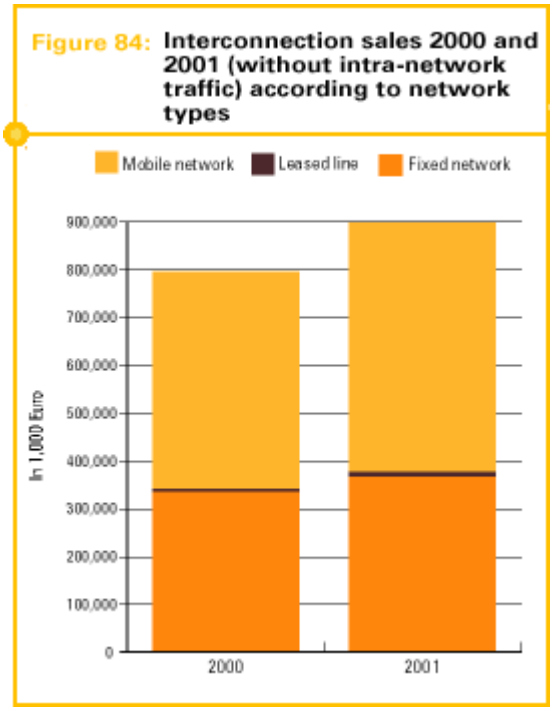
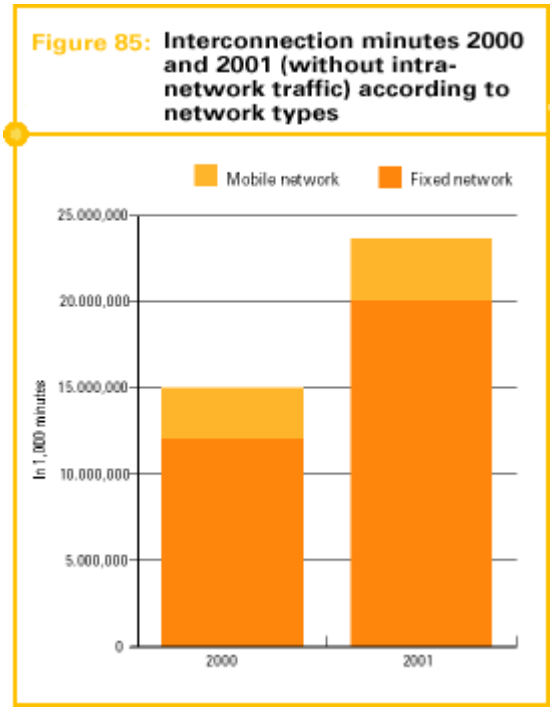


Figure 85: Interconnection minutes 2000 and 2001 (without intra-network traffic) according to network types



4.2.5.1 Market entry and market development
4.2.5.3 Tariffs
4.2.5.4 Austria by international comparison

4.2.5.3 Tariffs

In April 2001, the termination charges for the fixed network were lowered once again. Although the decision was aimed primarily at Telekom Austria, it affected all fixed network operators, on account of reciprocity. The local termination charges at peak periods dropped most dramatically (11%). The regional termination charges were reduced by 9%. The double-tandem termination charge remained unchanged. However, its significance is negligible, in terms of the traffic minutes.

Termination is the most important interconnection service for mobile communications. Origination plays a comparably subordinate role, as only calls to services numbers require origination. Transit services are not provided by the mobile operators.

Figure 86: Interconnection tariffs in the fixed network

	Charges until 31.03.2001 in €/100		Decision of the TKK of 22.06.2001 Z 6/01ff in €/100		Change in % (peak)
	Peak	Off-Peak	Peak	Off-Peak	
Termination Local	1.02	0.51	0.91	0.51	-11
Termination Regional	1.53	0.73	1.39	0.73	-9
Termination National	2.25	0.87	2.25	0.87	0
Transit Regional	0.29	0.15	0.29	0.15	0
Transit National	0.51	0.29	0.62	0.32	22
Origination Local	1.02	0.51	0.91	0.51	-11
Origination Regional	1.53	0.73	1.39	0.73	-9
Origination National	2.90	1.10	2.90	1.10	0

Peak: workdays 8.00-18.00; Off-peak: workdays 18.00-8.00, Saturday, Sunday and public holidays

In a number of proceedings, the TKK also ruled on adjustments of the mobile interconnection charges. The examination of the costs of all mobile operators resulted in the following changes: the termination charges of Mobilkom were lowered to € 0.124/minute as per 01.08.2001. The origination charges were reduced to € 0.119/minute. After reviewing the costs incurred, the regulatory authority left the interconnection charges of the other mobile operators unchanged.

Thus, the market leader charged the lowest interconnection charges, the next smaller competitors had somewhat higher interconnection charges. The new market entrant, tele.ring, continued at a termination charge of € 0.196/minute. It is worth noting that the tariff structure does not distinguish between peak and off-peak times and does not provide for set-up costs, which are charged in some countries.

Figure 87: Interconnection tariffs in mobile networks

	Mobilkom	Mobilkom	Mobilkom
in €/100	01.01.2001 - 31.07.2001	01.08.2001 - 31.03.2002	01.04.2002 - 31.12.2002
Termination	13.81	12.40	11.25
Origination	13.15	11.90	10.75

	T-Mobile	Connect	tele.ring
in €/100	01.01.2001 - 31.12.2002	01.01.2001 - 30.09.2003	01.01.2001 - 30.09.2003
Termination	13.80	13.80	19.62
Origination	13.20	13.20	19.20

The effects of the reduction in the termination charges on end-user tariffs were quite different. Telekom Austria, the SMP company on the fixed network market, had to adjust its end-user tariffs for calls to mobile networks to the changed termination charges, since the regulatory authority granted a fixed mark-up of € 0.058 on the mobile termination charges. This mark-up applied to all calls to national mobile networks, originating in the Telekom Austria network.

The alternative operators whose end-user tariffs are not subject to approval, in contrast to Telekom Austria, offered tariff models that reflected the decisions on termination charges only in part. Some operators, for historical reasons, still applied higher charges for calls to the networks of Connect and tele.ring than to the networks of Mobilkom and T-Mobile. Some charged the same rates for calls to all mobile networks, others demanded higher charges to the network of tele.ring.

4.2.5.1 Market entry and market development
4.2.5.2 Market data
4.2.5.4 Austria by international comparison

4.2.5.4 Austria by international comparison

On account of the aforementioned shifts in the traffic flows in the field of interconnection, local interconnection services are increasingly gaining importance. By international comparison, Austria is among the countries with the highest price levels for local peak termination charges. At the same time, it has to be noted that the gap between peak and off-peak times is particularly wide in Austria. In an international comparison of the local off-peak termination charges, Austria ranks in the middle range.

The regional termination charges ("single tandem") to the fixed network ranked in the middle, by international comparison (as per April 2001); in this connection, the further reduction in April 2001 reflected the international trend (see Fig. 89). An exception was national transit. Due to structural considerations concerning improved network load and traffic routing, the charges were increased by 22%. For the same reason, the national charges ("double tandem") remained unchanged. According to international practice, the charges distinguished between "peak" and "off-peak".

For these two services, the gap in Austria was also particularly wide. In national termination ("double tandem") Austria shows the widest gap of all. By European comparison, Spain and Portugal, which had opened their telecommunications markets only late, had higher charges. In countries like UK or Denmark, which had liberalised their markets early, the termination charges were in the lower range.

In mobile communications the termination charges are among the lowest in Europe (see Fig. 90). In particular, when comparing the peak tariffs, the mobile termination charges are especially favourable, as none of the Austrian mobile operators differentiates between time windows. Within the EU, companies with higher market shares tend to charge lower interconnection rates (regardless whether they were regulated or not). However, the penetration rate of mobile communications in a country does no longer play an important role, as the penetration rates within the EU are approaching each other at a high level.

Figure 88: European comparison of local interconnection tariffs in the fixed network

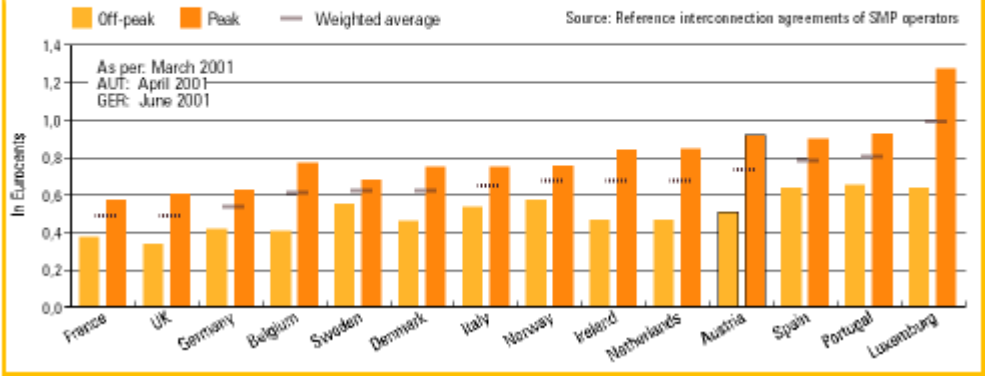


Figure 89: European comparison of regional interconnection tariffs in the fixed network

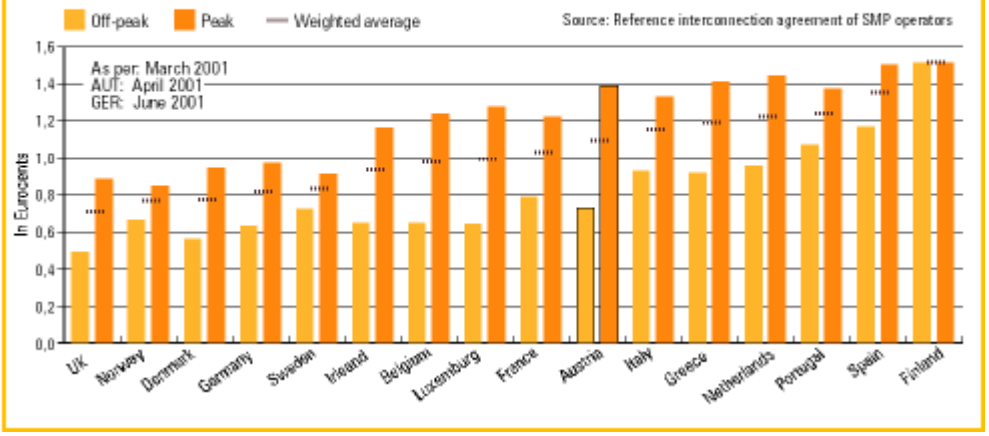
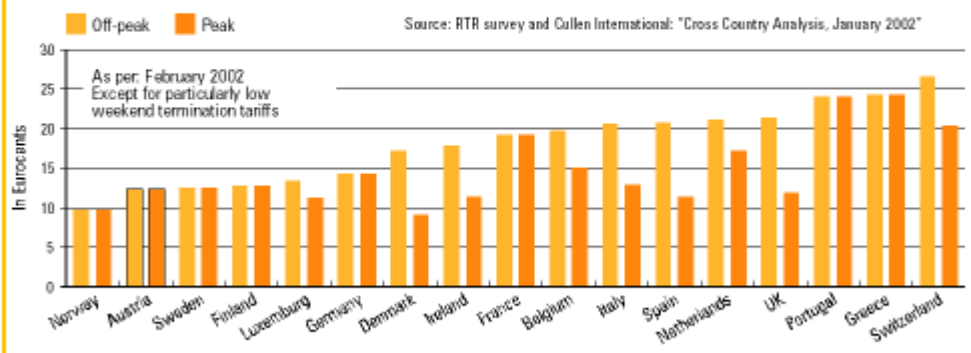


Figure 90: European comparison of peak and off-peak interconnection tariffs in the mobile network



4.2.5.1 Market entry and market development
4.2.5.2 Market data
4.2.5.3 Tariffs

4.2.6 Investments and employment in the telecom sector

Investments in the telecommunications infrastructure are important for the Austrian national economy, as they are not only the basis for modern economic branches and forms of the information society but – due to the intermediate character of telecommunications services – also trigger spill-over effects for the overall economy. In spite of the fact that investments in telecommunications infrastructure are important for the national economy, the conclusion – the more investments, the better – would be wrong. Regulatory decisions must rather aim at creating the right (efficient) amount of investment activities. This will be the case whenever the yields expected from investment activities (that are fraught with risk) equal the interest rates on the market.

Therefore, the regulatory task is to shape a neutral incentive structure with regard to the different types of competition at all stages of the value chain. In the longer term, this will lead to the development of infrastructure and result in sustainable competition.

In the regulatory decisions, it is decisive in this respect that interconnection charges are determined correctly. As described below, the determination by means of the FL-LRAIC (Forward Looking – Long Run Average Incremental Costs) is the basis for correct "make-or-buy" decisions, i.e. investment decisions that are correct with a view to the national economy.

The course of growth of the telecommunications sector also affects the development of employment. Both aspects - investment activities and development of employment - shall be added to the analysis of the individual sub-markets, on account of their special importance for the national economy in an analysis of the overall sector.

4.2.6.1 Cost accounting as exemplified by the determination of interconnection charges
4.2.6.2 Determination of the cost of equity capital
4.2.6.3 Scope of investments
4.2.6.4 Development of employment in the telecommunications industry

4.2.6.1 Cost accounting as exemplified by the determination of interconnection charges

The interconnection charges of telecommunications companies with SMP have to be cost-oriented and the FL-LRAIC standard shall be used, according to the relevant provisions. Consequently, the costing models of the SMP companies are to be based on the forward looking long run average incremental costs, according to an activity-oriented cost allocation (according to cost sources).

By means of this costing model the prices (competitive prices) shall be identified that would become established (only later) with fierce competition on the respective market. The model is therefore based on a long-term perspective. Due to this long-term perspective, also the costs that are usually referred to as fixed costs (such as, for example, depreciation of network components), or overhead costs, are assumed to be variable, as these capacity costs are adjustable in the long term. There is, therefore, no separation of fixed and variable costs and thus this model has fully distributed cost character, where all costs caused by interconnection are taken into account.

As a consequence, the depreciation required for the financing of new investments is also included in the FL-LRAIC model. Of course, also an appropriate interest on capital has to be provided, taking account of the risk. In this model, the investments are not assessed on the basis of historical purchasing costs but on the basis of replacement costs, according to the Modern Equivalent Asset (MEA) approach.

This guarantees that future investments in new - state-of-the-art - infrastructure can be actually carried out. These investments in modern infrastructure will also have the effect that costs related to operation and maintenance will be lower in the future, as, for example, settings on a system can be made centrally and are thus more easily maintainable.

Another important factor that has an impact on the costs is the term of depreciation for investments. The basis for determining the "calculatory" depreciation is not the depreciation period for an investment, as used in financial accounting, but the actual economical (technical) useful life. Contrary to financial accounting, an asset with a remaining book value of 0 (which would be completely depreciated according to financial accounting principles), will be assessed at replacement prices and considered in the costs.

To have the strongest possible position in competition, a provider would in the future use the economically most efficient technology or the most efficient network topology. Therefore, the FL-LRAIC costing model assumes an efficient network and efficient operation of this network. As a result, inefficiencies and burdens of the past of the SMP operator cannot be considered in interconnection charges, as otherwise the other operators would have to subsidise these inefficiencies. Therefore, an incentive is created also for the SMP operator to invest in efficient technology.

4.2.6 Investments and employment in the telecom sector

4.2.6.2 Determination of the cost of equity capital

4.2.6.3 Scope of investments

4.2.6.4 Development of employment in the telecommunications industry

4.2.6.2 Determination of the cost of equity capital

The costs of the tied-up capital (investments) are computed by means of the Weighted Average Cost of Capital (WACC) method. This weighted average cost of capital rate of a company is an important ratio for appraisal of the shares by the shareholders, as well as for the company management for capital budgeting and investment decisions.

When shareholders invest money in a company, they incur opportunity costs. The return on investment expected by the shareholders has to cover at least the opportunity costs. The opportunity costs are defined as the expected return on investment that the shareholders might earn if they invested their money on the capital market in financial instruments with a similar risk structure. On the assumption that companies are financed partly by equity and partly by debt, the cost of equity capital can be determined by weighting the equity return and the shareholders' returns with the capital structure.

To be able to carry out this weightage, first of all, the expected return on equity and the returns expected by the shareholders must be known. The expected return on investment of the shareholders is the reward for providing the capital (bank credits, bonds etc.) and, as a rule, is directly observable. However, the situation regarding the expected return on equity is different. The expected return can be determined only indirectly by using the Capital Asset Pricing Model (CAPM).

The calculation of the cost of equity capital by means of the CAPM explicitly considers the risk of the company. In case of risky technological innovations or investments, the risk will be compensated by taking higher costs of equity capital into account, because resulting additional risks would be anticipated by the shareholders in the form of higher expected returns. Whenever there exists whatever risk for a company or when business operation is assessed as being fraught with risk, this will be reflected also in the determination of the cost of equity capital.

4.2.6 Investments and employment in the telecom sector
4.2.6.1 Cost accounting as exemplified by the determination of interconnection charges
4.2.6.3 Scope of investments
4.2.6.4 Development of employment in the telecommunications industry

4.2.6.3 Scope of investments

Fig. 91 shows the overall resources of the national economy that were spent on the telecommunications infrastructure between 1998 and 2001. The data for 2001 was determined on the basis of a new, more comprehensive survey. Compared to the surveys of last year, inaccuracies could thus be eliminated. While the investment expenditures of the telecommunications operators had shown two-digit growth rates between 1998 and 2000, investments showed a declining tendency in 2001, even if the absolute amount of almost € 1,840 million was slightly higher than that in 1999. Telekom Austria's share in this amount was relatively high.

The growth until 2000 was mainly due to the market entry of new mobile communications operators and their high capital expenditure for the roll-out of the mobile networks during these years.

The investments made by Telekom Austria, on the one hand, and the telecommunications operators taken together in the association of alternative network operators (VAT), on the other hand, are also illustrated in Fig. 91.

Figure 91: Investments in the telecommunications sector

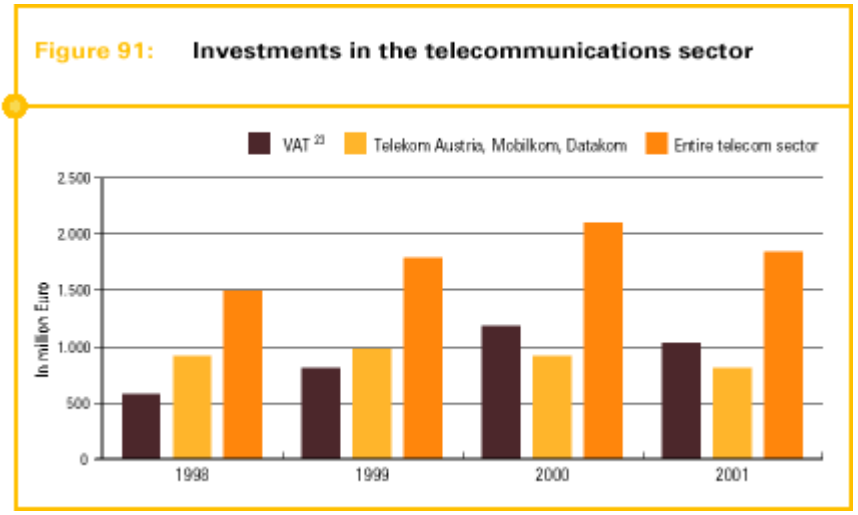
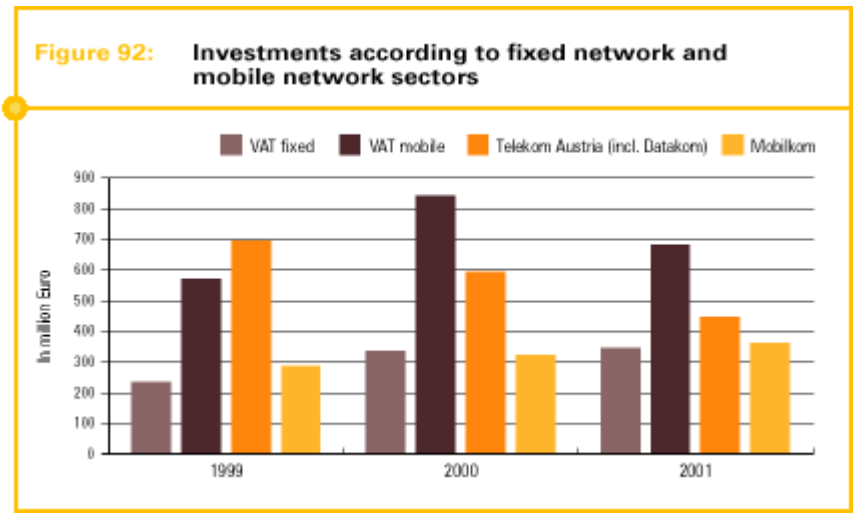


Figure 92: Investments according to fixed network and mobile network sectors



The investment volume of Telekom Austria Group was between € 812 and € 919 million in the years under review, that of the alternative network operators (VAT) increased heavily between 1998 and 2000 and, eventually, exceeded the investment volume of Telekom Austria Group in 2000 with a total of € 1,182 million. In 2001, the aggregated investments of the members of the VAT amounting to € 1,028 million considerably exceeded those of Telekom Austria Group by a total amount of € 216 million. The growth rates of the (gross) investments in the telecommunications sector of approx. 20% in 1999 and approx. 17% in

This fact is accounted for in Fig. 92. However, it has to be noted that in the fixed network sector of the VAT group the investment data of operators with considerable investment expenditure, such as Telekabel, was not considered correspondingly in the years 1999 and 2000.

Thus, annual investments in the telecommunications sector in Austria were over € 1.8 billion. With € 812 million, Telekom Austria Group had the largest share in this respect. The decline in the investment volume in 2001 might have been due to the general consolidation phase

2000 were considerably higher than those of the entire national economy (1999: 2.2%, 2000: 3.6%).[24]

When the investment volumes of Telekom Austria Group and the VAT are broken down further into fixed and mobile network sectors, this reveals a clear preponderance of investments by the three mobile operators belonging to the VAT.

but also to the extremely tense situation on the capital market and the fact that financing of investments was therefore more difficult.

23 The VAT (http://www.vat.at) is the Austrian interest group of alternative telecommunications providers (except for Telekom Austria Group).
24 Source: Statistik Austria: Statistical Yearbook Austria 2002 (values for 2001 not contained).

4.2.6 Investments and employment in the telecom sector
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4.2.6.4 Development of employment in the telecommunications industry

4.2.6.4 Development of employment in the telecommunications industry

The number of jobs in the telecommunications industry has increased since liberalisation started. Even though the major fixed network operator (Telekom Austria) was forced to carry out large-scale lay-offs as a result of liberalisation, this reduction was mostly compensated by the increasing demand for personnel in the mobile communications sector and at the alternative fixed network operators.

In 2001, however, the reduction in the number of Telekom Austria employees could not be compensated any more by the additional jobs created in all other telecommunications companies (see Fig. 93 and 94).

Figure 93: Staff development according to fixed and mobile network sectors

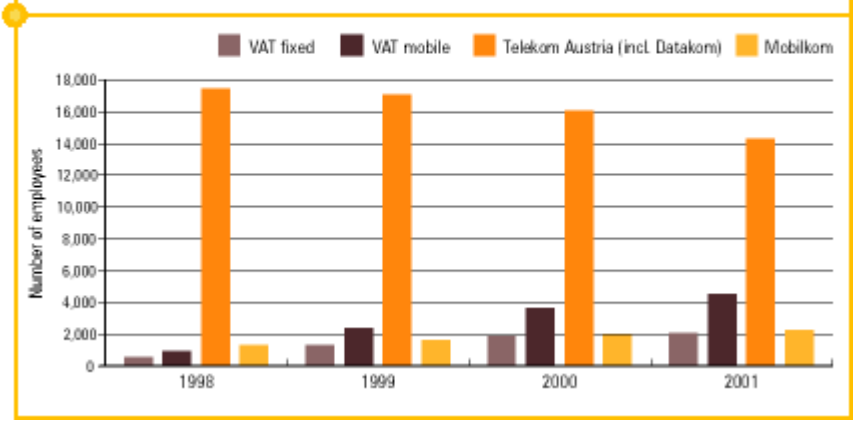
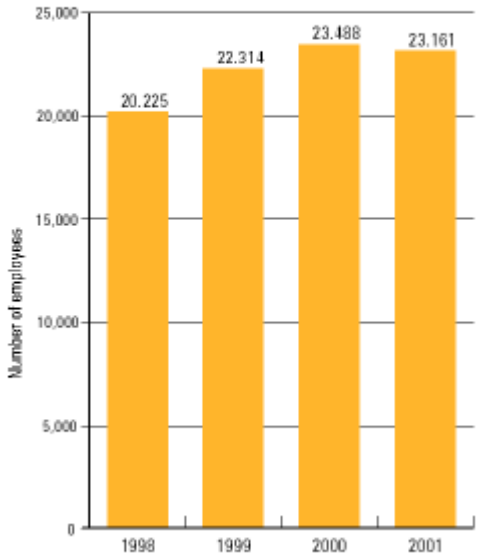


Figure 94: Staff development in the entire telecom sector



- *4.2.6 Investments and employment in the telecom sector*
- *4.2.6.1 Cost accounting as exemplified by the determination of interconnection charges*
- *4.2.6.2 Determination of the cost of equity capital*
- *4.2.6.3 Scope of investments*