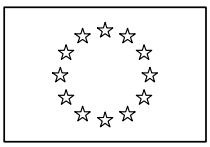

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Technical Annexes of the

Ninth Report on the Implementation of the Telecommunications Regulatory Package

{COM (2003) 715 final }

ANNEX 1

MARKET OVERVIEW

TABLE OF CONTENTS

1 PLAYERS IN THE FIXED MARKET

1.1. PLAYERS IN THE FIXED MARKET

This section analyses the situation of the market players in the fixed telecommunications market (voice telephony and network services): the number of operators authorised to operate a network and to provide public fixed voice telephony, the number of players actually active in the market, incumbents' market shares on the fixed voice telephony market.

Data are based on the replies to the European Commission questionnaire, provided by the national regulatory authorities and give the situation as at August 2003.

The figures include a great variety of operators: fixed network operators, service providers, cable operators as well as wireless local loop, mobile and satellite operators (for the fixed part of their networks and services).

Depending on the national licensing scheme, for some countries data for both local and national operators are given.

Local operators are operators authorised to offer telecommunications services only to users located in specific areas (to whom they provide local as well as long-distance and international services through interconnection agreements with other operators).

National operators are operators authorised to offer telecommunications services without any geographical restriction. They may provide all types of telecom services (local, long-distance and international) to users located throughout the national territory.

Local operators exist in Germany, Spain, France, Italy, Finland, and the United Kingdom. This does not mean that in the other countries all operators are national, but only that the licensing scheme does not provide for a licence limited as to its geographical scope. The number of local operators is not strictly comparable between Member States, since it varies considerably between countries depending on the division of the national territory into local areas.

The figures in the following charts reflect the number of operators, rather than the number of licences, since some operators my have been granted several licence. This is particularly true for the large companies, whose subsidiaries can also have a separate licence.

After the massive entry into the market that characterised the first stage of liberalisation (+113% between 1998 and 2001), the number of operators authorised[1] to offer public fixed telecommunication services in Europe has started to decrease. In August 2003 there were in the EU a total of 1202 operators authorised to offer public voice telephony (269 local and 933 national operators) and 1484 public network operators (555 local and 929 national operators).

Since August 2002 the number of potential players has remained more or less stable (-2%) for the voice telephony market, while the number of public network operators has decreased by 6%[2].

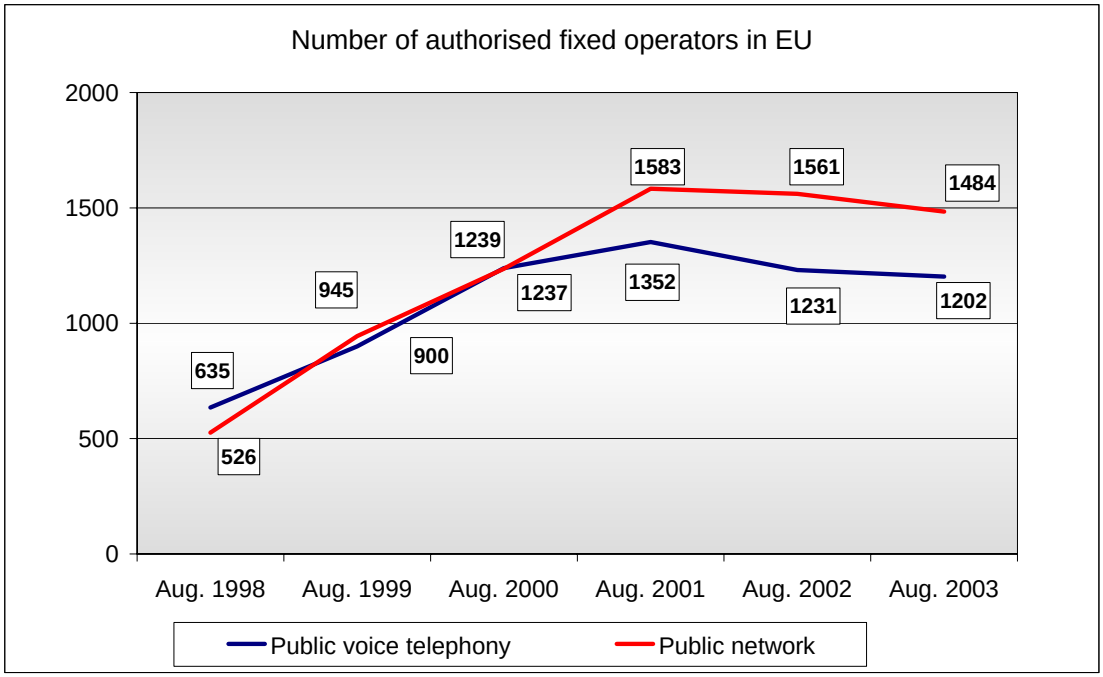
[1] In the sense that they have an individual licence/authorisation or they are subject to a notification/ registration procedure.

[2] The peak in the number of authorised operators was reached in 2001 with 1 352 operators authorised to provide voice telephony services and 1 583 public network operators.

Among the 1 202 operators legally authorised to provide voice telephony in the EU, less than half (around 500) have started operations, the majority only in some local areas or for business users. In particular, it should be noted that one third of operators effectively providing local calls are local operators only.

The total number of the major competing operators[3] in the EU is around 59 and in the great majority of EU countries there are no more than 4 real competing players (see Figure 5).

Figure 1



PUBLIC FIXED NETWORK OPERATORS

The following charts show the number of network operators with a public network licence and/or authorised to offer network services. *Public network operators* are defined as operators that install, manage and operate a telecommunications transmission network to provide public telephony services or public network services[4].

Where applicable the distinction in the licence/authorisation between local and national public network operators concerns the geographical scope of the network, while the provision of network services could be subject to a different geographical limitation. In the following, "local operators" means operators whose authorisation for the deployment of the network does not cover the whole national territory, whatever the geographical scope of the service. Moreover, this does not exclude that in the other countries that do not impose any geographical distinction, national operators are not providing services only in local areas.

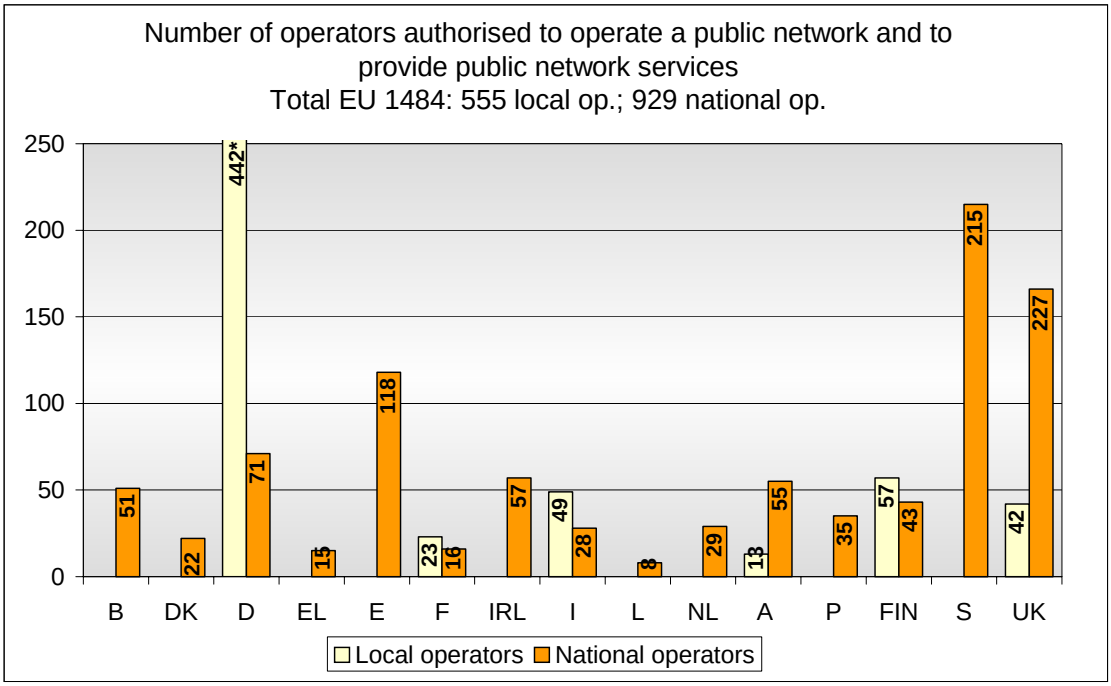
[3] See section 1.2 on incumbents' market share for more details.

[4] Public fixed network services are defined as the conveyance of calls, messages and signals over a telecommunications network, including any necessary switching. They may be network interconnection services, which are provided to other network operators to enable calls and associated functions to be passed through interconnected networks, or basic retail network services, which are provided to customers such as end-users or service providers.

It should be noted that a licence to operate a local/regional public network does not necessarily imply the existence of local network access to customers.

The following chart shows that in the EU there are a total of 1484 authorised network operators, 63% of which are local operators. Only one third of the total authorised operators have effectively started commercial activities for local access (507 network operators, half of which are local operators) and only around 15% of the total authorised network operators are effectively active on the trunk-international network services market[5].

Figure 2



* Figure not to scale.

- The figure for Denmark is not strictly comparable with the others due to the fact that there is neither a licensing requirement nor a central register of operators and their activities (operators only apply for numbers). The data refer to the estimates of the network operators actually offering network services.
- The figure for Spain does not include 74 cable operators, that have transformed their provisional cable concession into a definitive public network licence.
- Data for Ireland include both basic and general licences.
- Due to a different reporting method applied by the NRA, data for the Netherlands is not comparable with the previous reports, and do not represent actual market development.
- In Finland, 39 of the 57 regional network operators are local incumbents and belong to the Finnet Group. 3 local and 4 national network operators belong to Elisa Group.
- Data for Sweden include both licensed and notified operators.
- In the United Kingdom, the local operators are 42 local cable franchise operators, owned by 2 companies[6].

[5] In this case the number of local operators is negligible.

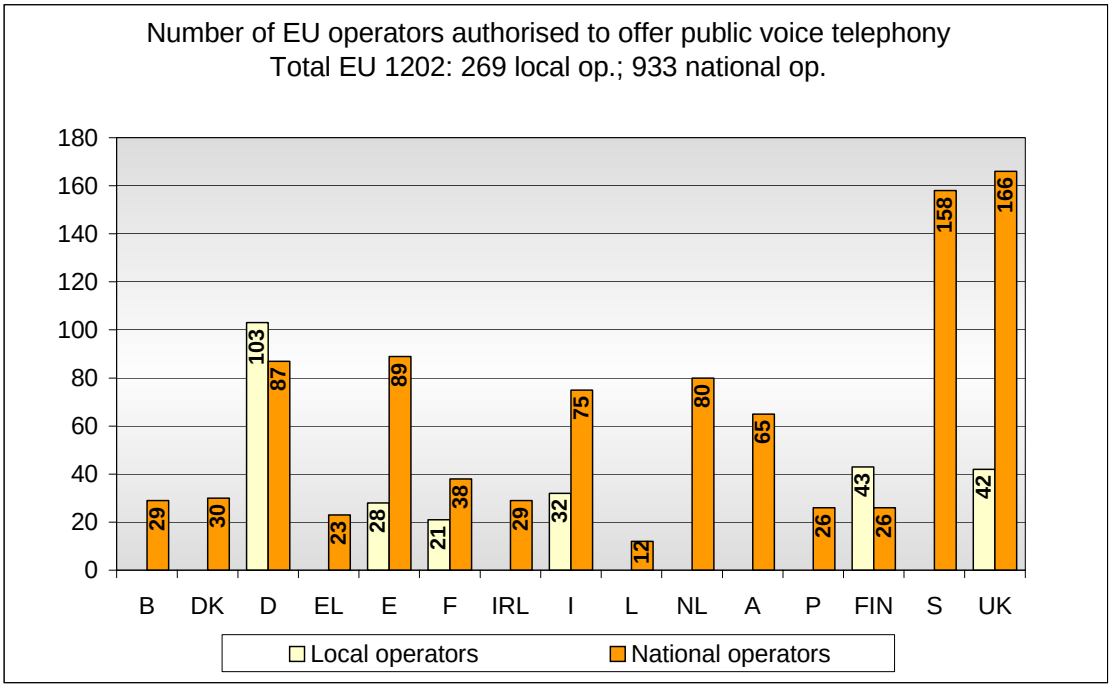
[6] In the UK the 42 local cable franchise operators, owned by 2 companies, must hold (inter alia) a standard PTO licence for the provision of cable TV which, in turn, also gives the right to provide public voice telephony/network service. How many of these cable operators are also providing public voice telephony/network services is unknown. From January 2001 the geographical restriction on cable companies ceased to exist and any cable licensee was free to operate outside the area laid down in its licence, but to maintain comparability with previous Reports we will continue to consider these operators as local. The big decrease in the number of local cable operators since 2001 (134 at that time) is due to intensive merger activities in the market.

PUBLIC FIXED VOICE TELEPHONY OPERATORS

Public fixed voice telephony is defined as a service available to the public for the direct transport on a commercial basis of real-time speech via the public switched network, such that any user can use equipment connected to a network termination point at a fixed location to communicate with another user of equipment connected to another termination point.

Voice telephone could be provided by the operators on an own self-operated network or on a leased network. In the first case, the operator provides voice telephony over a network fully controlled, operated and (wholly or partially) owned by him; in the second case the operator operates, controls and manages the transmission capacity which is leased from other operators[7].

Figure 3



- The figure for Denmark is not strictly comparable with the others. Due to the registration system, the number of operators authorised to provide public fixed voice telephony figures for Denmark has been estimated using the number of operators that have been allocated geographical numbers and/or access codes.
- In Finland, 39 of the 43 regional operators are local incumbents and belong to the Finnet Group. 7 national operators belong to Elisa Group.
- Data for Sweden include both licensed and notified operators.
- Due to a different reporting method applied by the NRA, data for the Netherlands is not comparable with the previous reports, and do not represent actual market development.
- In the United Kingdom, the local operators are 42 local cable franchise operators, owned by 2 companies[6].

The number of operators authorized to offer public fixed telecoms services indicates only the potential for competition in the market rather than the current level of competition. For this reason, where possible, an estimate is given of the number of operators actually active on the market.

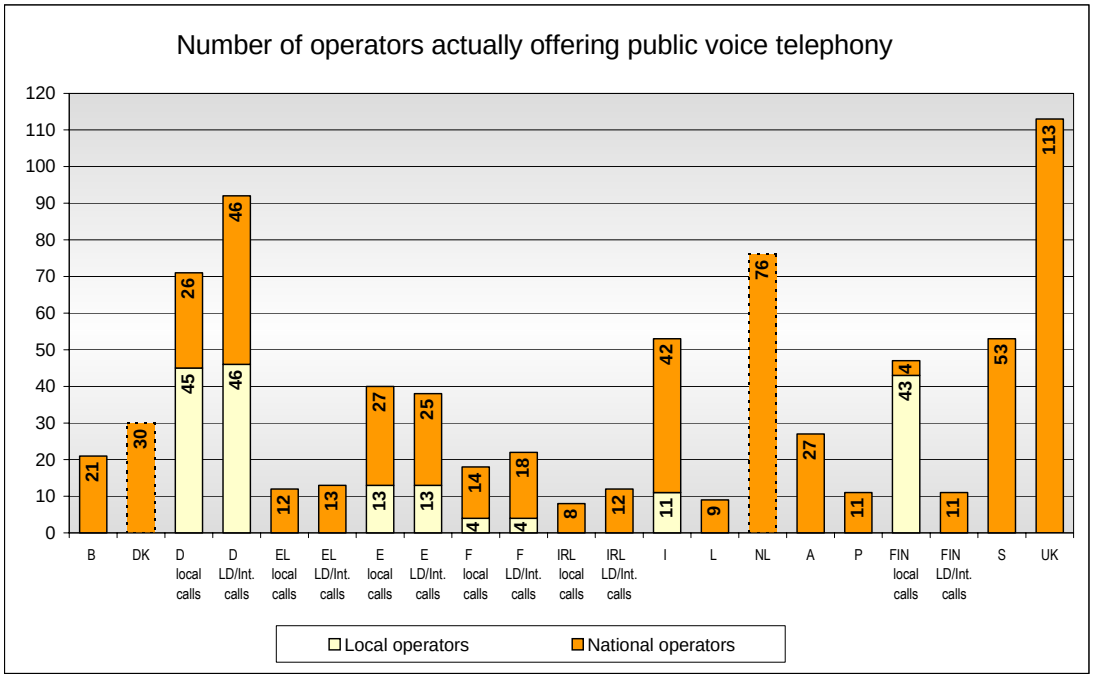
[7] Simple call-back and calling card services and operators dealing only with marketing, billing, etc., are excluded. The definition of service provider may differ from that used in the national law of individual countries (in some countries non-self operated network operators engage exclusively in reselling activities).

The following chart shows the estimate of the number of operators active in the voice telephony market at August 2003. Figures for local operators are available only for the countries in which the licence/authorisation system provides for this category. Moreover, this does not exclude that in the other countries that do not impose any geographical distinction, national operators are not providing services only in local areas.

Where possible separate figures for local and long-distance/international call market are provided. In these cases, the two bars referring to the same country should be read separately on a service by service bases, since the same operator can be authorised to offer more than one type of service.

The chart shows a significant presence of active local operators in the local calls market (around one third on the total number of active operators) while, apart from Germany, in the long-distance/international calls market their presence is negligible.

Figure 4



- Figures for Denmark and the Netherlands are not strictly comparable with the others since they refer to the operators that have been allocated geographical numbers and/or access codes.
- The figures for the Netherlands are not comparable with previous reports.
- Figures for both Spain and Finland do not include 2 operators actually offering only international voice telephony.
- In Finland, 37 of the 43 regional operators providing local calls are local incumbents and belong to the Finnet Group. 2 local and 2 national operators providing local calls belong to Elisa Group.
- The figures for France refer to 31.3.2003
- The figures for Sweden refer to 31.12.2002
- DK, I, NL, A, P, S and UK do not provide separate figure for the types of calls.
- In Belgium and Luxembourg local calls does not exist as a separate category from long-distance calls.

Figures in the previous chart do not show to what extent the operators are offering services. Many new entrants initially only provide services to business users in the main cities, even if they have a national license allowing them to offer all types of service throughout the country.

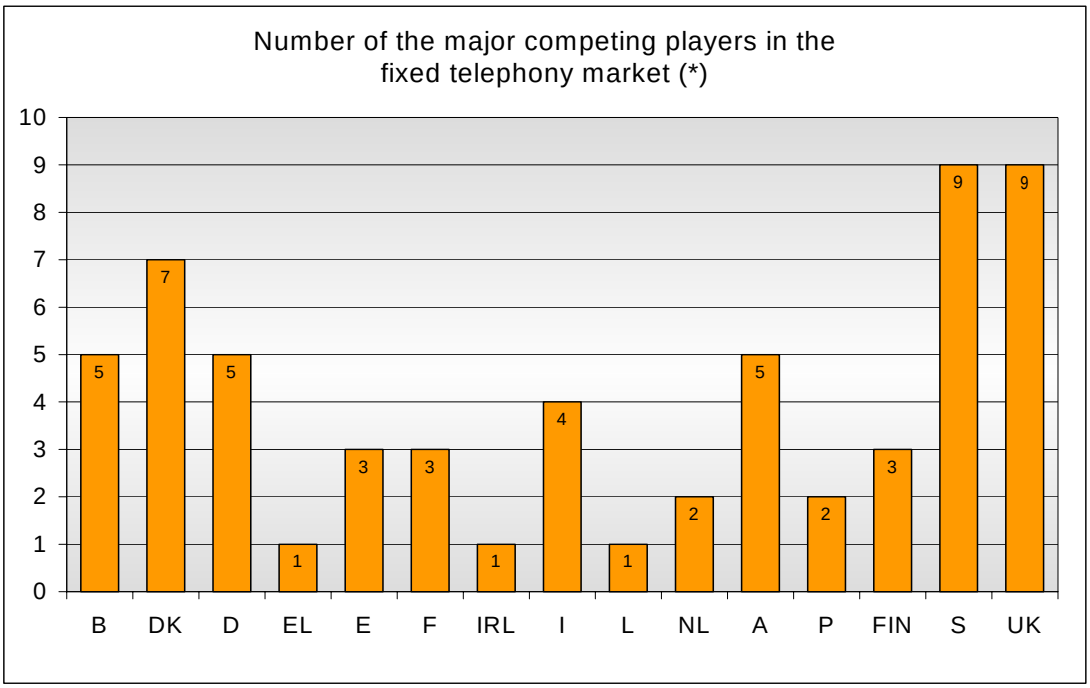
To give an idea of the "real" number of effectively competing fixed operators, the following chart shows for each country the number of operators that have a combined market share of at least 90% on the global voice telephony market (including all types of calls[8]). Generally speaking, very few

[8] Local calls to internet, local phone calls, long-distance and international calls as well as calls to mobile.

countries have more than 4 competing operators (including the incumbent) that have such a combined market share.

These figures give an idea of the number of major competing operators, but is should be recalled that the competition is largely asymmetric, with a strong position of the incumbents.

Figure 5



(*) Number of operators that have a combined market share of at least 90% on the global voice telephony market.

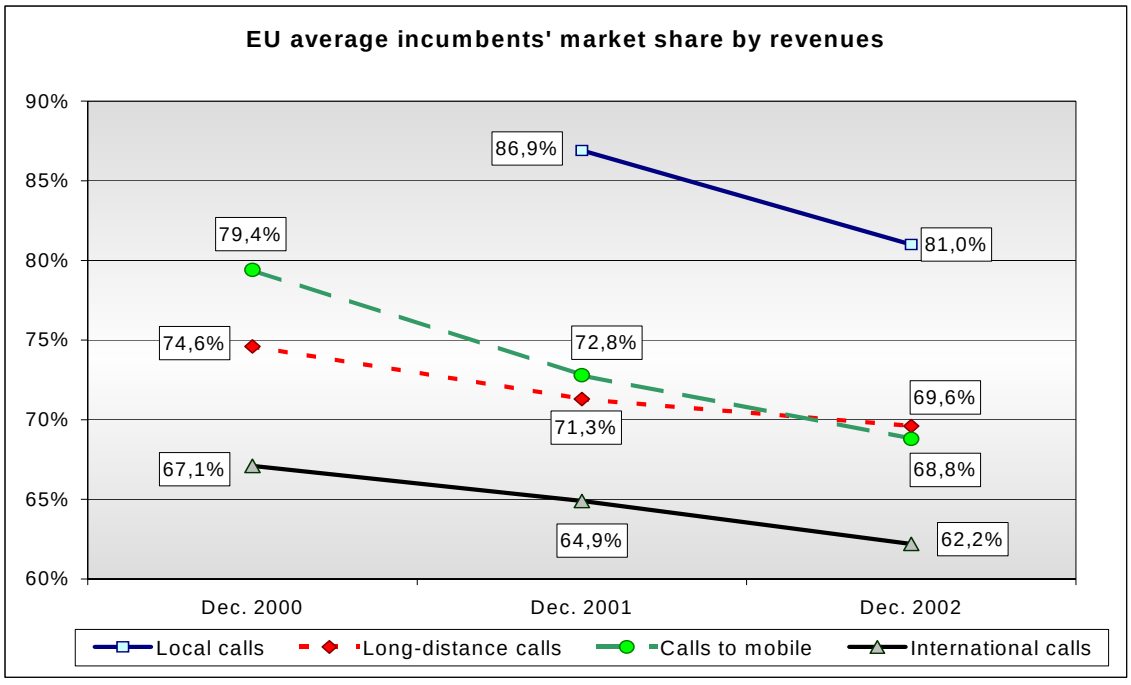
1.2. INCUMBENTS MARKET SHARE ON THE FIXED VOICE TELEPHONY MARKET

This section shows the incumbents' market share on the fixed voice telephony markets on the basis of both retail revenues and outgoing minutes of traffic. Where possible, figures for local, long-distance, international call, calls to mobile and calls to internet are shown. Unfortunately, not all Member States collect both types of data, and differentiation between the various markets is not always available. DK, L and P do not provide data by revenues; NL, S, and I do not provide data by minutes of traffic. Data for A by revenues are confidential.

Figures in this section have been provided by NRAs and give the situation as for December 2002, except for Netherlands, Austria (March 2002) and the United Kingdom (March 2003).

The following chart shows the EU weighted average trend since 2001 of the incumbent's market share in the major segment of the voice telephony market[9] based on retail revenues. Due to the non availability of data for all the countries and for all types of calls, the average EU data should be considered as indicative[10].

Figure 6

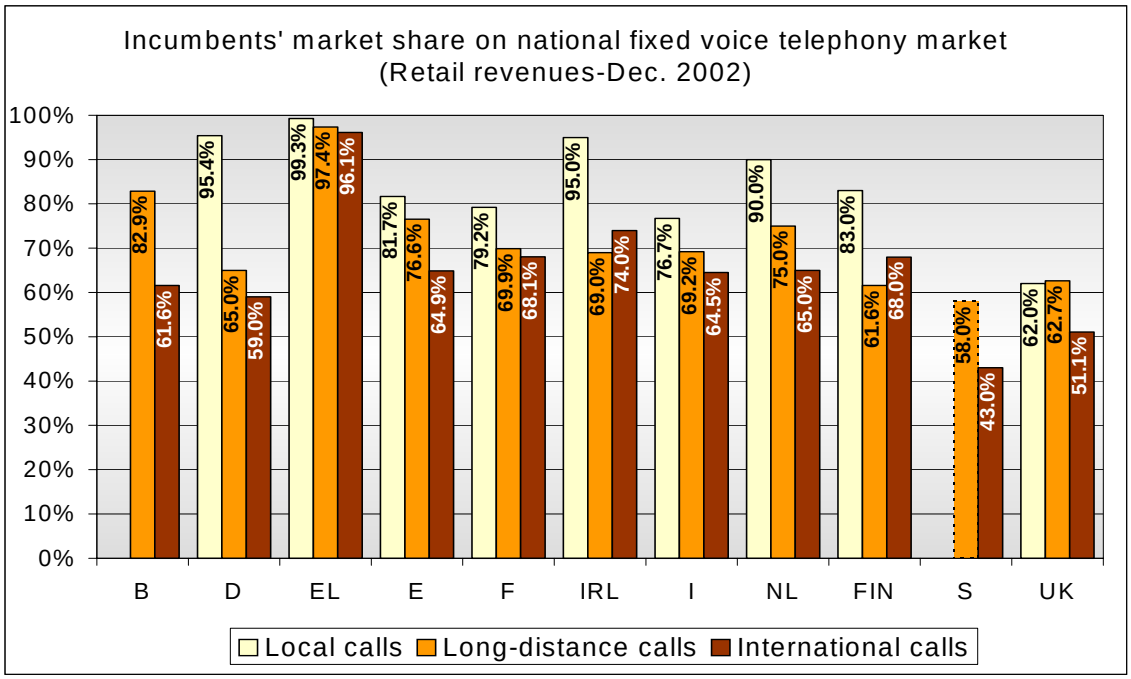


The following two charts show the incumbents' market share in the local, long-distance and international call market by retail revenues and by minutes of outgoing traffic. Local calls market includes both local phone calls and local calls to internet.

[9] Data are not comparable with the previous reports, due to several factors: (1) figures for the years 2000 and 2001 have sometimes been updated to reflect revised data received from Member States; (2) the EU average is now a weighted, rather than a simple average; (3) 2002 and 2001 data for non euro-zone countries have been recalculated on the basis of 2003 exchange rate.

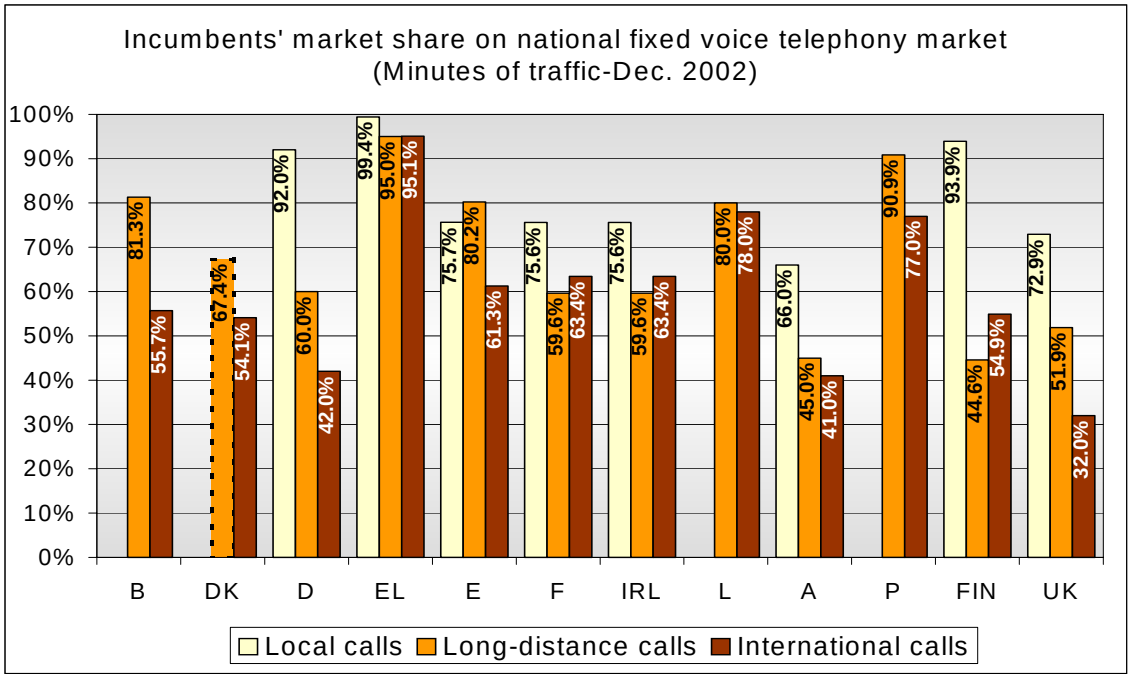
[10] Data for local call market is an average of countries that represent more than 90% of the EU population for both 2001 and 2002; data for call to mobile represent 96% of the EU population or the years 2002-2001 and 90% for the year 2000; data for international call represent more than 96% of the EU population or all the periods considered.

Figure 7



- In Belgium "local calls" does not exist as a separate category from long-distance calls.
- The figures for the Netherlands refer to March 2002, before the introduction of CPS for local calls on 1st August 2002. Moreover, data for long distance market refer to the combined local and long-distance market.
- In Finland, the figure for local calls is the combined market share of Sonera, Elisa and Finnet. The figures for the long-distance and international market include Sonera only and not Finnet even if it is designated as SMP.
- Data for the long-distance market in Sweden is not strictly comparable with the others since it refers to the global national call market (local, long-distance calls and calls to mobile).

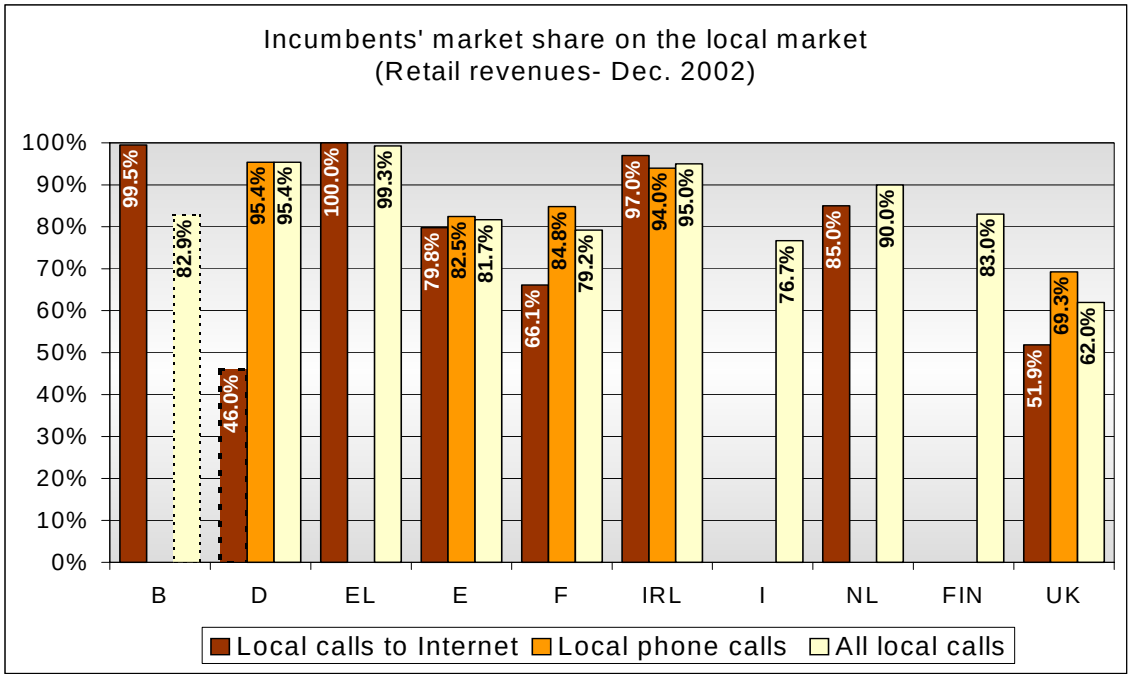
Figure 8



- In Belgium and Luxembourg local phone calls does not exist as a separate category from long-distance calls.
- Data for long-distance market share in Denmark is not strictly comparable with the others since it refers to the global national call market (local, long-distance calls and calls to mobile)
- In Finland, the figure for local calls is the combined market share of Sonera, Elisa and Finnet. The figure for the long-distance and international market includes Sonera only and not Finnet even if it is designated as SMP.

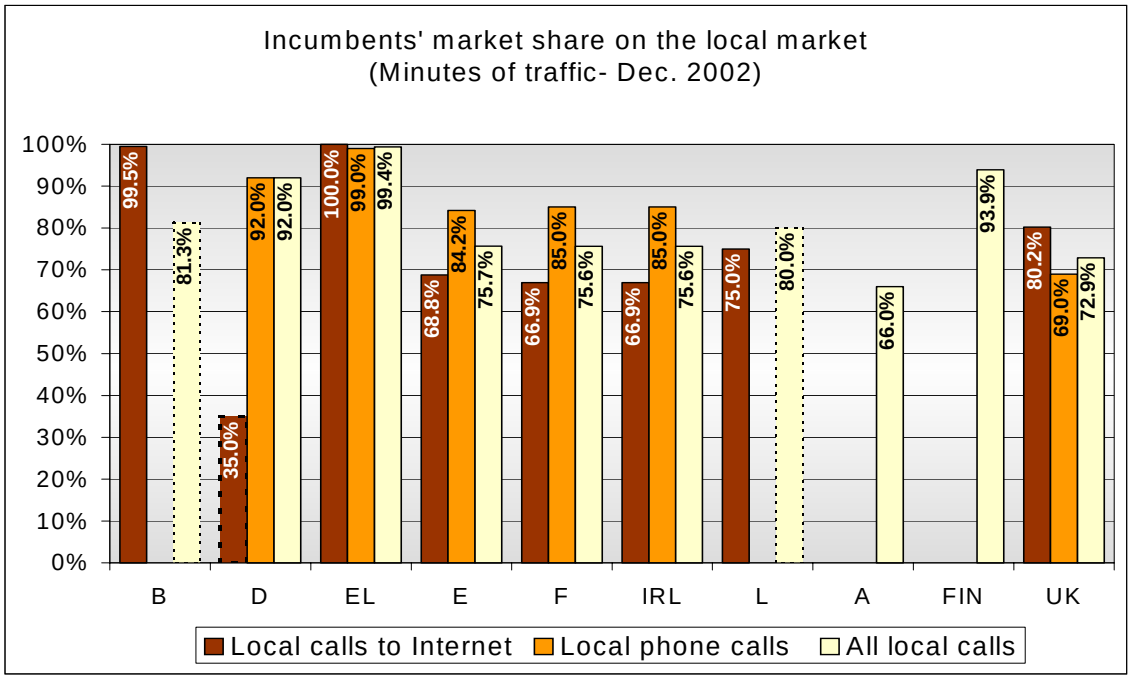
The following charts show the incumbents' market share in the local calls market by retail revenues and by minutes of outgoing traffic. Where possible, separate figures for local phone calls and local calls to internet are provided.

Figure 9



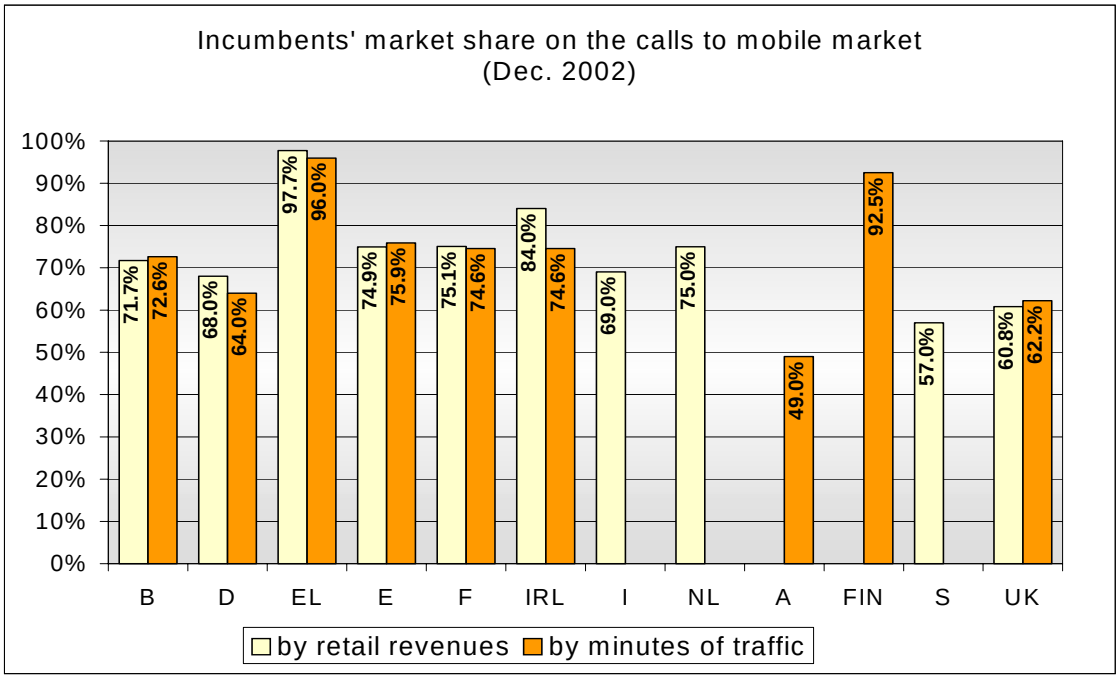
- Columns with dotted border are not strictly comparable with the others.
- In Belgium local calls does not exist as a separate category from long-distance calls.
- In Germany calls to internet are not local calls.
- In Ireland operators may classify internet calls differently. They may be included in other call categories such as local only, national as well as internet; therefore, market shares are varied.
- The figures for the Netherlands refer to March 2002 before the introduction of CPS for local call on 1st August 2002. Moreover, data for local calls to internet include also ISDN access.

Figure 10



- Columns with dotted border are not strictly comparable with the others.
- In Belgium and Luxembourg local calls does not exist as a separate category from long-distance calls.
- In Germany calls to internet are not local calls.
- In Ireland operators may classify internet calls differently. They may be included in other call categories such as local only, national as well as internet, therefore market shares are varied.
- In Finland, the figure for local calls is the combined market share of Sonera, Elisa and Finnet.

Figure 11



- The figure for Finland refers to Dec. 2001.

2 CONSUMERS' CHOICE OF FIXED OPERATORS

This section analyses the fixed voice telephony market from the point of view of consumers.

The data presented below have been provided by the national regulatory authorities and, unless otherwise indicated, report the position at August 2003. Figures for countries not included in the charts are not available.

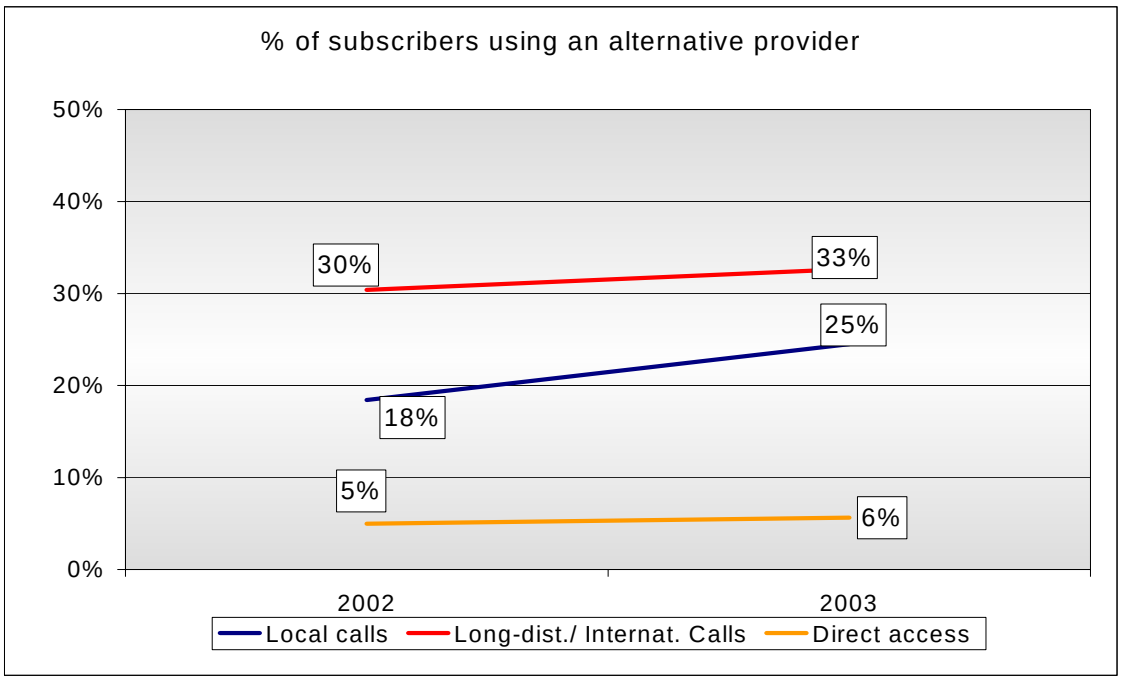
Figures are not always comparable with those published in previous Reports, due to changes in the methodologies and/or in the classification used by the Member States.

2.1. PERCENTAGE OF SUBSCRIBERS ACTUALLY USING AN ALTERNATIVE PROVIDER OTHER THAN THE INCUMBENT

Traditional incumbents' customers are more and more aware of the possibility of using a provider alternative to the incumbent, either by dialling a call-by-call prefix (*carrier selection*) or by choosing to route all calls by default to the network of an alternative operator (*carrier pre-selection*). The use of an alternative operator through carrier selection/carrier pre-selection does not exclude the possibility of using the incumbent too. *Direct access* is also available to users through alternative operators' proprietary wire/wireless access or through unbundled local loops leased from the incumbent.

As at August 2003, 33% of EU subscribers used an alternative provider to route long-distance and international calls, while only 25% were using alternative providers for local calls. At the same time, direct access from alternative providers was used by 6% of EU subscribers. Since last year, the percentage of subscribers using an alternative provider has grown by 16% for direct access, 12% for long-distance/international calls and 39% for local calls.

Figure 12

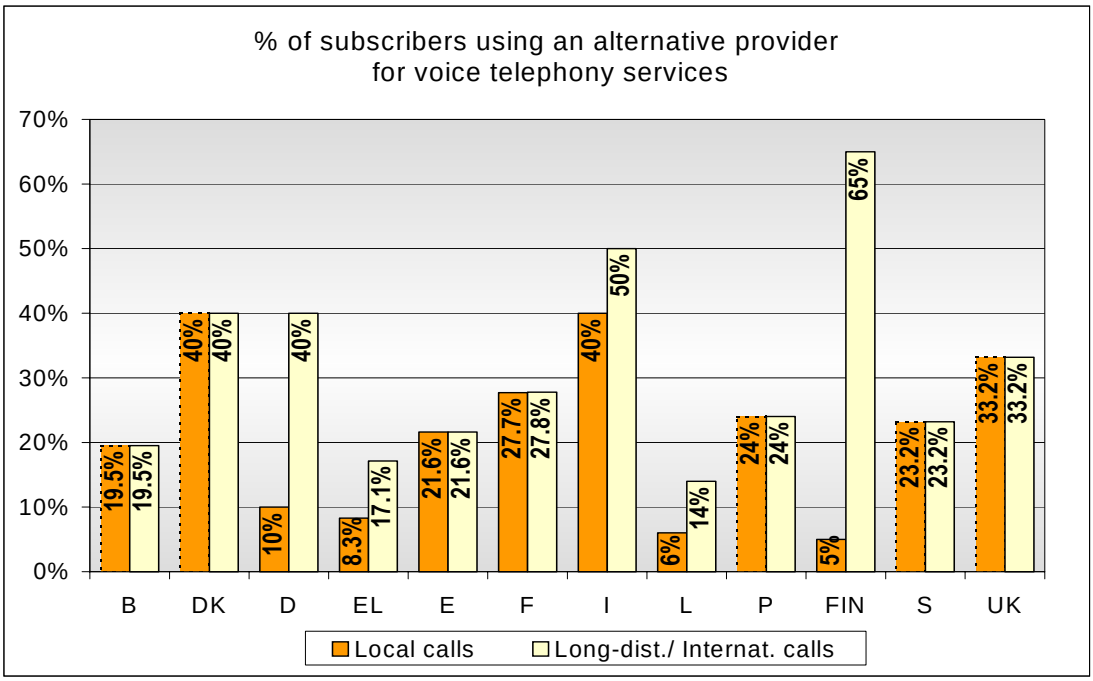


The following charts show for the 15 Member States the % of subscribers using an alternative provider for voice telephony services through carrier selection, carrier pre-selection and direct access. Where available, separate figures for local and long-distance/international calls are given.

Figures refer to August 2003 except for Belgium and Sweden (31.12.02) and for France (31.3.2003).

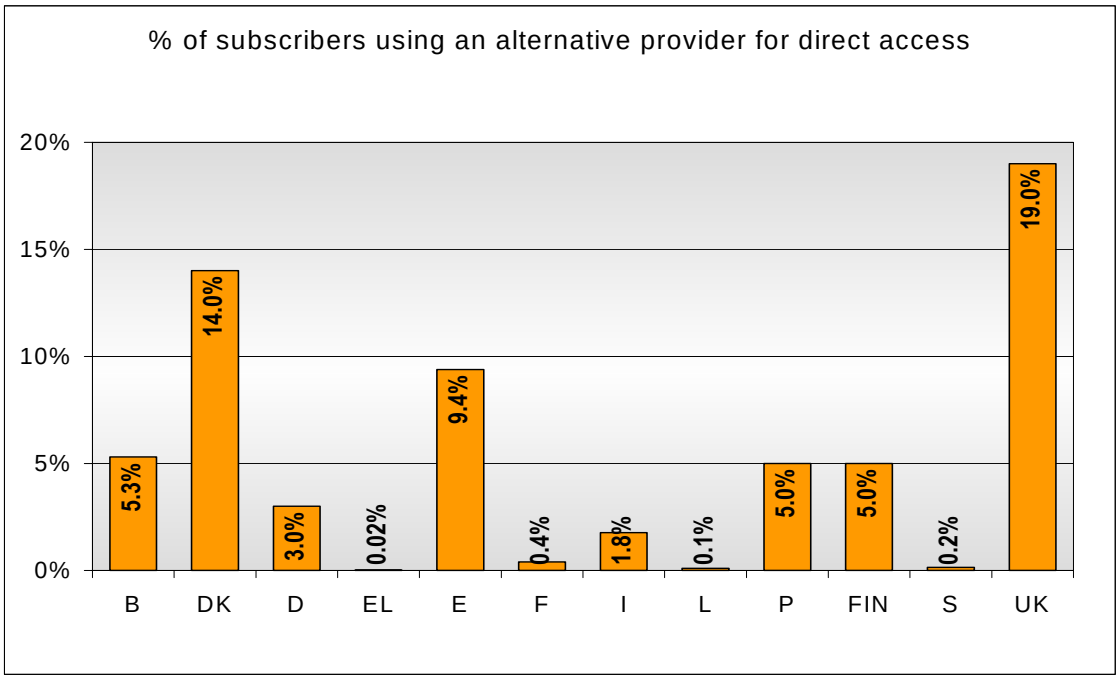
Data for Ireland, Netherlands and Austria are not available.

Figure 13



- The figures for France, Spain, Sweden and Luxembourg should be read as minimum.
- The figure for local calls in Luxembourg includes only carrier pre-selection customers, while for long-distance/international calls, it also includes carrier selection customers.
- The figures for Denmark, Portugal, Sweden and United Kingdom do not distinguish between local and long-distance/international calls. In Belgium local calls does not exist as a separate category from long-distance calls.

Figure 14


% of subscribers using an alternative provider for direct access
20%
15%
10%
5%
0%
5.3%
14.0%
3.0%
0.02%
9.4%
0.4%
1.8%
0.1%
5.0%
5.0%
0.2%
19.0%
B
DK
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2.2. FACILITIES USED BY NEW ENTRANTS FOR THE PROVISION OF VOICE TELEPHONY

This section provides information on the facilities used by new entrant to offer voice telephony, particularly to residential users.

Data have been provided by the national regulatory authorities and report the position at July 2003, except for Sweden and the United Kingdom (1.1.2003) and for France (31.3.2003).

Alternative operators can ask users to be routed to their network either by carrier selection (CS) or by carrier pre-selection (CPS). Furthermore, new entrants can obtain direct access to users through proprietary wire/wireless access or through unbundled local loops leased from the incumbent.

These facilities are not mutually exclusive and very often the same operator uses the three at the same time accordingly to category of customers (business or residential), type of services (local or long-distance/international calls), geographical area, availability of ULL, etc.. The following figures should therefore be read separately and not aggregate as country totals.

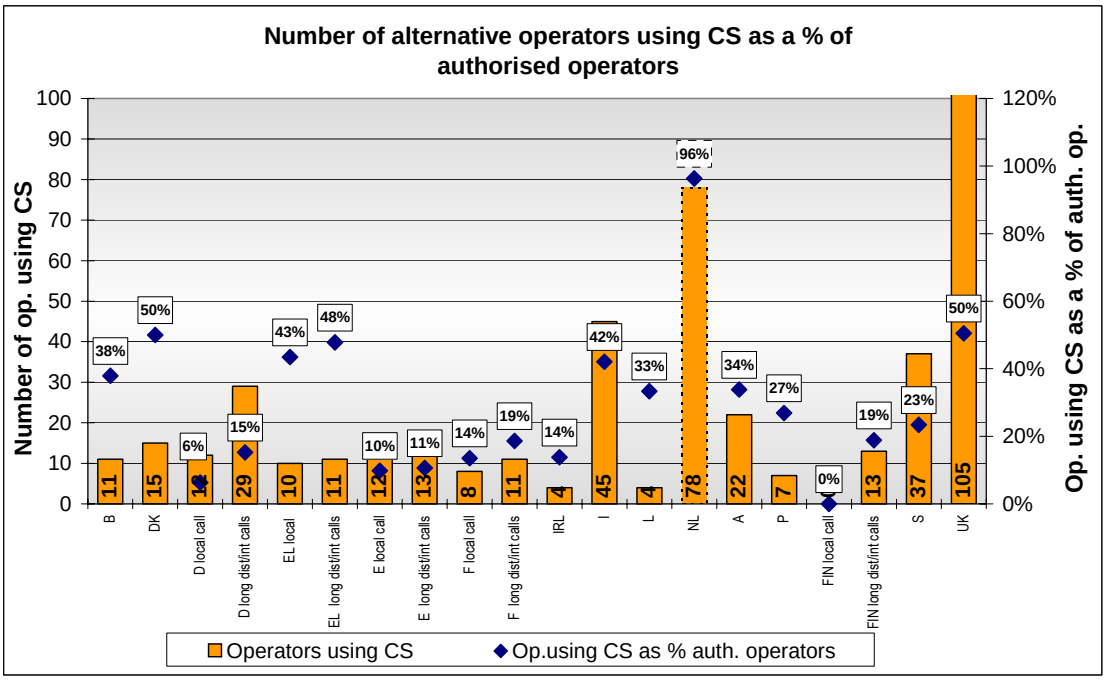
At July 2003 we could broadly estimate that more than 2/3 of the new entrants that are operational in the European market offer voice telephony services though carrier selection and/or carrier pre-selection, and only 1/3 of them use direct access to customers. These values have remained virtually unchanged between 2002 and 2003 across the EU.

The following two charts show the number of operators using carrier selection and/or carrier pre-selection by Member State at July 2003. Where possible and appropriate, separate figures for types of calls are given; in the other cases (DK, IRL, I, NL, A, P, S and UK), separate data was not available or the operators do not differentiate the facilities used by type of calls. In Belgium and Luxembourg local calls does not exist as a separate category from long-distance calls.

The number of operators using carrier selection and/or carrier pre-selection depends on the number of authorised operators, which can vary widely between countries. This is due to the different size of the countries and to the existence, in only some of them, of the local operators category.

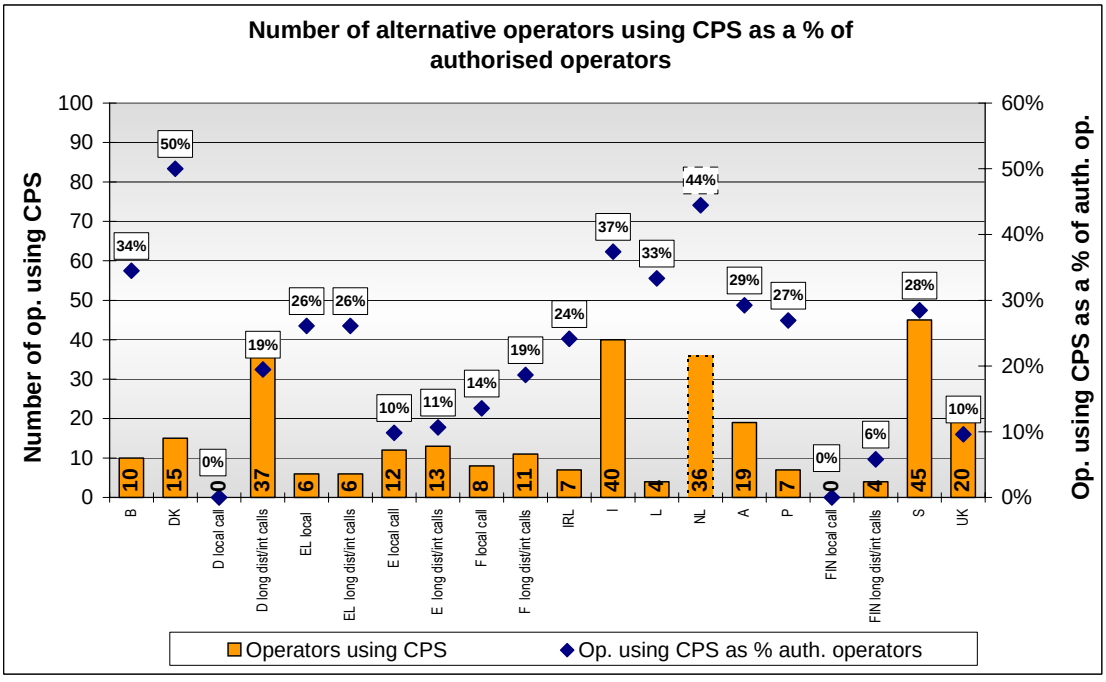
For these reasons, an estimate of the number of operators using carrier selection and/or carrier pre-selection as a percentage of authorised operators is also shown. It should be recalled that less than half of authorised operators have started operations. Moreover, the figures do not show to what extent the operators are offering services: residential and/or business users; nation-wide or only in local areas; all types of calls or only local or long-distance or international calls, etc..

Figure 15



- The figures for Belgium refer to national calls only and not to international calls.
- The figures for Denmark should be considered as minimum.
- In Germany, carrier pre-selection for local calls was not available until July 2003.
- The figures for the Netherlands for CS are not strictly comparable with the others since the data refers to operators with an access code and not to operators effectively active.

Figure 16



- The figures for the Netherlands are not strictly comparable with the others

Consumers' choice

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3 PUBLIC NETWORK INTERCONNECTION AND INTERCONNECTION CHARGES

3.1. FIXED-TO-FIXED INTERCONNECTION CHARGES

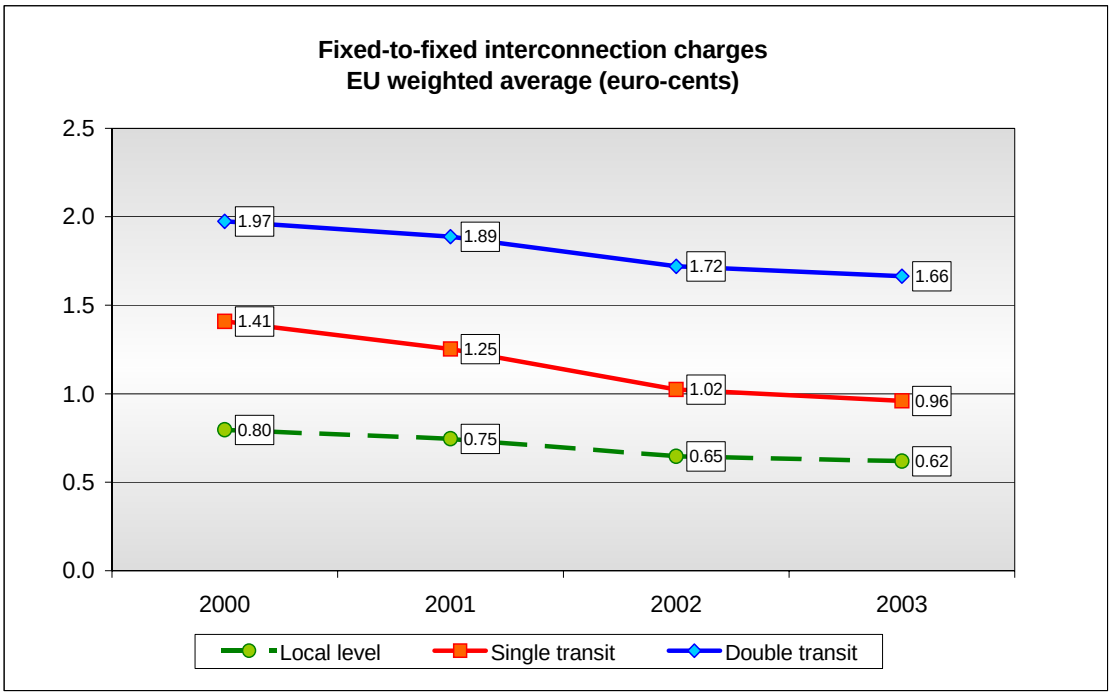
This section analyses the interconnection charges for call termination on the incumbent's fixed network[11].

The figures may have been approved by the NRA or simply agreed between operators, where the legal framework does not require NRA approval.

The following chart shows the EU weighted average interconnection charges since 2000[12] for local level, single and double transit.

Since August 2000, the EU weighted average charge for call termination on fixed networks has decreased by 32% for single transit, by 22% at local level, and by 16% for double transit. This happened mostly in the period up to August 2002; during the past year the level of interconnection charges seems to have stabilised (they are around 5% less for the retail and single transit levels; 3% less for double transit). Price differences between countries are still significant, in particular at the double transit level, and even seem to have increased over the past three years.

Figure 17



[11] The figures shown are per minute charges based on the first three minutes of a call.

[12] The EU average is a weighted, rather than a simple average; this explains the difference with the data published in the previous reports. Furthermore, 2003 exchange rates have been applied to the years 2000-2002 for the non euro-zone countries.

The following three charts show the interconnection charges for local level, single and double transit as of 1 August 2003, in comparison to the values of August 2002. Charges for the Netherlands apply from 1 September 2003.

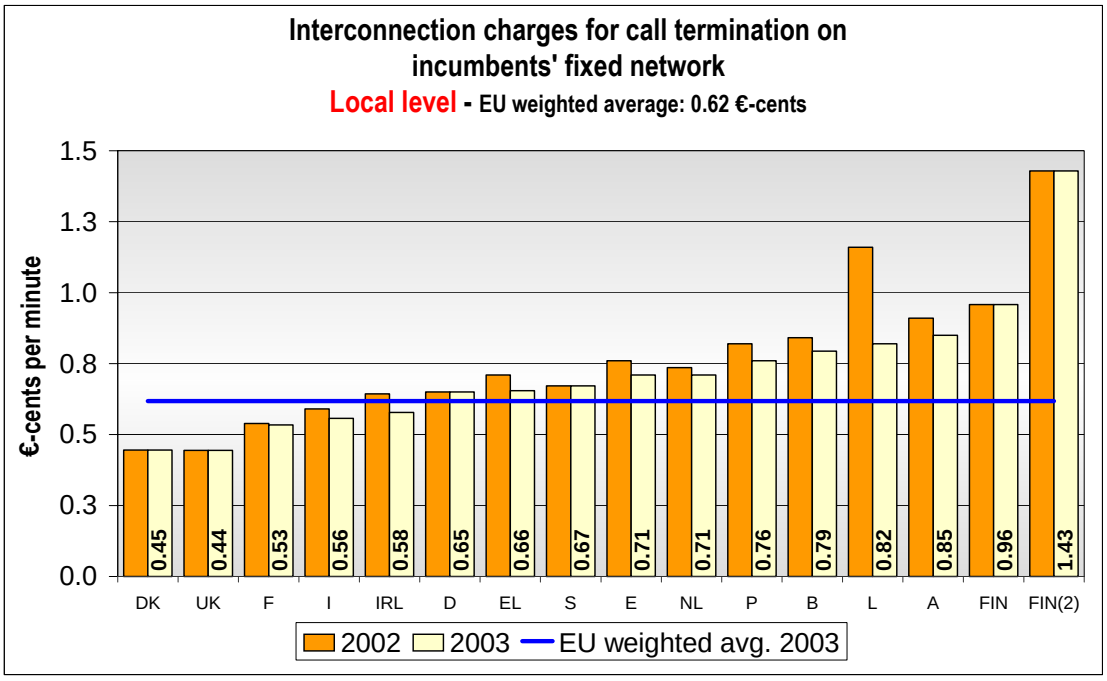
The most notable changes since last year have been the significant decreases in Luxembourg (-29% for local and single transit and –20% for double transit), in Denmark (-17% for local transit and –28% for double transit) and in Italy and Ireland, where there has been a decrease of 14% and 10% respectively at all levels of interconnection.

The interconnection charge for double transit has significantly increased in Greece (+35%), which brought it up to the second highest position.

In the case of France, in order to maintain consistency across Member States, the per minute charge indicated (based on the first 3 minutes) does not include the charge related to the cost of the 2 Mbit/s port which, however, according to ART, provides a better picture of the cost borne by the interconnecting party. By taking this additional charge into account, per minute average charges set by the NRA (peak/off-peak charge for a call of 200 seconds) would be 0.57€-cent and 1.01€-cent respectively at local and single transit interconnection levels.

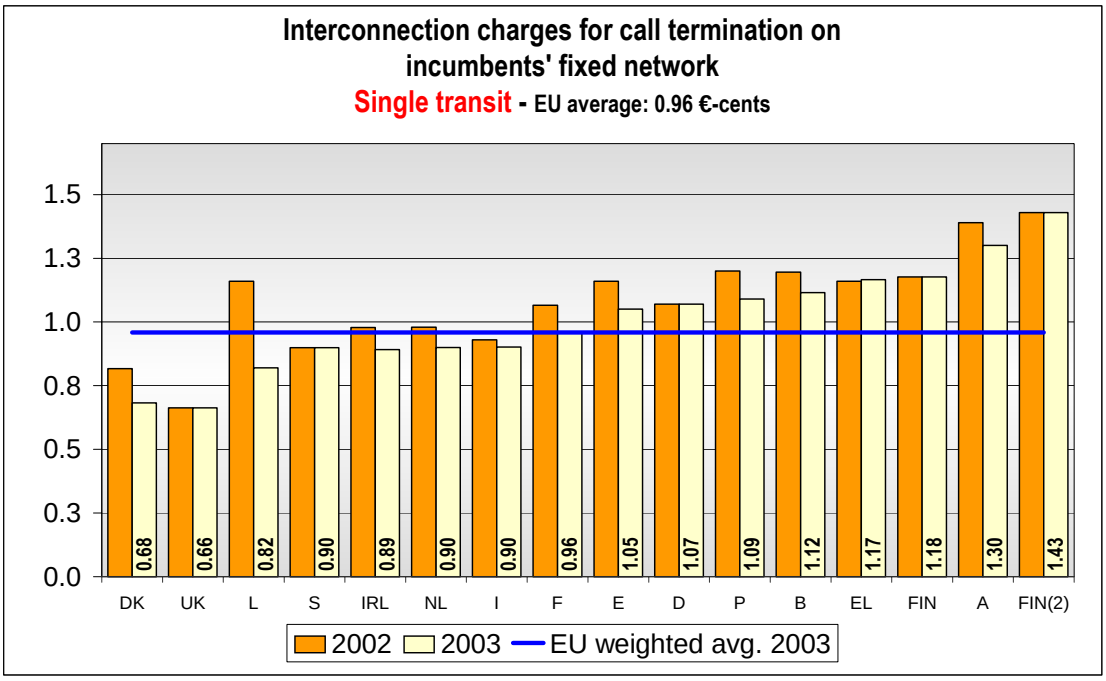
In Finland there are about 50 SMP operators who apply different interconnection charges. The charts refer to charges applied by the two major operators, Sonera (FIN) and Elisa (FIN2).

Figure 18



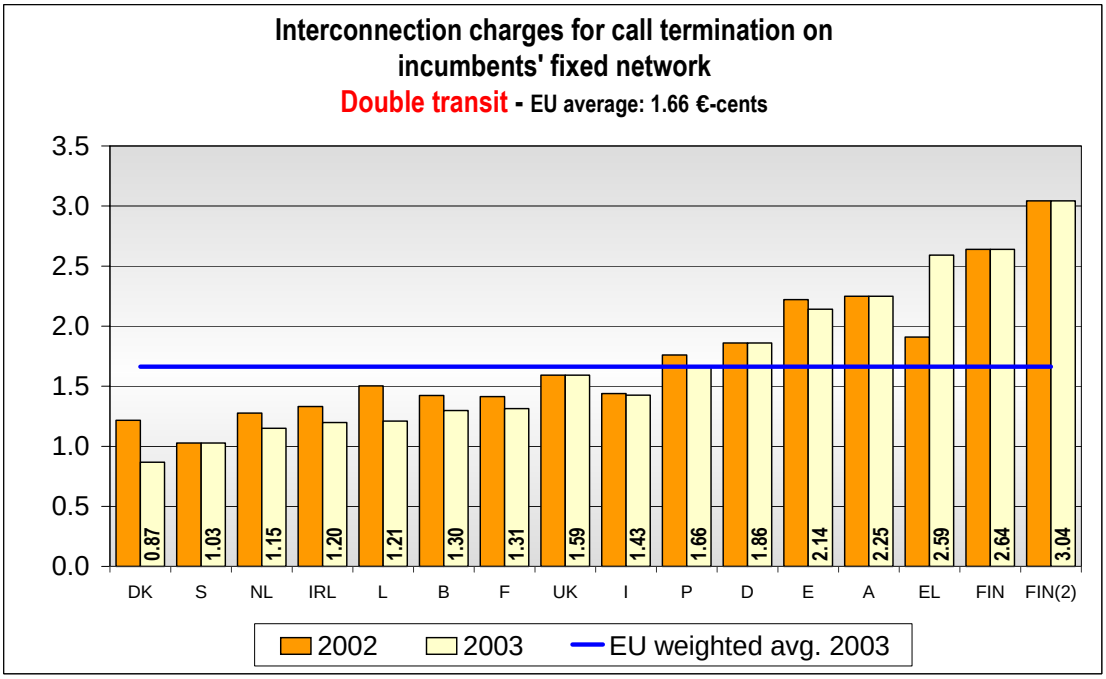
- In Luxembourg there is no distinction between local and long-distance domestic calls.
- Figures for Denmark, Sweden and United Kingdom for 2002 have been recalculated using 2003 exchange rate.

Figure 19



- Interconnection charges for Spain refer to a standard single transit, but a different charge is applied in Barcelona and Madrid (0,95€-cents).
- Figures for Denmark, Sweden and United Kingdom for 2002 have been recalculated using the 2003 exchange rates.

Figure 20



- The figures for Finland consist of two charges: one paid to the local operator and one paid to the long-distance operator.
- Figures for Denmark, Sweden and United Kingdom for 2002 have been recalculated using 2003 exchange rate.
- Data for the United Kingdom refer to a connection of more than 200km. For lengths of less than 100km the interconnection charge at double transit is 1.013€-cents; and for 100-200km it is 1.26€-cents.

3.2.FIXED-TO-MOBILE INTERCONNECTION CHARGES

This section shows the per-minute interconnection charges for fixed call termination on the networks of mobile operators.

In the following charts information is shown for 50 mobile operators in the EU (representing almost 100% of the EU mobile market). A total of 16 operators in the EU have been designated as having significant market power (SMP[13]) in nine national markets for interconnection: Belgium, Denmark, Greece, Spain, France, Ireland, Italy, Finland and Sweden. SMP operators cover 45% of the EU mobile market (in terms of subscribers).

26 operators have been designated as SMP on the national mobile market (SMP-mobile) in 13 Member States: the 9 countries with SMP operators in the interconnection market plus Luxembourg, Netherlands, Portugal and the United Kingdom. In Germany and Austria there are no operators designated as SMP or as SMP-mobile either.

Charges are for calls originating in the same countries, except for Finland, where charges for mobile termination of international fixed calls are considered**.**

The per-minute interconnection charges are based on the first three minutes of a call at peak rate, except for the Netherlands, Finland and Sweden where the average peak/off-peak rate set by the NRA has been shown.

Except for Germany, the figures have been collected by the NRA, and give the situation in August 2003. Data for Germany are not publicly disclosed by the NRA and the figure shown in the chart was provided by Cullen International.

The following chart shows the evolution of the weighted average fixed-to-mobile interconnection charges for SMP and non SMP mobile operators, since August 2001[14].

The difference in charges between the two classes of operators has arisen mostly during the past year as a result of regulatory intervention by NRAs to bring about cost orientated charges for SMP operators. Since August 2002, the average interconnection charge for SMP operators has decreased by 15.3%, while for non-SMP operators they have remained more or less stable.

The difference between the level of the charges for SMP and non-SMP operators can be explained by the increased number of SMP operators (which now account for 45% of EU subscribers compared to 41% in 2002), but mostly by the cost orientation requirement for interconnection charges on SMP operators.

It should be noted that even for non-SMP operators in the national interconnection market, interconnection charges are sometimes set by the NRAs, for example as a result of intervention on the basis of a competition enquiry or to set price ceilings to avoid excessive of tariffs. Furthermore, in some countries NRAs intervene in setting the charges for non-SMP operators in order, for example, to resolve a dispute between market players.

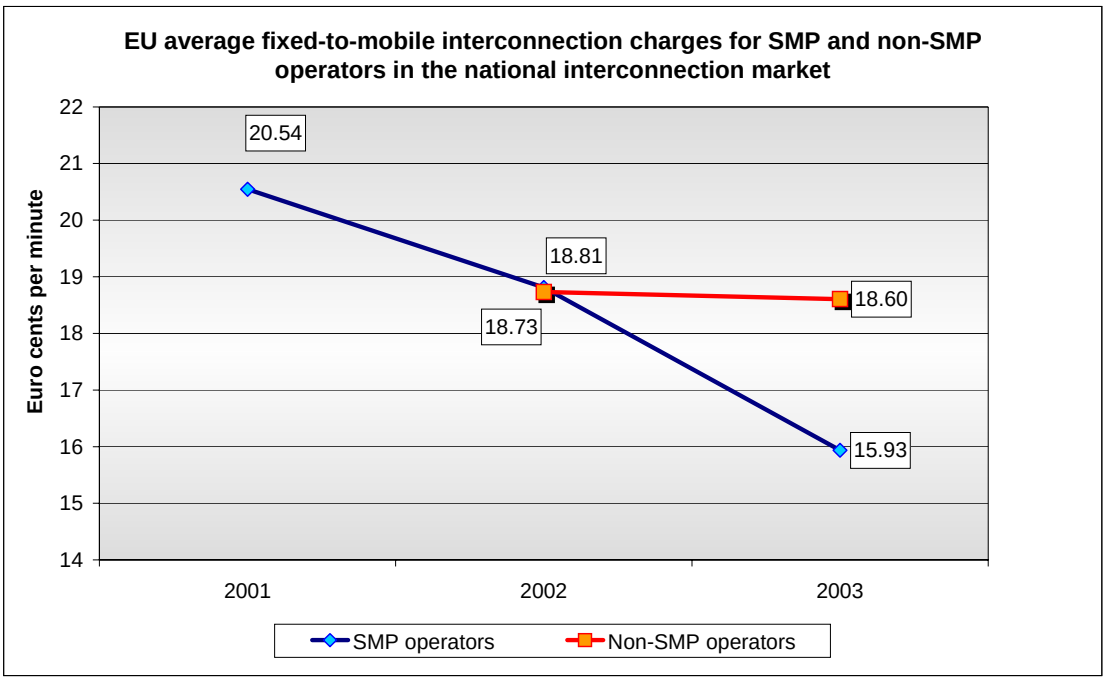
It should be noted that notwithstanding the decrease, the level of fixed-to-mobile interconnection charges remains on average more than 9 times higher than that of fixed-to-fixed interconnection charges (double transit).

[13] In the following document, SMP operators means operators designated as having significant market power in the national markets for interconnection, while SMP-mobile operators means operators designated as SMP on the national mobile market.

[14] Figures are not comparable with previous reports, due to the use of weighted averages instead of simple averages; furthermore, the 2003 exchange rates have been applied to the previos years 2000-2002 for the non euro-zone countries. Figures for 2001 for non-SMP operators are not available: the EU weighted average for non-SMP operators representing 36% of the subscribers of total non-SMP operators' subscribers was 20.9€-cents.

The EU weighted average of fixed-to-mobile interconnection charges for 50 European operators is 17.45€-cents.

Figure 21



The following charts show the fixed-to-mobile interconnection charges for 50 mobile operators in the EU, the national weighted average[15] for SMP and non-SMP operators and the trend since August 2002.

With the exception of all operators in France and Portugal, one operator in Spain and two in Greece, mobile termination charges do not vary according the type of network in which the call is originated (fixed or mobile). In France, mobile-to-mobile interconnection charges are based on the "bill and keep" principle, so mobile operators do not define termination charges.

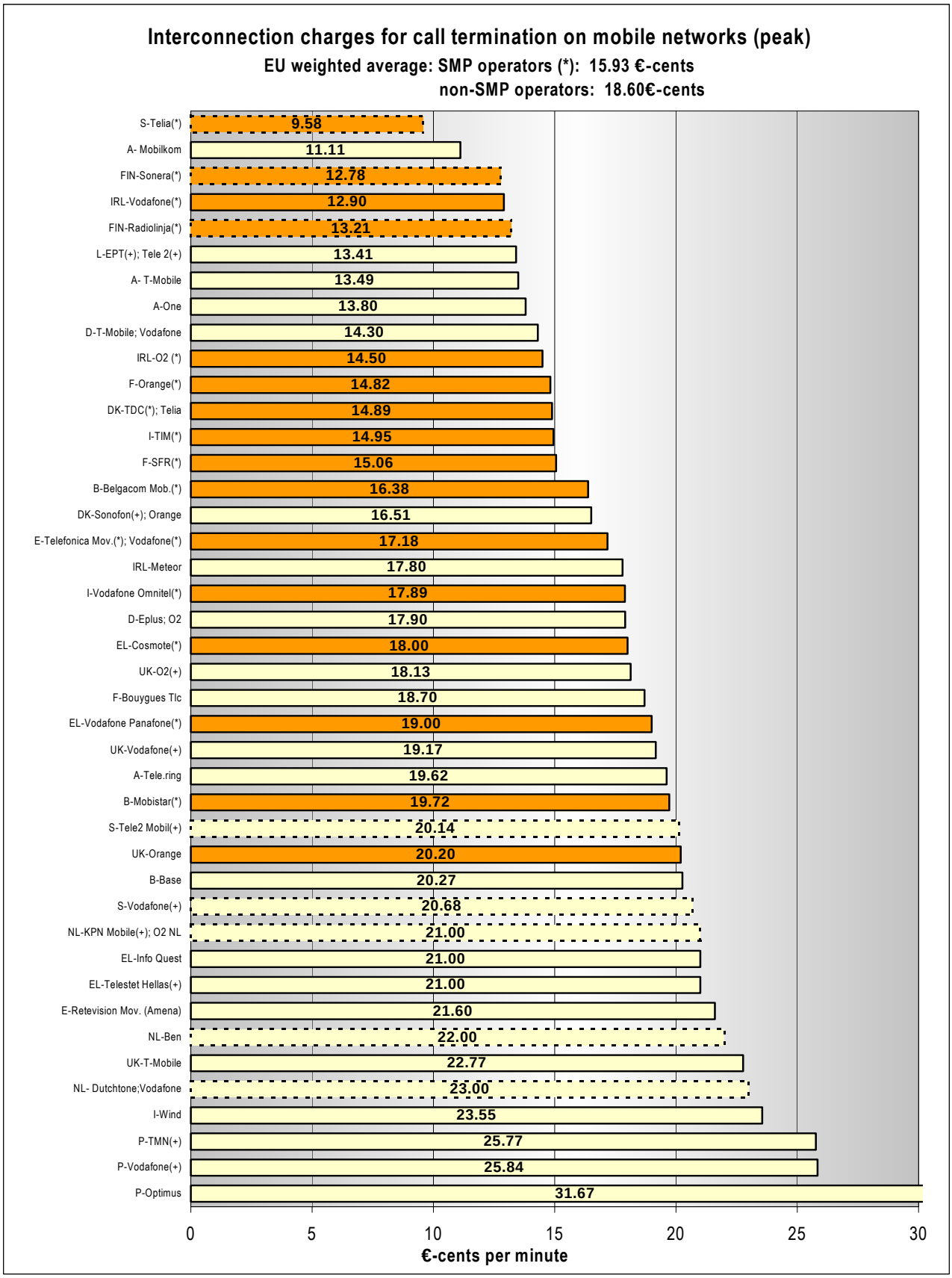
Data for Finland indicate the interconnection charges for an international fixed call to a mobile network (interconnection charges also apply to mobile-to-mobile calls). No mobile wholesale termination charges exist for calls originating on a national fixed network; instead, so-called “end-user” charges are levied. The originating fixed operator charges a customer a fixed network retail charge and a mobile network retail charge (to be forward to the mobile operator). Both fixed and mobile operators determine the charges for their own segments. An example of a fixed-to-mobile retail call charge (at peak rate including VAT) is 27€-cents for Sonera and 26€-cents for Radiolinja.

The main decreases in the charges since August 2002 have been achieved in Italy (-25% for one SMP operator), in France and Spain (around –18% for both SMP operators), in Ireland -13% for the SMP operator Vodafone), in Belgium (-14% for one SMP operator) and in Greece, where charges have decreased on average by 9% for the four non-SMP operators, after intervention by the NRA. On the other hand, fixed-to-mobile interconnection charges have increased by 10% for one operator (SMP on the national mobile market) in the Netherlands.

The figures for Portugal published in the 8th report are not comparable with the 2003 figure; moreover, the NRA has estimated an average decrease of 8% since last year.

[15] Average of the interconnection charges for the different national operators weighted on the basis of their subscribers.

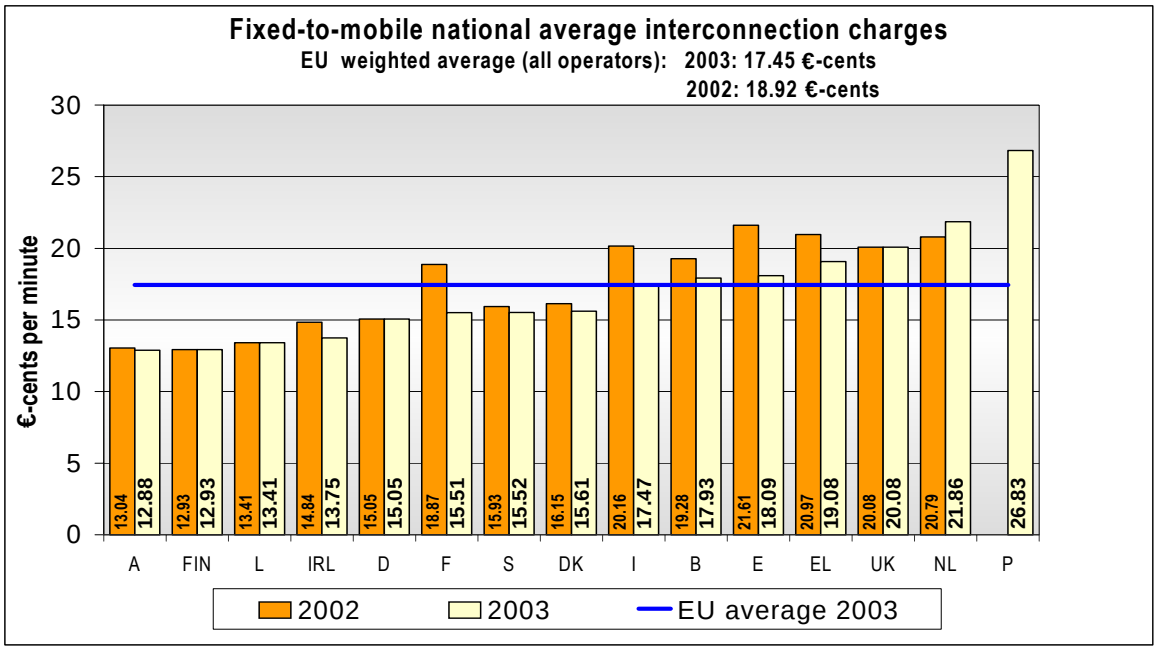
Figure 22



- The figures for Netherlands, Finland and Sweden are not strictly comparable with the others since they represent an average peak/off-peak rate.

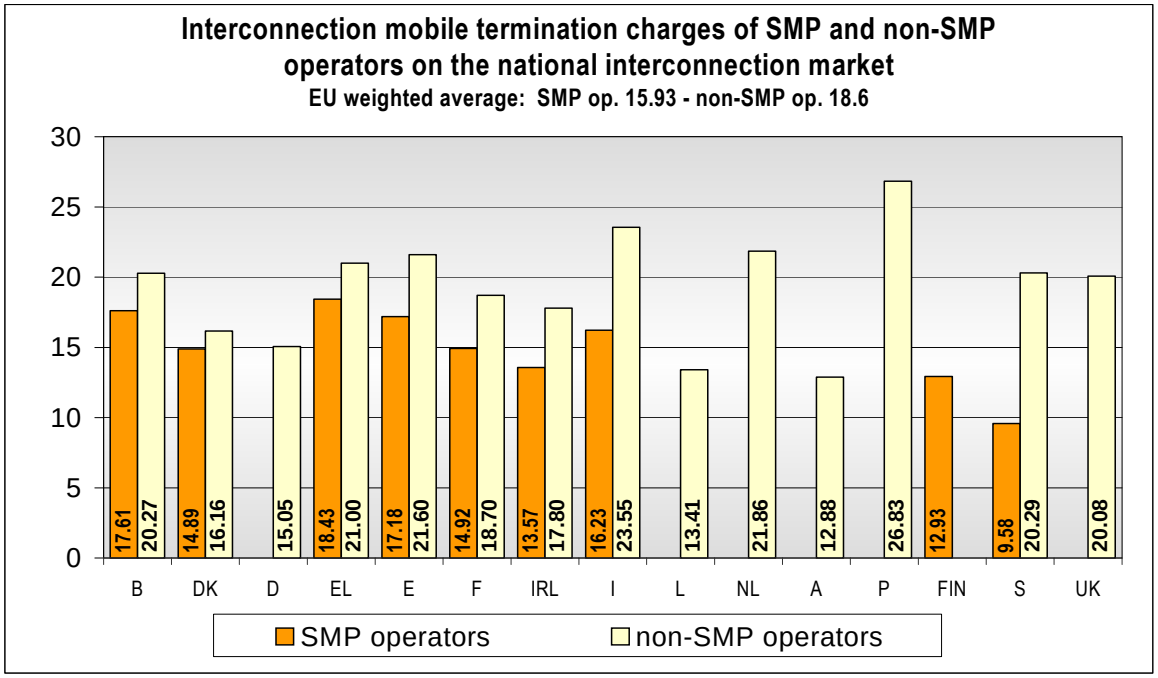
Legend:
(*) SMP operators in the national interconnection market
(+) SMP operators in the national mobile market

Figure 23



- Figures for Denmark, Sweden and United Kingdom for 2002 have been recalculated using the 2003 exchange rates.

Figure 24



3.3. LEASED LINES INTERCONNECTION CHARGES

This section shows the monthly rental and the one-off charges for short-distance leased lines (local ends, excluding VAT) up to 2 and 5 km provided by the incumbent operator to other interconnected operators. An estimate of the total average monthly rental cost (based on the total cost for two years) is also presented. Deviations for the monthly rental from the "recommended price ceiling" set in Commission Recommendation 1999/3863 of 24 November 1999 are also shown. The recommended price ceilings[16] are:

- € 80/month for a 64 Kbit/s leased line part circuit up to 5 km
- € 350/month for a 2 Mbit/s leased line part circuit up to 5 km;
- € 1 800/month for a 34 Mbit/s leased line part circuit up to 2 km;
- € 2 600/month for a 34 Mbit/s leased line part circuit up to 5 km.

National Regulatory Authorities have provided these figures through the questionnaire for the 9th Implementation Report and the replies to the ONP COM02-18 Document. Figures indicate the position in August 2003.

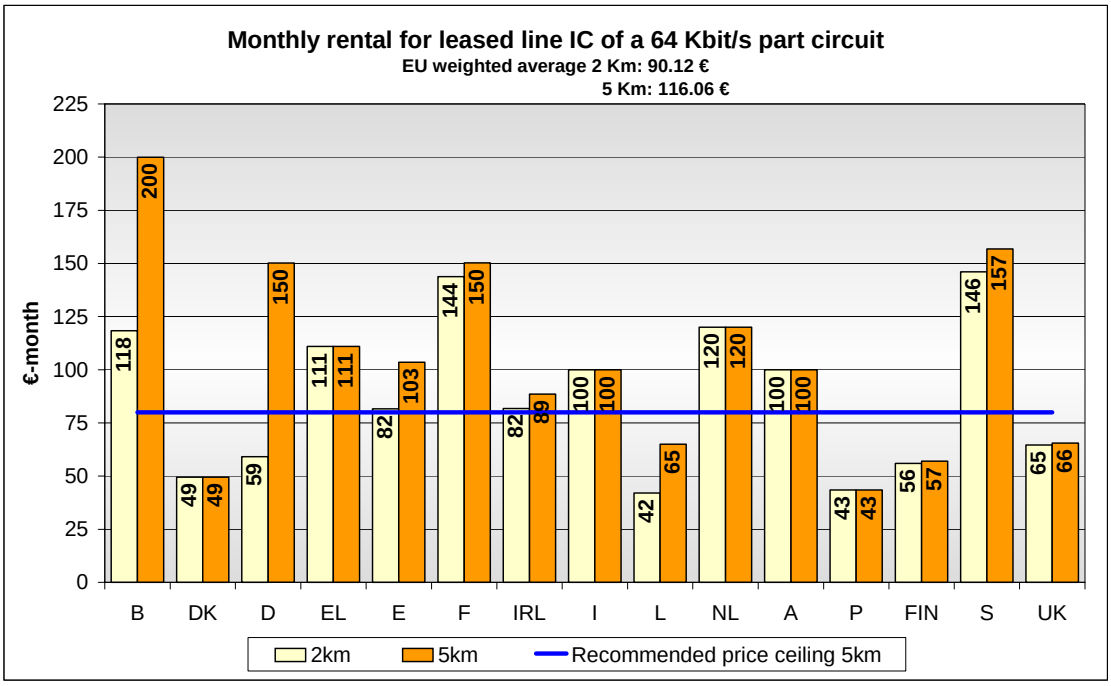
New prices with effect from September 2003 have been published in the Netherlands.

In Finland the charges by SMP operators differ. Leased lines prices are averages based on the charges of Sonera, Elisa and Finnet.

There is no 34 Mbit/s price offer in France. For the calculation of the EU 15 monthly rental average price, the 2002 price in France has been used in order to maintain consistency with previous years and plot the EU 15 average deviation from the price ceiling.

64 Kbit/s part circuit

Figure 25



[16] Although the ceiling is not used anymore, it has been a very helpful tool to benchmark progress towards the reduction of leased lines wholesale interconnection prices. It is therefore used in this report in order to present progress.

Figure 26

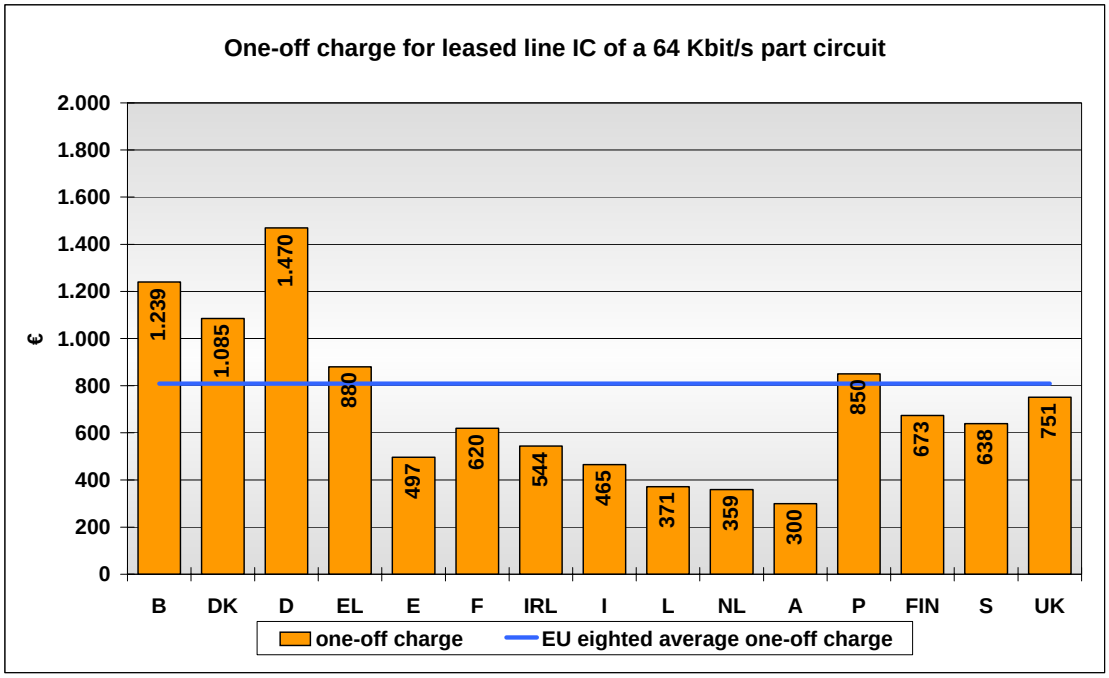
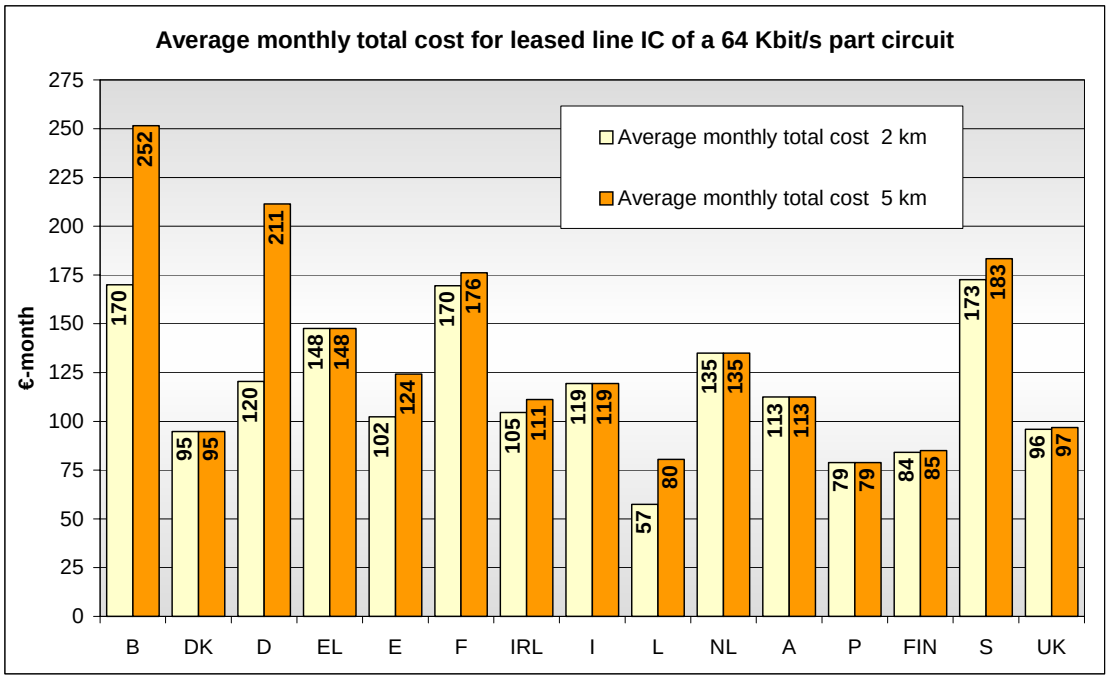


Figure 27



2 Mbit/s part circuit

Figure 28

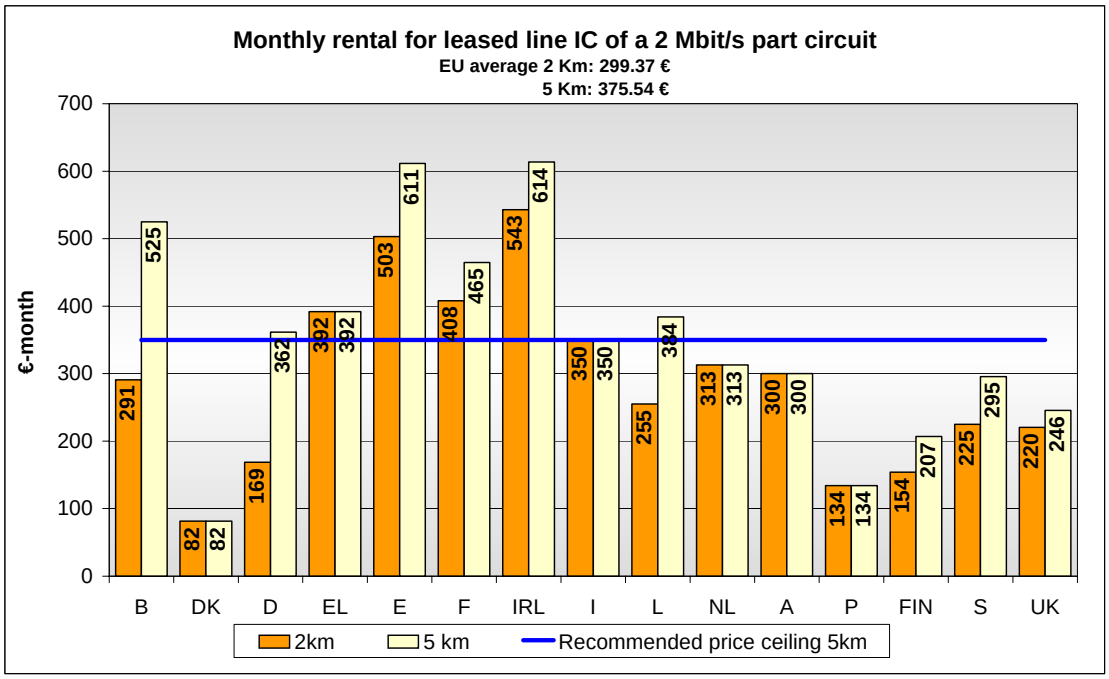


Figure 29

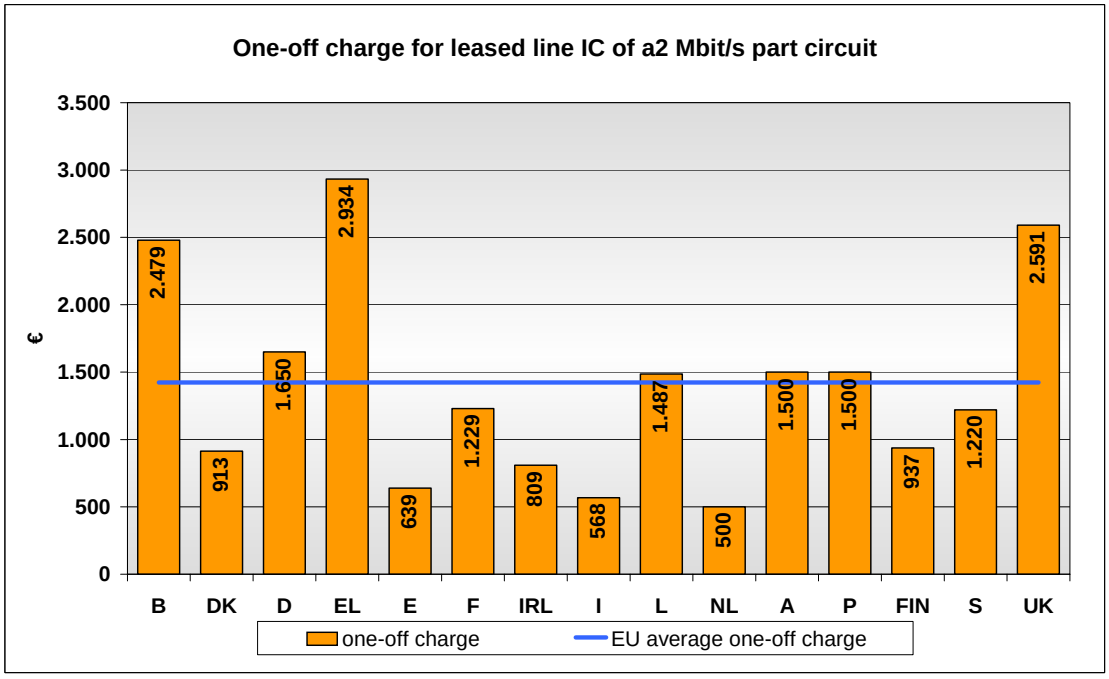
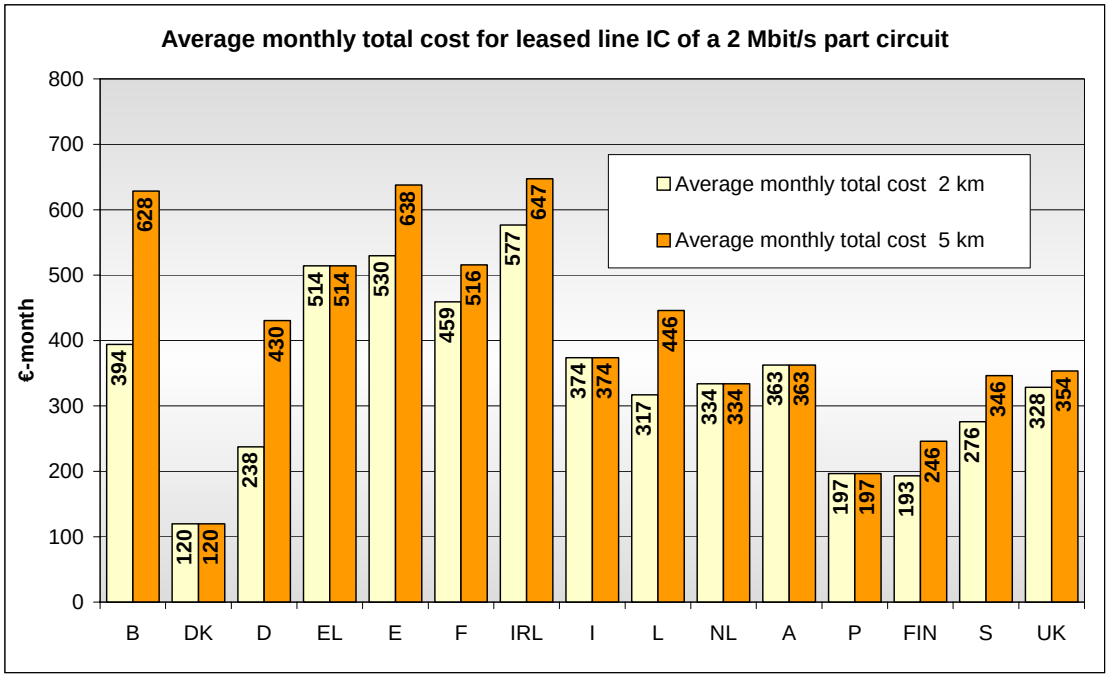
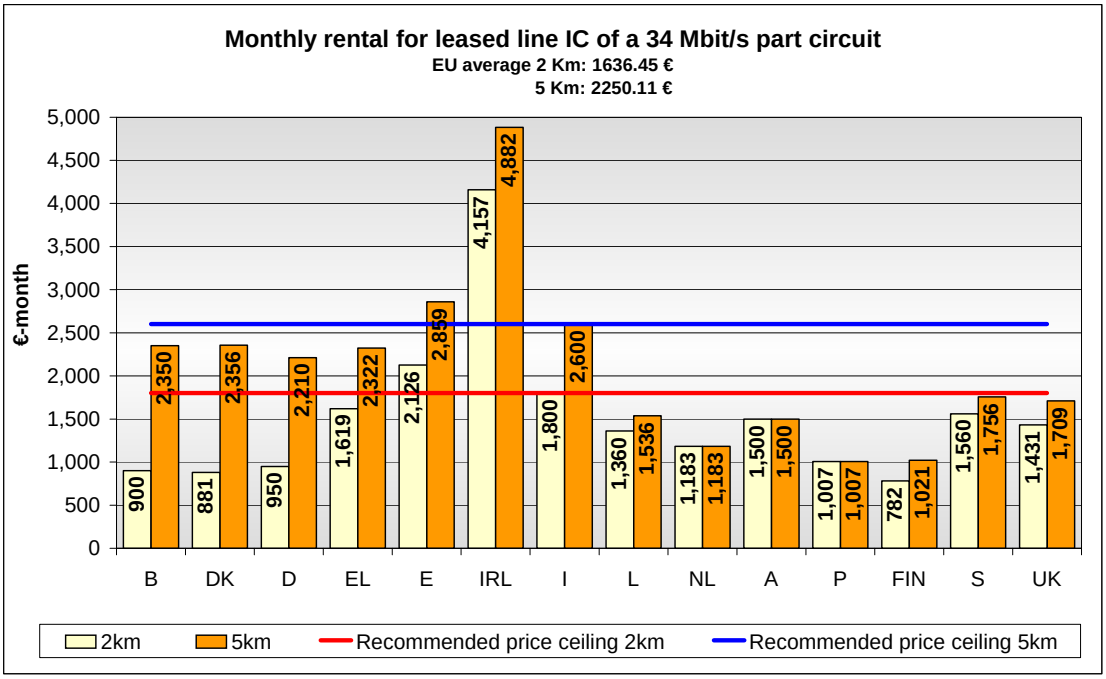


Figure 30


Average monthly total cost for leased line IC of a 2 Mbit/s part circuit
€-month
800
700
600
500
400
300
200
100
0
Average monthly total cost 2 km
Average monthly total cost 5 km
394
628
120
120
238
430
514
514
530
638
459
516
577
647
374
374
317
446
334
334
363
363
197
197
193
246
276
346
328
354
B
DK
D
EL
E
F
IRL
I
L
NL
A
P
FIN
S
UK

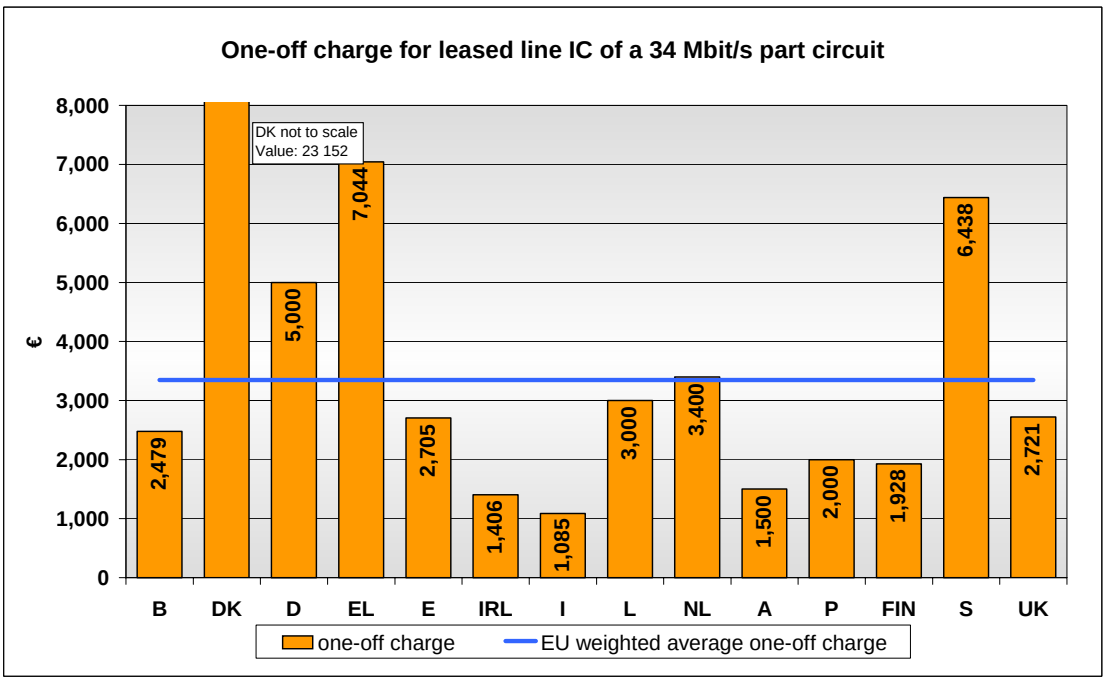
34 Mbit/s part circuit

Figure 31



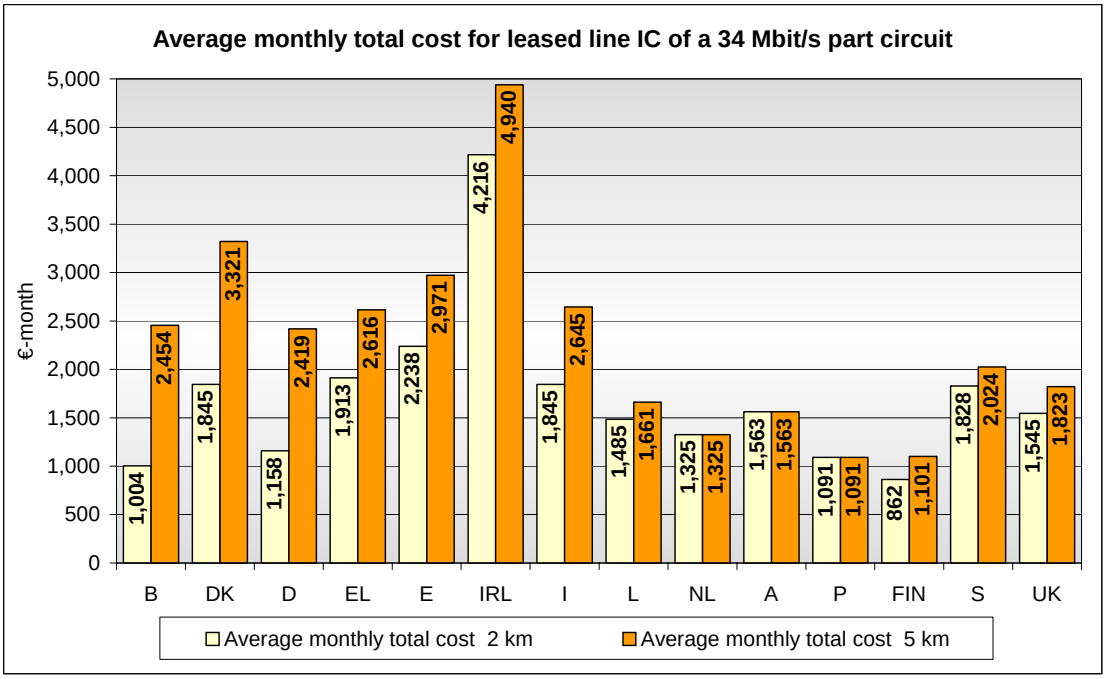
- There is no 34 Mbit/s price offer in France
- Price in the Netherlands is an average of 2 times 34 Mbit/s in a 155 Mbit/s fibre access service and a 155 Mbit/s broadband access group.

Figure 32



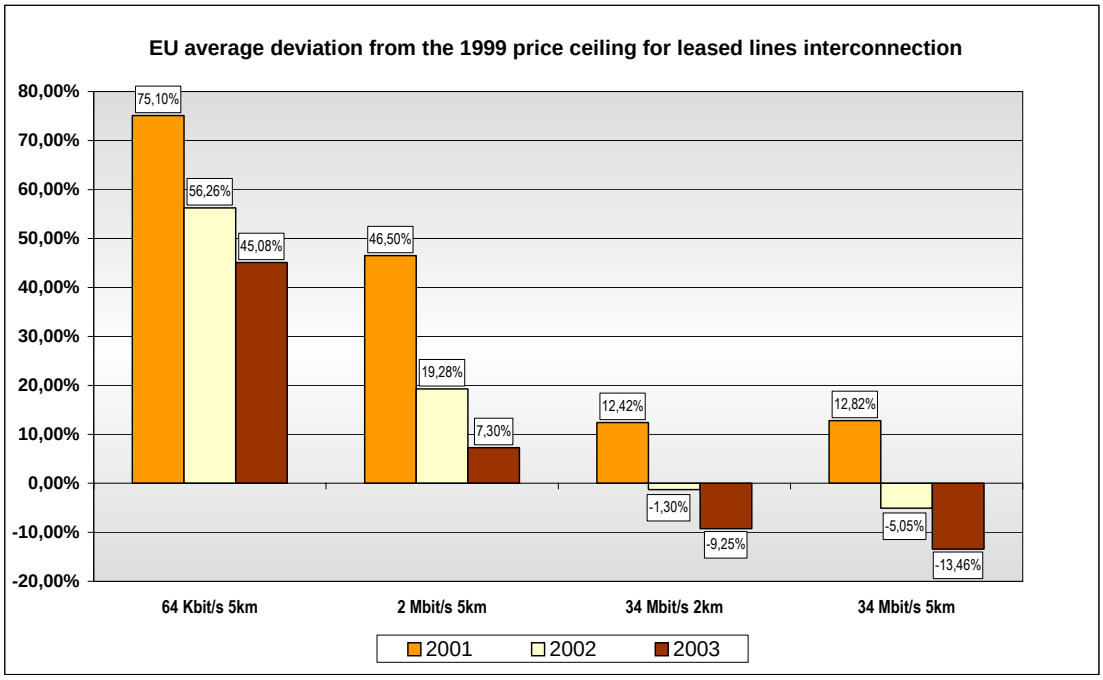
- There is no 34 Mbit/s price offer in France

Figure 33



- There is no 34 Mbit/s price offer in France
- Price in the Netherlands is an average of 2 times 34 Mbit/s in a 155 Mbit/s fibre access service and a 155 Mbit/s broadband access group.

Figure 34



4 MOBILE MARKET

4.1. MOBILE PENETRATION

The following charts show the number of mobile subscribers and the penetration rate in 2003 for second generation mobile services (DCS-GSM) in each Member State. The growth in the penetration rate since August 2002 is also shown.

Subscriber figures are taken from FT Mobile Communications (August 2003). The NRAs have had the opportunity to revise these data and, where necessary, have made corrections. In some cases the figures for August 2003 are estimates, since operators have not provided official figures. Data include both post-paid card and pre-paid subscribers and show the situation as at August 2003 with the following exceptions:

For Denmark, Greece, Portugal, Sweden and the United Kingdom the reference date is 1st July 2003.

For Spain the reference date is 1st June.

Data for Finland and Italy (estimated data) refer to the end of September.

EU average is a weighted average.

Figure 35 shows the absolute number of mobile subscribers in each Member State (columns) and the penetration rate (dots), measured as the number of subscribers per 100 population.

Figures for Italy, Spain and Sweden include analogue subscribers.

Figure 35

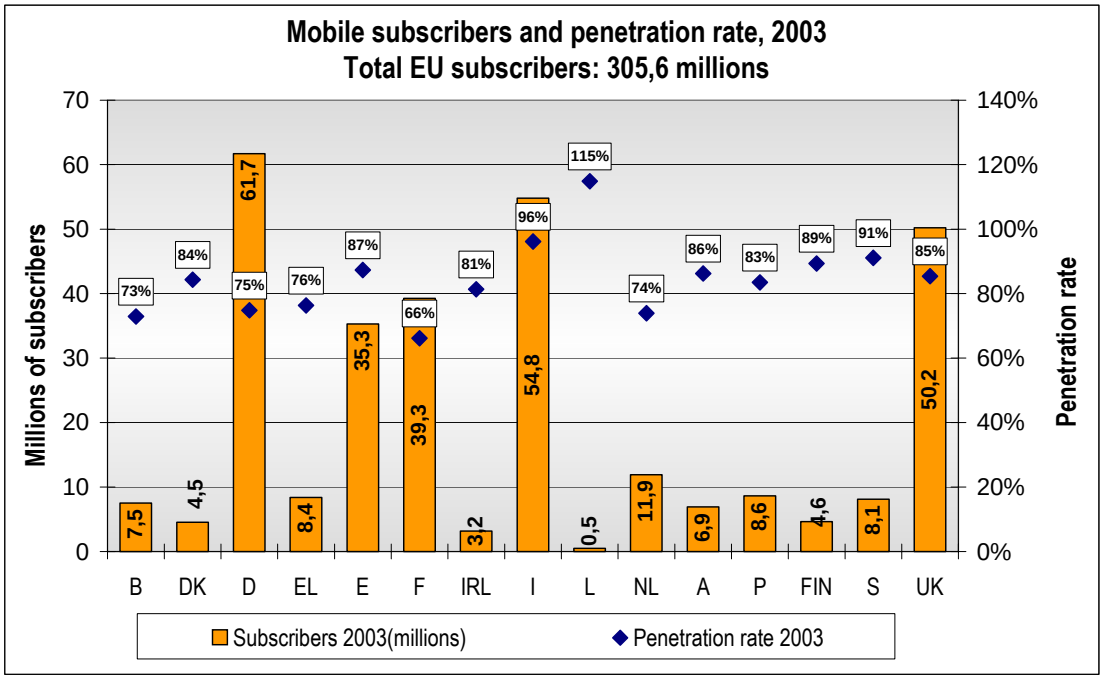


Figure 36

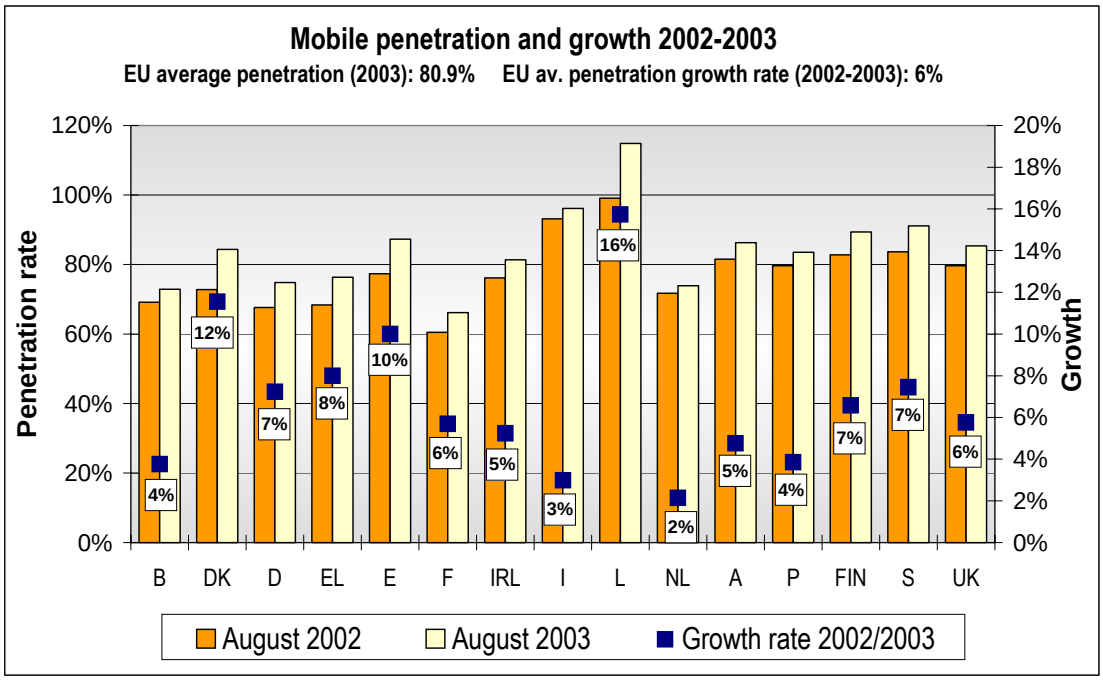


Figure 37

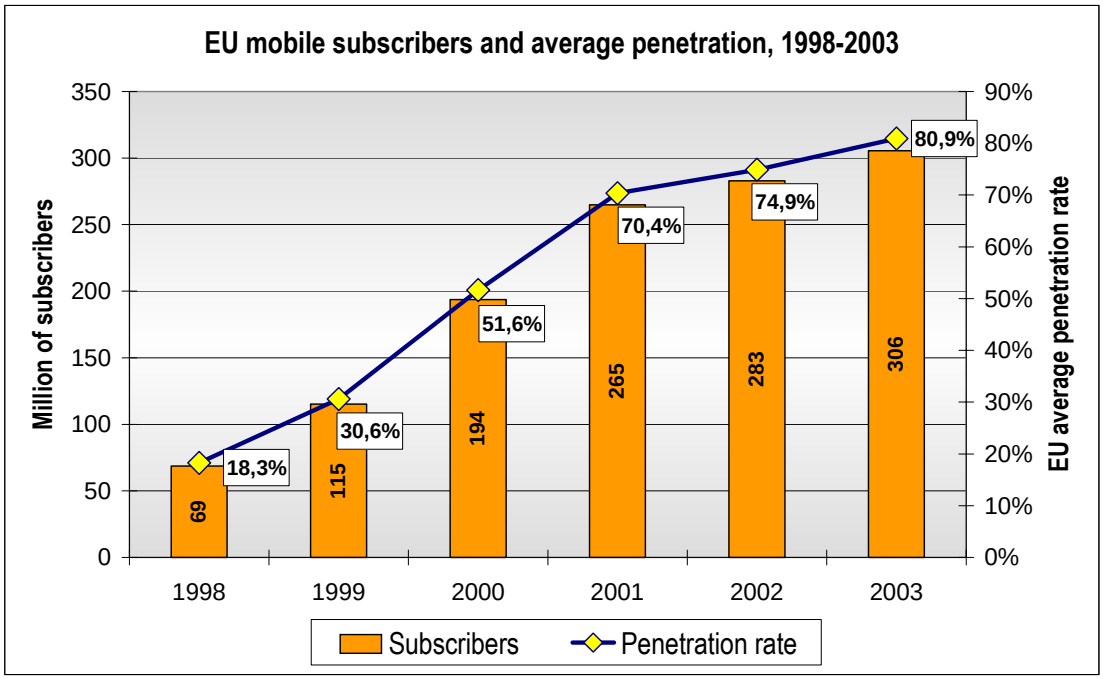
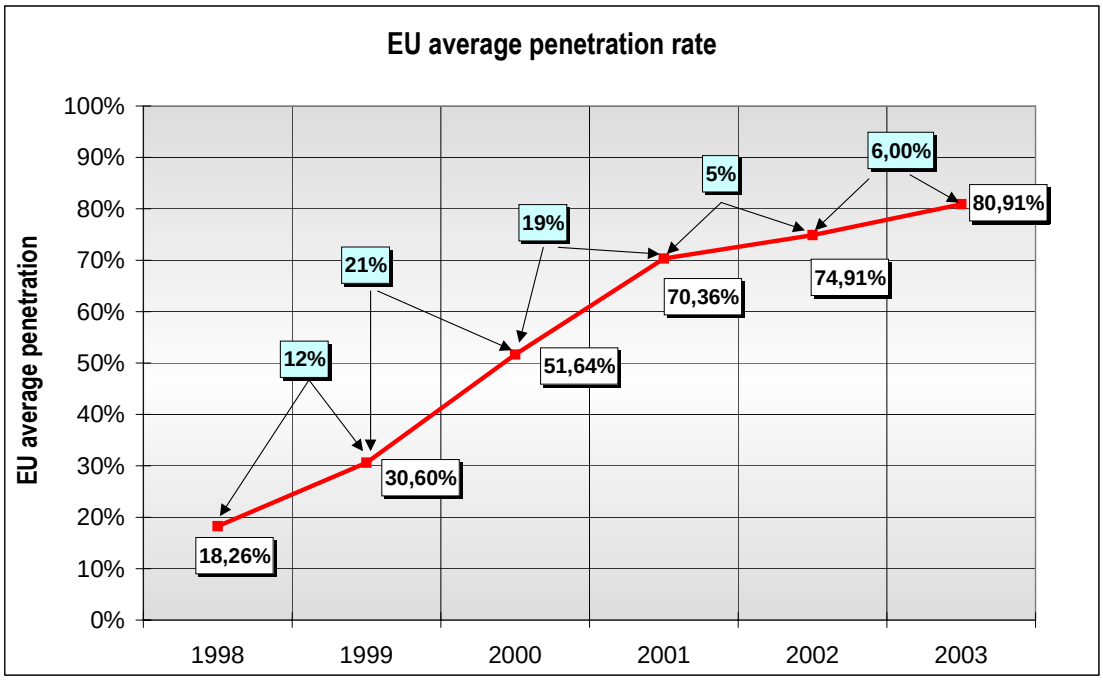


Figure 38



4.2. PLAYERS IN THE MOBILE MARKET

This section shows the number of mobile licences granted in each Member State for the provision of analogue, GSM 900, DCS 1800 and UMTS services.

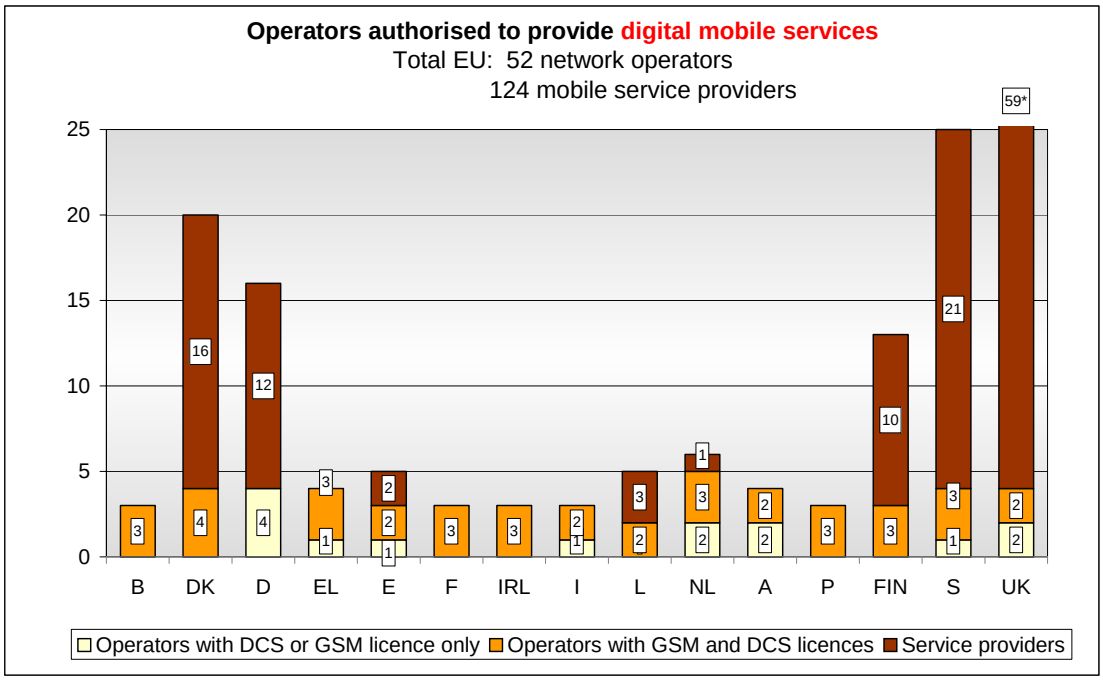
The data on the number of licensed operators have been provided by the national regulatory authorities and indicate the position in August 2003.

The following chart shows the number of operators licensed to provide digital mobile services (second-generation) rather than the number of licences issued in each country. The number of operators indicates the real magnitude of the choice of operators for customers of digital mobile services, since very often operators have licences for both GSM 900 and DCS 1800. Mobile network operators have been identified as having only GSM 900 or only DCS 1800 frequencies, or both (in which case they have usually been granted a GSM 900 licence which has subsequently been extended to the DCS 1800 band).

Information on mobile service providers[17] has been included where available (without distinction between local and national coverage).

[17] Mobile service providers are defined as entities authorised to offer mobile service under their own brand name (dealing with marketing, billing, etc.), using a third party's mobile network.

Figure 39



* Values not to scale.

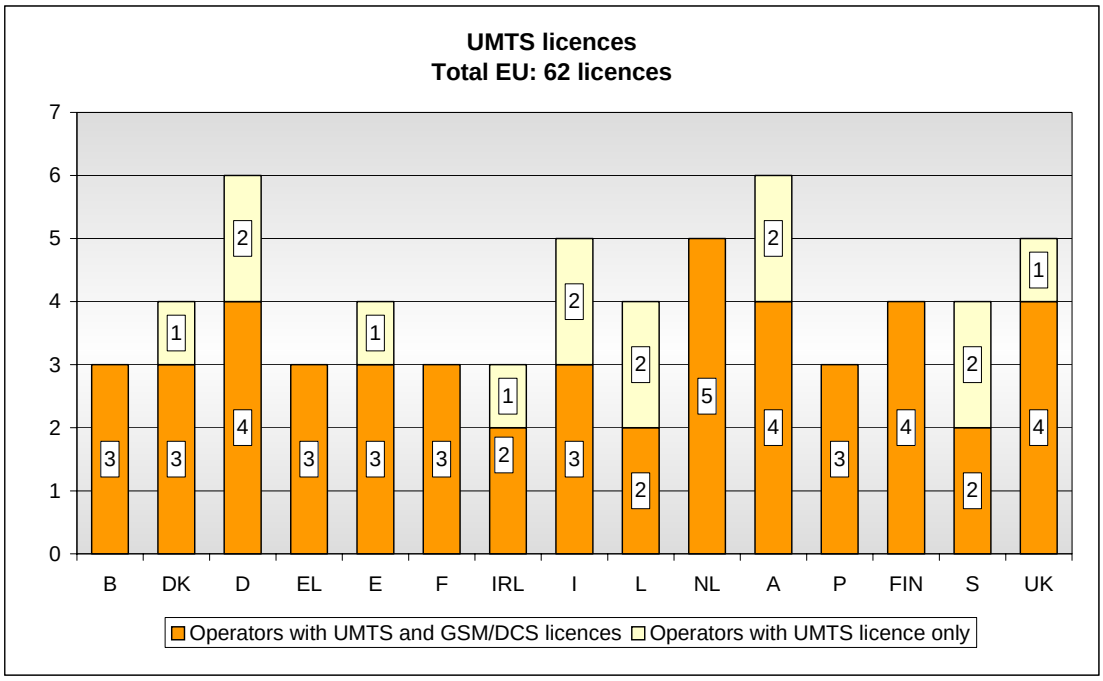
- Figures for Finland do not include 1 local GSM operator belonging to the Finnet Group (Alands).
- The figure for France does not include 2 analogue, 6 GSM and DCS local licences granted to the subsidiaries of the licensed mobile operators for the overseas departments[18].

There are 3 analogue licences for mobile services still active in EU: in Spain, in Italy and in Sweden. Their phase-out is scheduled for the 1st January 2007 for Sweden and Spain and for the end of 2005 for Italy.

The following chart shows the number of UMTS licences granted in Europe. The great majority of licences have been granted to players active in the second generation market, and 14 licences have been granted to new entrants.

[18] Département de la Réunion, Antilles Françaises, Guyane; Île de Saint Martin et Saint Barthélémy)

Figure 40



The figure for Finland does not include a local service provider.

4.3. OPERATORS' MARKET SHARES

The following charts show the market shares, in terms of subscribers, of the leading operator and of the main competitors in the second generation mobile market.

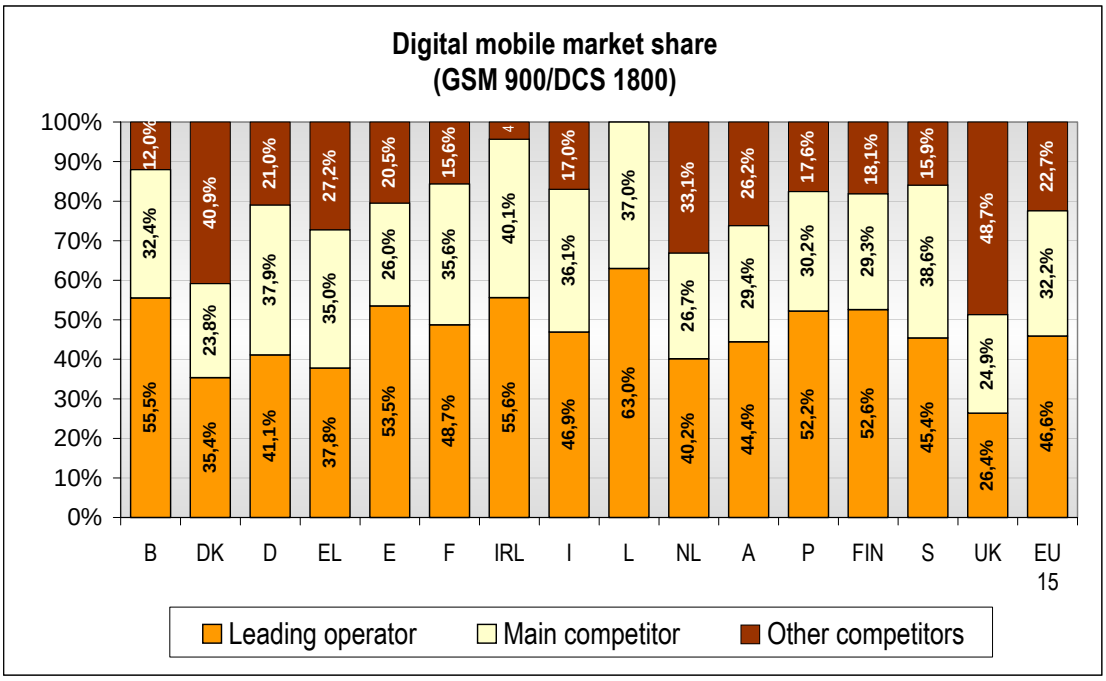
Operators' market shares have been calculated on the overall mobile market (including analogue, DCS 1800 and GSM 900 subscribers). There are analogue subscribers in Spain, Italy and Sweden.

Data concerning shares of the mobile market are based on estimates on the number of mobile subscribers, taken from FT Mobile Communications, and refer to August 2003. As already indicated, NRAs have checked these estimates.

Apart from the United Kingdom, the leading operator is a subsidiary of the incumbent fixed network operator.

Figure 41 shows the shares of the leading operator, the main competitor and the other competitors on the digital mobile market only (100%).

Figure 41



The following chart shows the share of the overall mobile market held by the mobile subsidiary of the incumbent fixed operator. Where the incumbent still operates the analogue service, the shares of the overall mobile market of their analogue and of their digital services are indicated separately.

Figure 42

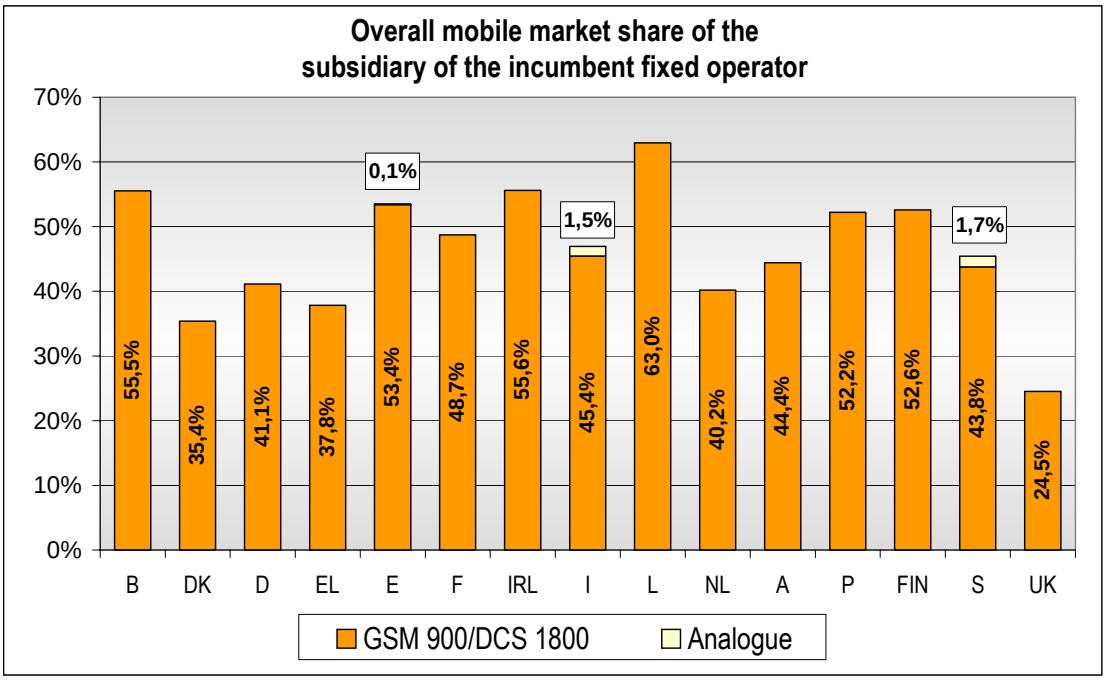
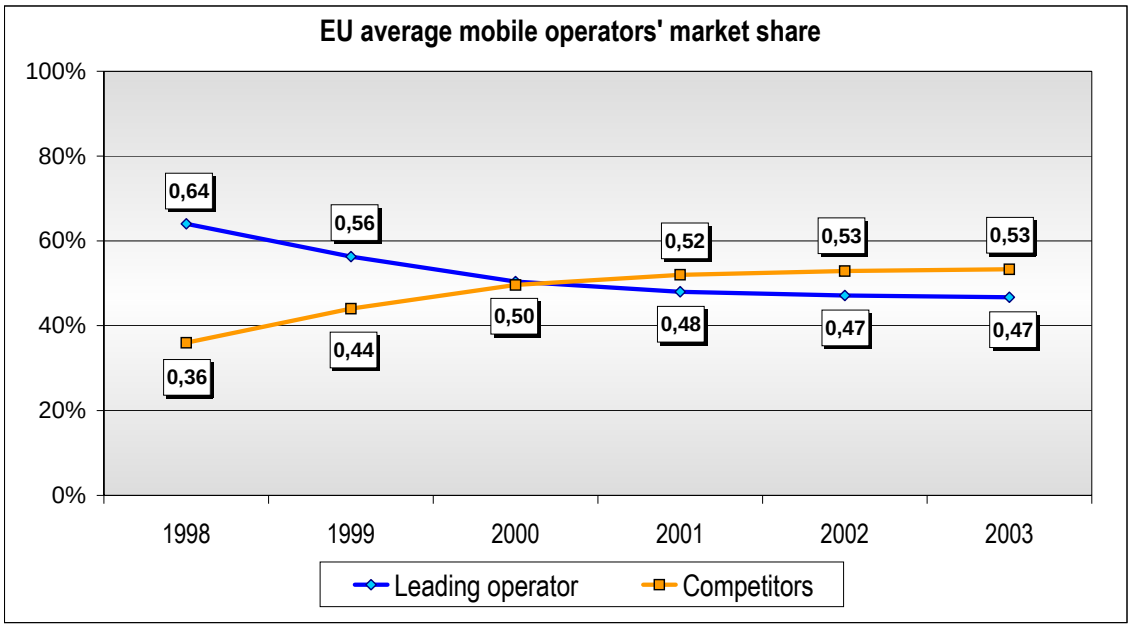


Figure 43



4.4. MOBILE BASKET TARIFFS

The analysis of national (as opposed to roaming) mobile services tariffs is based on the OECD baskets for digital mobile services. Due to significant changes in usage patterns the OECD baskets have been redefined with effect from August 2002. The new baskets are not compatible with the "old" ones, in that they contain an SMS element, they include calls to several mobile networks, and they do not cover international calls.

The new, revised baskets are used in this analysis. There are 3 different baskets, based on low, medium and high usage levels. All packages analysed in this study are post-paid packages. Some of the main properties of the new OECD baskets are:

Low usage basket with:
25 outgoing calls per month + 30 SMS messages
42% of calls are to fixed line phones, 58% to mobile phones

Medium usage basket with:
75 outgoing calls per month + 35 SMS messages
36% of calls are to fixed line phones, 64% to mobile phones

High usage basket with:
150 outgoing calls per month + 42 SMS messages
40% of calls are to fixed line phones, 60% to mobile phones

Each basket also has a unique definition of time of day distribution and call duration, and includes the monthly rental, and any registration charges distributed over 3 years.

The two most prominent operators in each country are covered, based on available subscriber numbers. All relevant packages from each operator are considered, but the final results presented here only show the cheapest package for each basket.

A full description of the methodology can be found at the end of this report.

Figure 44

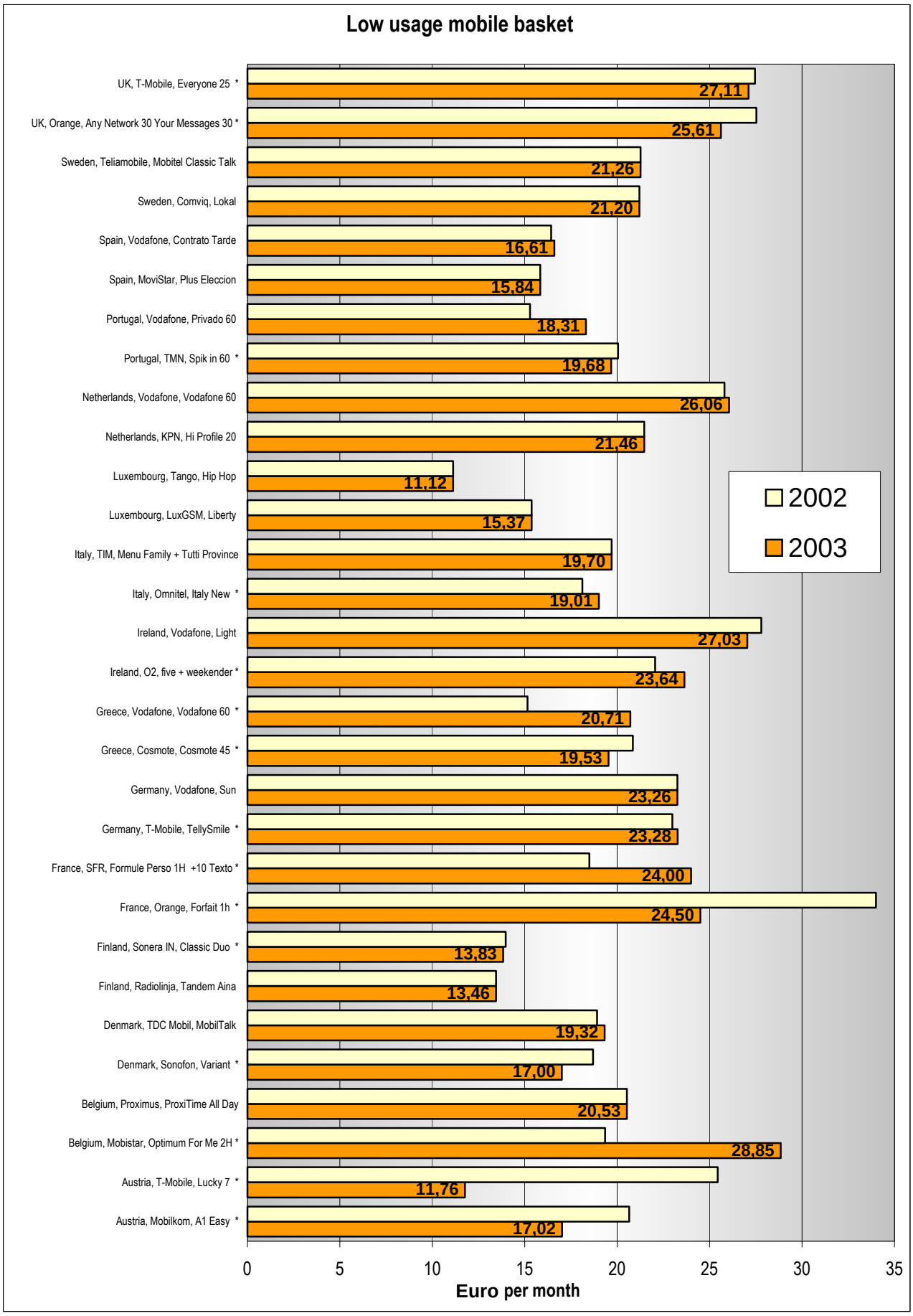

Low usage mobile basket
UK, T-Mobile, Everyone 25 *
27,11
UK, Orange, Any Network 30 Your Messages 30 *
25,61
Sweden, Teliamobile, Mobitel Classic Talk
21,26
Sweden, Comviq, Lokal
21,20
Spain, Vodafone, Contrato Tarde
16,61
Spain, MoviStar, Plus Eleccion
15,84
Portugal, Vodafone, Privado 60
18,31
Portugal, TMN, Spik in 60 *
19,68
Netherlands, Vodafone, Vodafone 60
26,06
Netherlands, KPN, Hi Profile 20
21,46
Luxembourg, Tango, Hip Hop
11,12
Luxembourg, LuxGSM, Liberty
15,37
Italy, TIM, Menu Family + Tutti Province
19,70
Italy, Omnitel, Italy New *
19,01
Ireland, Vodafone, Light
27,03
Ireland, O2, five + weekender *
23,64
Greece, Vodafone, Vodafone 60 *
20,71
Greece, Cosmote, Cosmote 45 *
19,53
Germany, Vodafone, Sun
23,26
Germany, T-Mobile, TellySmile *
23,28
France, SFR, Formule Perso 1H +10 Texto *
24,00
France, Orange, Forfait 1h *
24,50
Finland, Sonera IN, Classic Duo *
13,83
Finland, Radiolinja, Tandem Aina
13,46
Denmark, TDC Mobil, MobilTalk
19,32
Denmark, Sonofon, Variant *
17,00
Belgium, Proximus, ProxiTime All Day
20,53
Belgium, Mobistar, Optimum For Me 2H *
28,85
Austria, T-Mobile, Lucky 7 *
11,76
Austria, Mobilkom, A1 Easy *
17,02
2002
2003
0
5
10
15
20
25
30
35
Euro per month

Figure 45

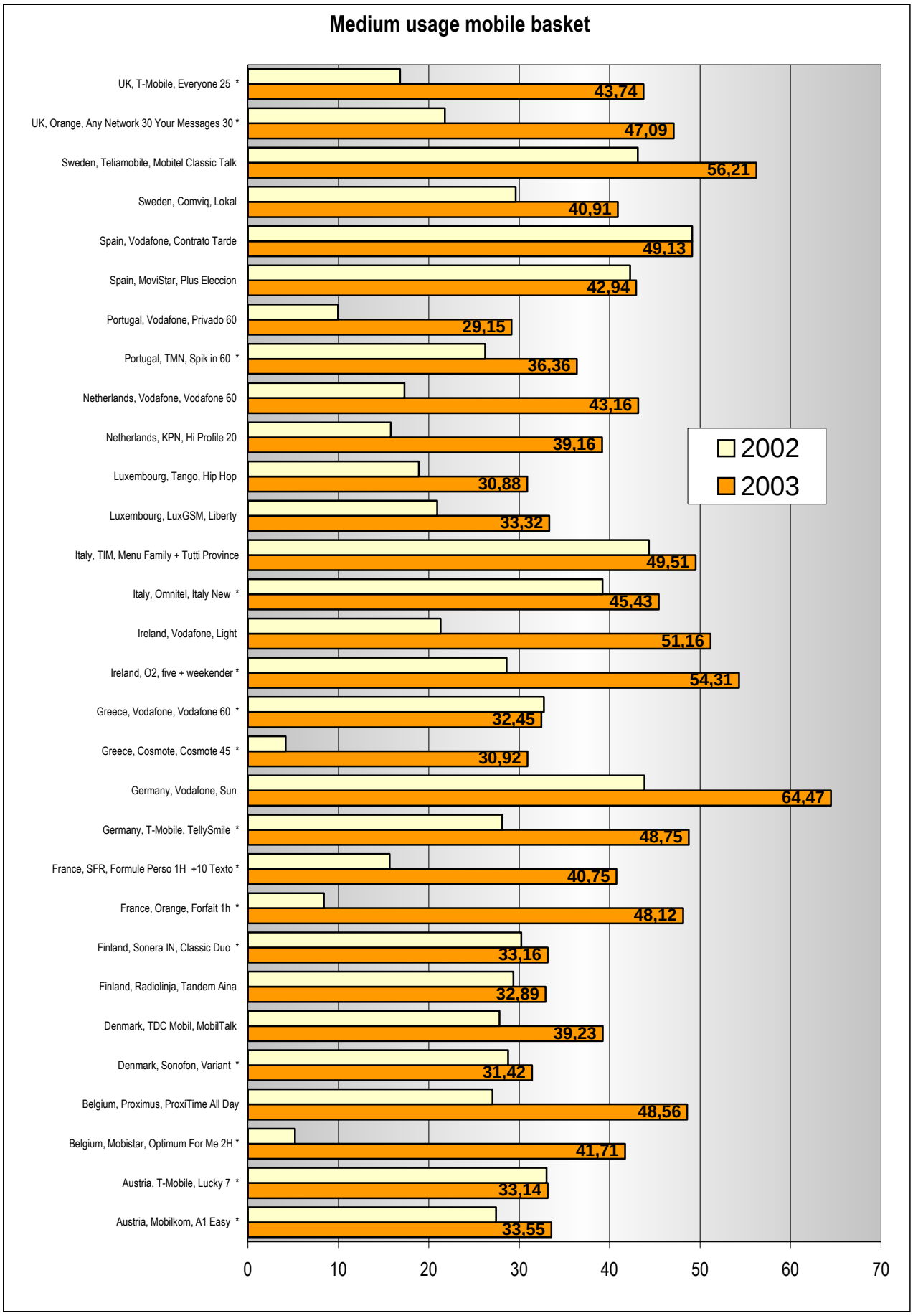
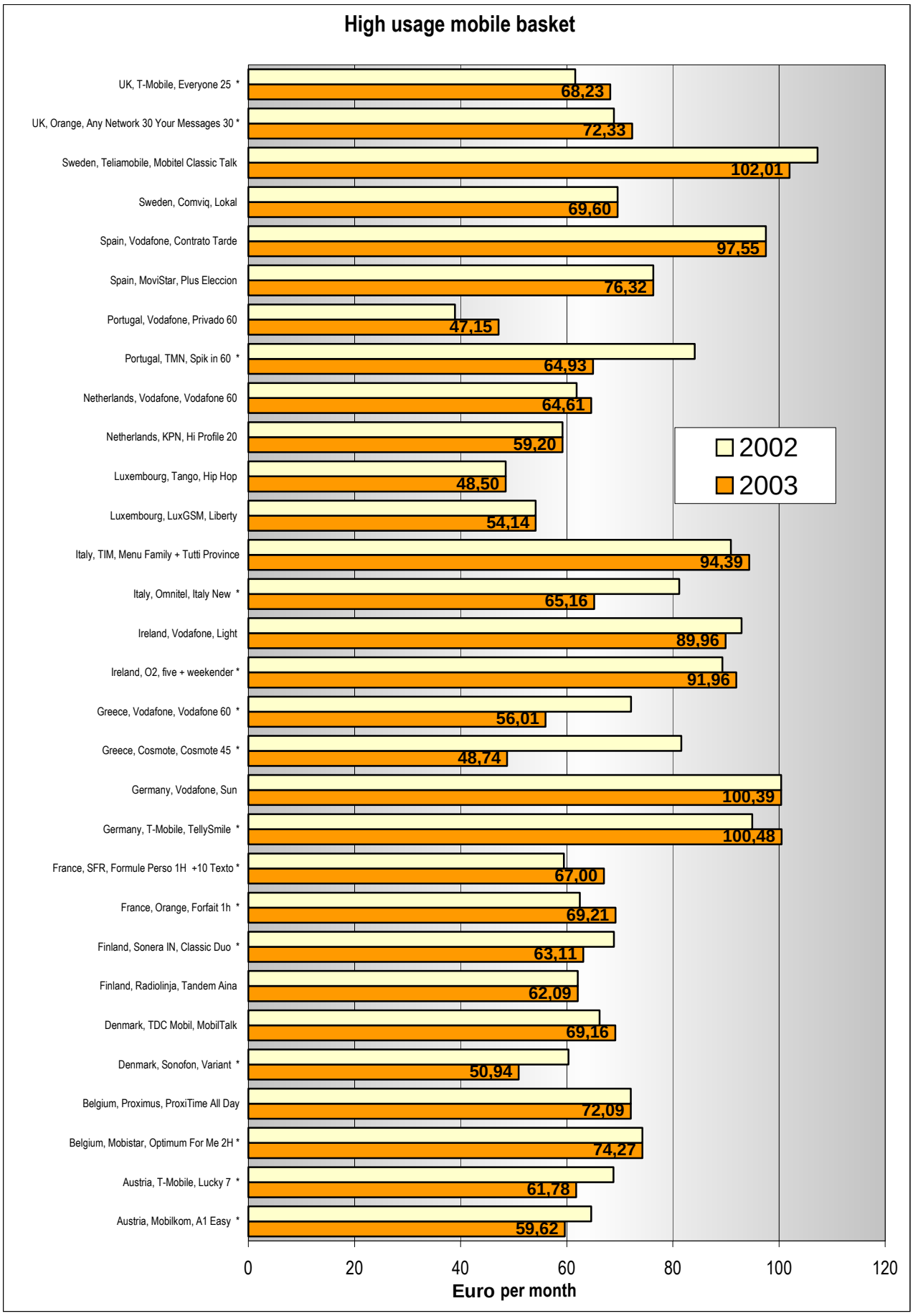

Medium usage mobile basket
UK, T-Mobile, Everyone 25 *
43,74
UK, Orange, Any Network 30 Your Messages 30 *
47,09
Sweden, Teliamobile, Mobitel Classic Talk
56,21
Sweden, Comviq, Lokal
40,91
Spain, Vodafone, Contrato Tarde
49,13
Spain, MoviStar, Plus Eleccion
42,94
Portugal, Vodafone, Privado 60
29,15
Portugal, TMN, Spik in 60 *
36,36
Netherlands, Vodafone, Vodafone 60
43,16
Netherlands, KPN, Hi Profile 20
39,16
Luxembourg, Tango, Hip Hop
30,88
Luxembourg, LuxGSM, Liberty
33,32
Italy, TIM, Menu Family + Tutti Province
49,51
Italy, Omnitel, Italy New *
45,43
Ireland, Vodafone, Light
51,16
Ireland, O2, five + weekender *
54,31
Greece, Vodafone, Vodafone 60 *
32,45
Greece, Cosmote, Cosmote 45 *
30,92
Germany, Vodafone, Sun
64,47
Germany, T-Mobile, TellySmile *
48,75
France, SFR, Formule Perso 1H +10 Texto *
40,75
France, Orange, Forfait 1h *
48,12
Finland, Sonera IN, Classic Duo *
33,16
Finland, Radiolinja, Tandem Aina
32,89
Denmark, TDC Mobil, MobilTalk
39,23
Denmark, Sonofon, Variant *
31,42
Belgium, Proximus, ProxiTime All Day
48,56
Belgium, Mobistar, Optimum For Me 2H *
41,71
Austria, T-Mobile, Lucky 7 *
33,14
Austria, Mobilkom, A1 Easy *
33,55
2002
2003
0
10
20
30
40
50
60
70

Figure 46


High usage mobile basket
UK, T-Mobile, Everyone 25 *
68,23
UK, Orange, Any Network 30 Your Messages 30 *
72,33
Sweden, Teliamobile, Mobitel Classic Talk
102,01
Sweden, Comviq, Lokal
69,60
Spain, Vodafone, Contrato Tarde
97,55
Spain, MoviStar, Plus Eleccion
76,32
Portugal, Vodafone, Privado 60
47,15
Portugal, TMN, Spik in 60 *
64,93
Netherlands, Vodafone, Vodafone 60
64,61
Netherlands, KPN, Hi Profile 20
59,20
Luxembourg, Tango, Hip Hop
48,50
Luxembourg, LuxGSM, Liberty
54,14
Italy, TIM, Menu Family + Tutti Province
94,39
Italy, Omnitel, Italy New *
65,16
Ireland, Vodafone, Light
89,96
Ireland, O2, five + weekender *
91,96
Greece, Vodafone, Vodafone 60 *
56,01
Greece, Cosmote, Cosmote 45 *
48,74
Germany, Vodafone, Sun
100,39
Germany, T-Mobile, TellySmile *
100,48
France, SFR, Formule Perso 1H +10 Texto *
67,00
France, Orange, Forfait 1h *
69,21
Finland, Sonera IN, Classic Duo *
63,11
Finland, Radiolinja, Tandem Aina
62,09
Denmark, TDC Mobil, MobilTalk
69,16
Denmark, Sonofon, Variant *
50,94
Belgium, Proximus, ProxiTime All Day
72,09
Belgium, Mobistar, Optimum For Me 2H *
74,27
Austria, T-Mobile, Lucky 7 *
61,78
Austria, Mobilkom, A1 Easy *
59,62
2002
2003
0
20
40
60
80
100
120
Euro per month

5 BROADBAND ACCESS AND PRICING

5.1. BROADBAND ACCESS

This section provides data on the number and type of broadband lines supplied in the EU by both incumbent operators and new entrants. It also contains information on access lines provided by means of alternative technologies such as wireless access (WLL), satellite and cable modems.

Information have been collected from the national regulatory authorities though the ONP COM02-18 questionnaire on data for local broadband access. Given the rapid developments in this sector, it has been agreed with NRAs to update the ONP questionnaire data on a regular basis in January, July and October. Unless otherwise stated data below refer to the situation as at 1st July 2003.

For the collection of data the following concepts have been used:

- "New entrants" refers not only to alternative telecommunications operators, but also include the internet service providers (ISPs);
- In the case of full unbundling, the copper pair is rented to a third party for its exclusive use;
- As fully unbundled lines (ULL) supplied by incumbent to new entrants could be used for services other than broadband (voice telephony for example) the total number of ULL for access to internet might be lower than the total number of ULL;
- In the case of shared access, the incumbent continues to provide telephony service, while the new entrant delivers high speed data services over the same local loop;
- Bitstream access refers to the situation where the incumbent installs a high-speed access link to the customer premises and then makes this access link available to third parties, to enable them to provide high-speed services to customers. Bitstream depends in part on the PSTN and may include other networks such as the ATM network, and bitstream access is a wholesale product that consists of the provision of transmission capacity in such a way as to allow new entrants to offer their own, value-added services to their clients. The incumbent may also provide transmission services to its competitor, to carry traffic to a 'higher' level in the network hierarchy where new entrants may already have a broadband point of presence.;
- In contrast to bitstream access, simple resale occurs where the new entrant receives and sells on to end-users - with no possibility of value-added features to the DSL part of the service - a product that is commercially similar to the DSL product provided by the incumbent to its own retail customers, irrespective of the ISP service that may be packaged with it;
- Retail broadband access refers to the access provided to the end users;
- Incumbents' DSL lines refers to the lines provided to end users by the incumbent, its subsidiaries or partners;
- "Other means of accessing the internet" indicates connections by means of satellite, fibre optic, powerline communications, etc;

5.1.1. Wholesale access

This section shows the availability of wholesale access supplied by incumbents to new entrants. Separate figures are provided for full unbundled lines, shared access and bitstream access (wholesale DSL lines.

Table 1 Number of agreements for full ULL, shared access, bitstream access and resale, 2002-2003.

	N. of agreements on fully unbundled lines		N. of agreements on shared lines		N. of agreements Wholesale DSL lines supplied. Bitstream access		N. agreements Wholesale DSL lines supplied. Simple resale	
	2002	2003	2002	2003	2002	2003	2002	2003
B	7	8	4	8	4	9	12	21
DK	16	13	5	4	5	7	1	0
D	91	74	3	5	2	0	52	0
EL	2	7	0	0	0	0	0	0
E	6	9	6	9	38	40	n.a.	n.a.
F	9	9	9	9	4	5	5	20
IRL	1	1	1	1	0	3	0	0
I	31	31	2	2	50	45	n.a.	0
L	n.a.	2	n.a.	2	n.a.	0	n.a.	1
NL	10	12	10	12	n.a.	1	n.a.	0
A	12	17	0	0	24	24	0	0
P	4	4	n.a.	n.a.	4	8	n.a.	0
FIN	180	n.a.	80	n.a.	60	n.a.	35	n.a.
S	33	63	33	63	4	23	5	11
UK	53	57	5	7	309	n.a.	0	535
Tot. EU	**455**	**307**	**158**	**122**	**504**	**165**	**110**	**588**

Figure 47

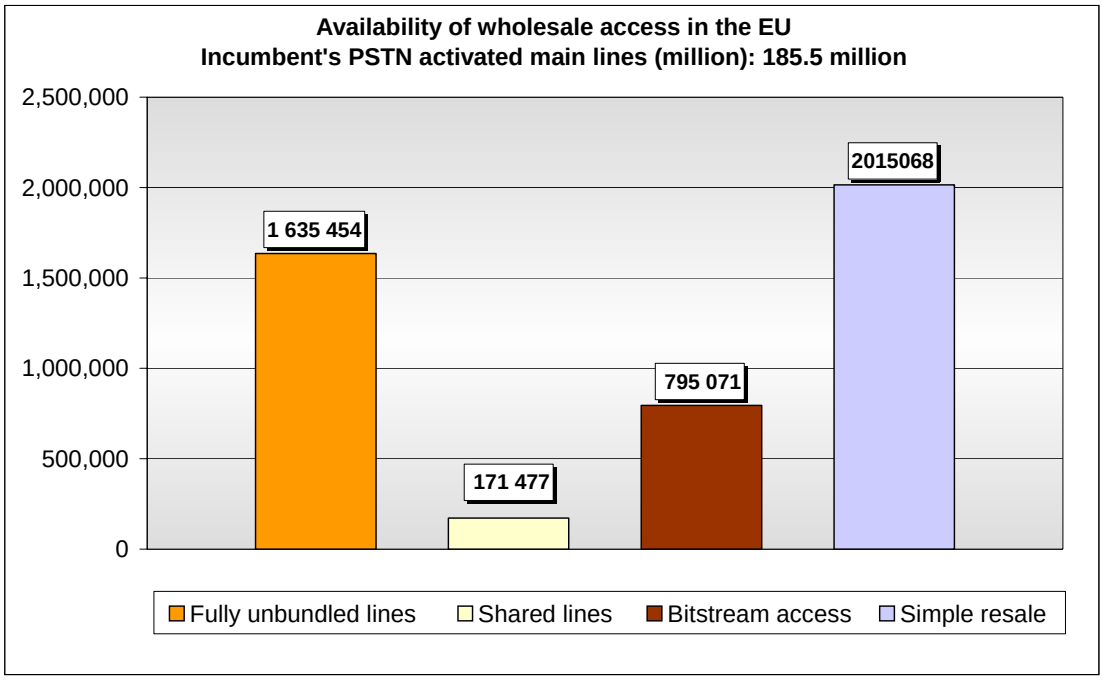


Figure 48

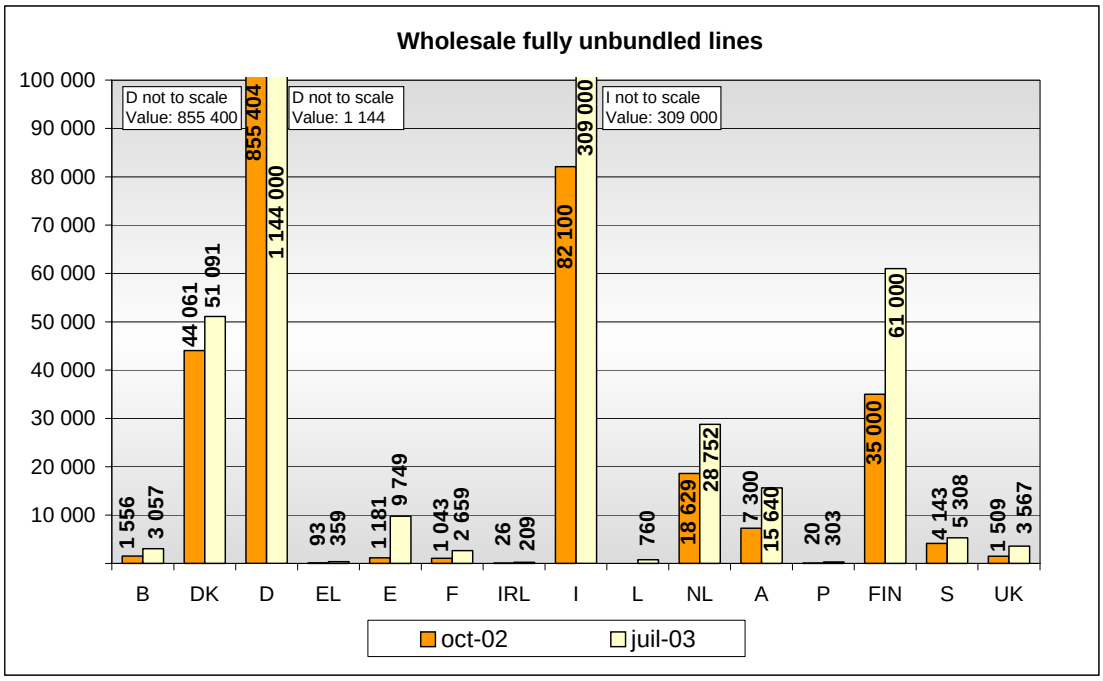


Figure 49

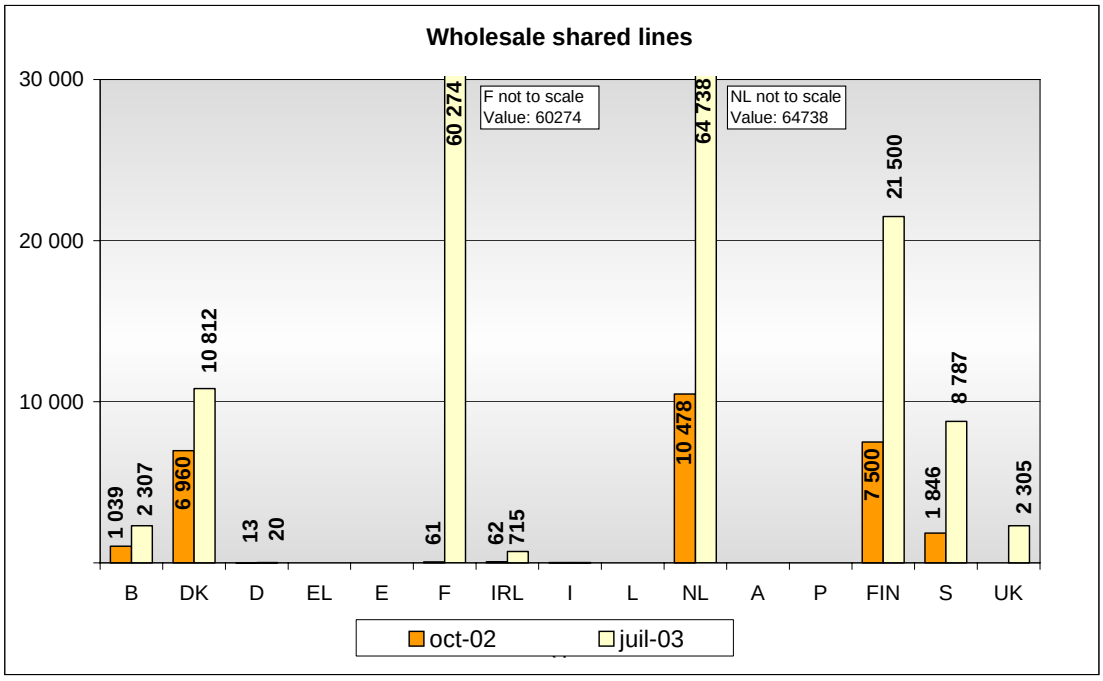
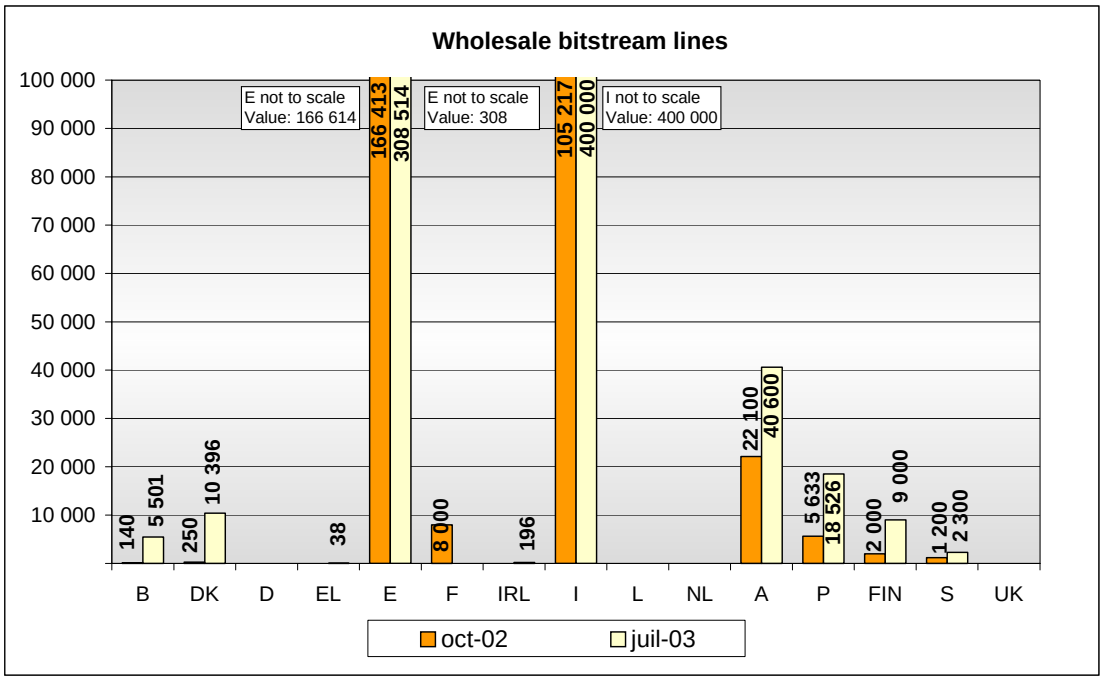


Figure 50


Wholesale bitstream lines
100 000
90 000
80 000
70 000
60 000
50 000
40 000
30 000
20 000
10 000
E not to scale
Value: 166 614
E not to scale
Value: 308
I not to scale
Value: 400 000
140
5 501
250
10 396
38
166 413
308 514
8 000
196
105 217
400 000
22 100
40 600
5 633
18 526
2 000
9 000
1 200
2 300
B
DK
D
EL
E
F
IRL
I
L
NL
A
P
FIN
S
UK
oct-02
juil-03

5.1.2. Retail broadband access to internet

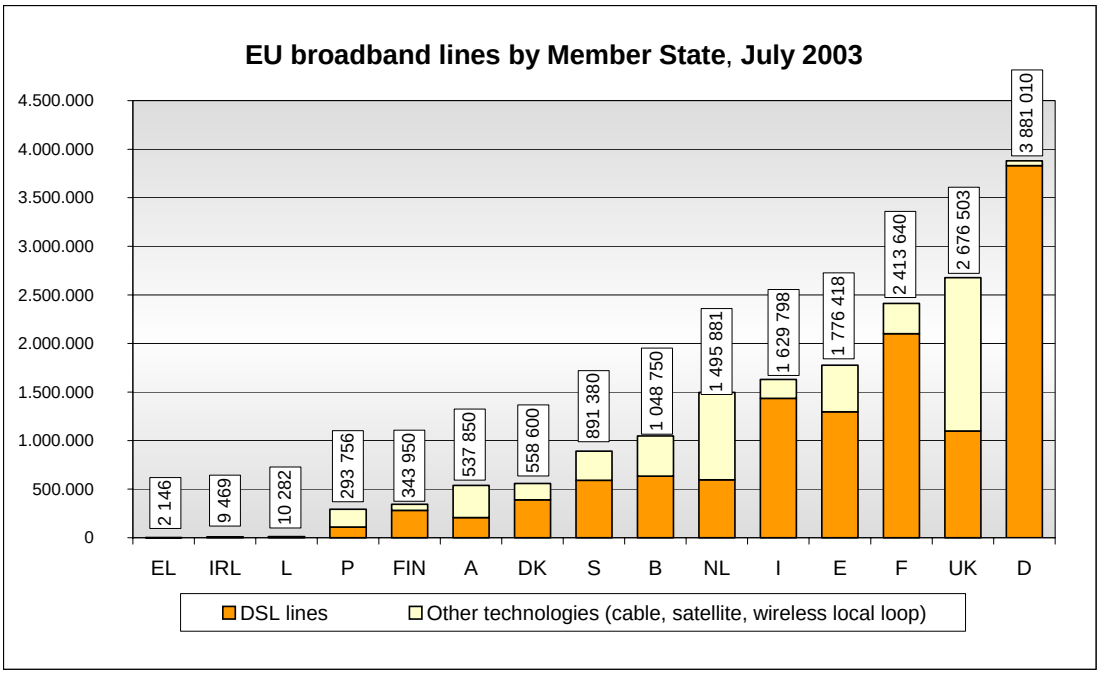
This section shows the availability of broadband access to internet for end-users provided by incumbents (their subsidiary or partners) and by new entrants (alternative telecom operators or Internet Service Providers).

Internet broadband access can be provided through different means: DSL lines, wireless local loop (WLL), cable TV access (cable modem), dedicated leased lines and other access (like satellite, fibre optic, powerline communications, etc.)

New entrants' DSL lines can be provided to end users by means of full unbundled, shared access, bitstream access or resale.

Figure 48 shows the total number of broadband access to internet for each Member States provided by both incumbents and new entrants and including all means of broadband connections.

Figure 51



Figures 52, 53 and 54 present the number of broadband lines per Member State in October 2002 and July 2003. Figure 52 displays the total number of retail broadband lines, while Figure 53 shows the DSL lines and Figure 54 the lines using other means.

Figure 52

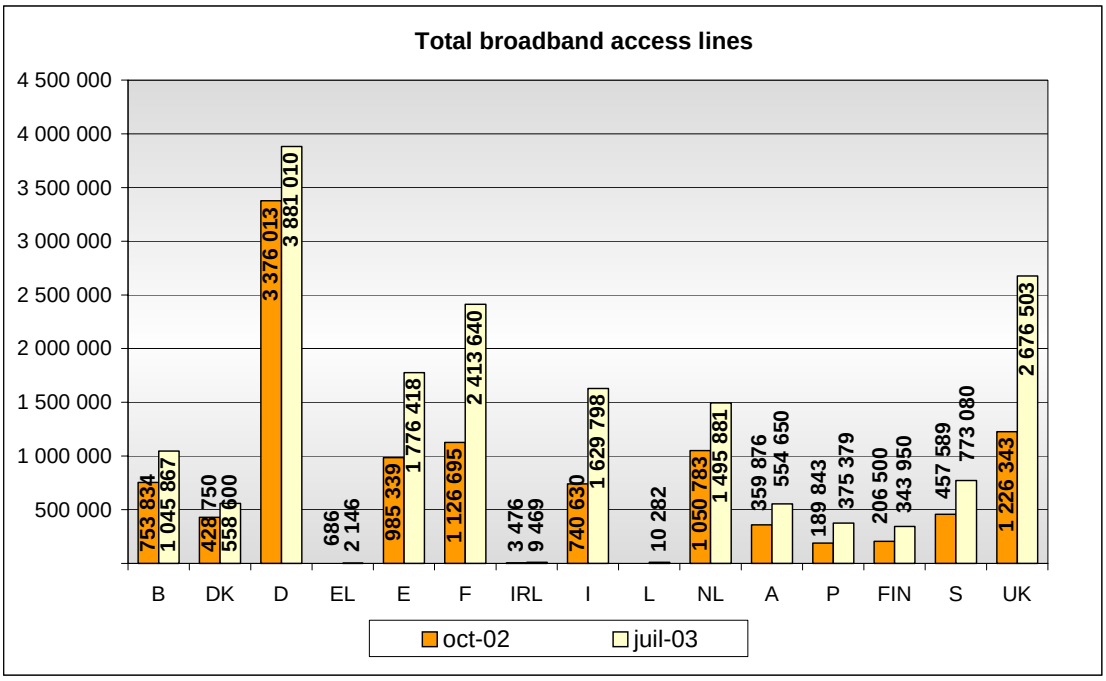


Figure 53

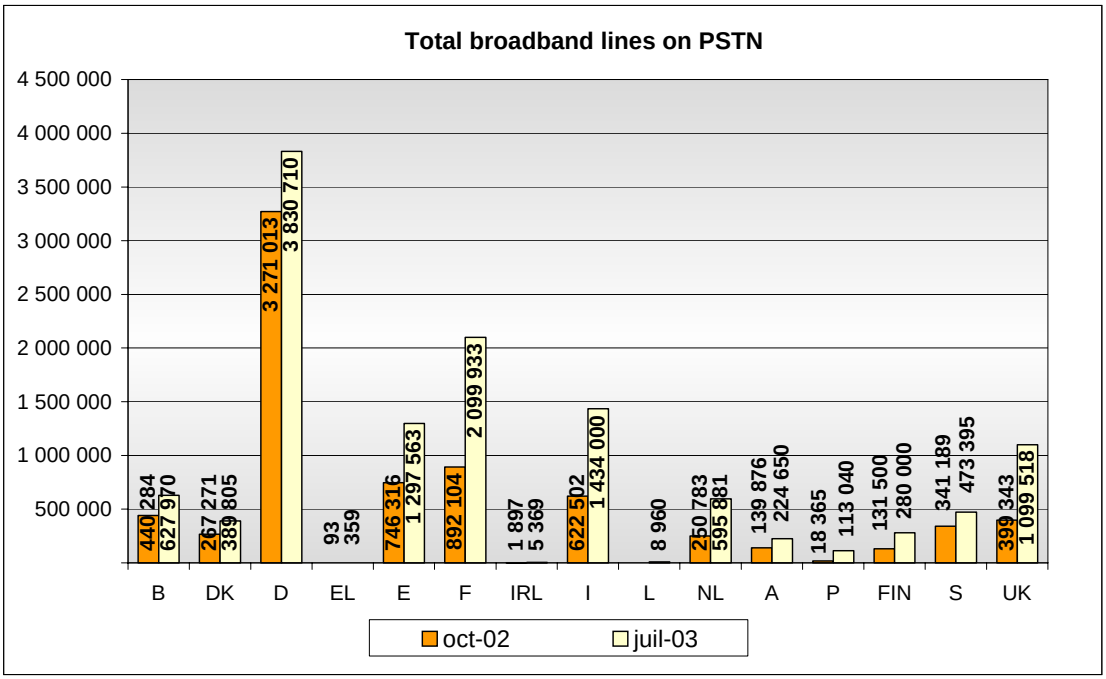


Figure 54

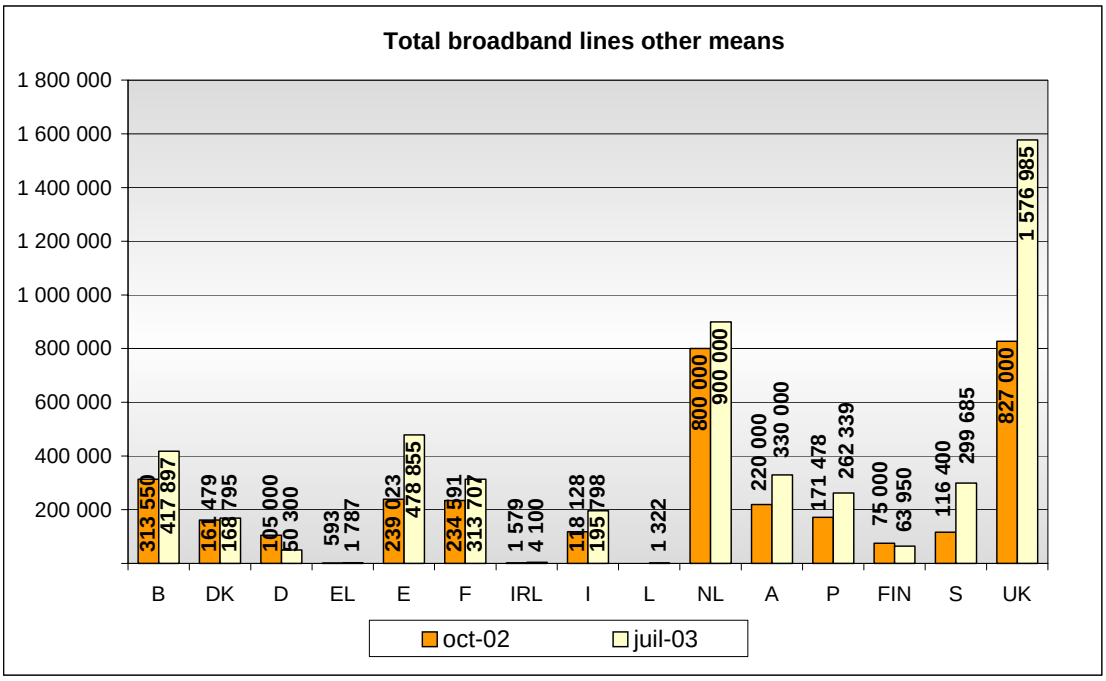


Figure 55 displays the breakdown of broadband lines by technology in each Member State.

Figure 55

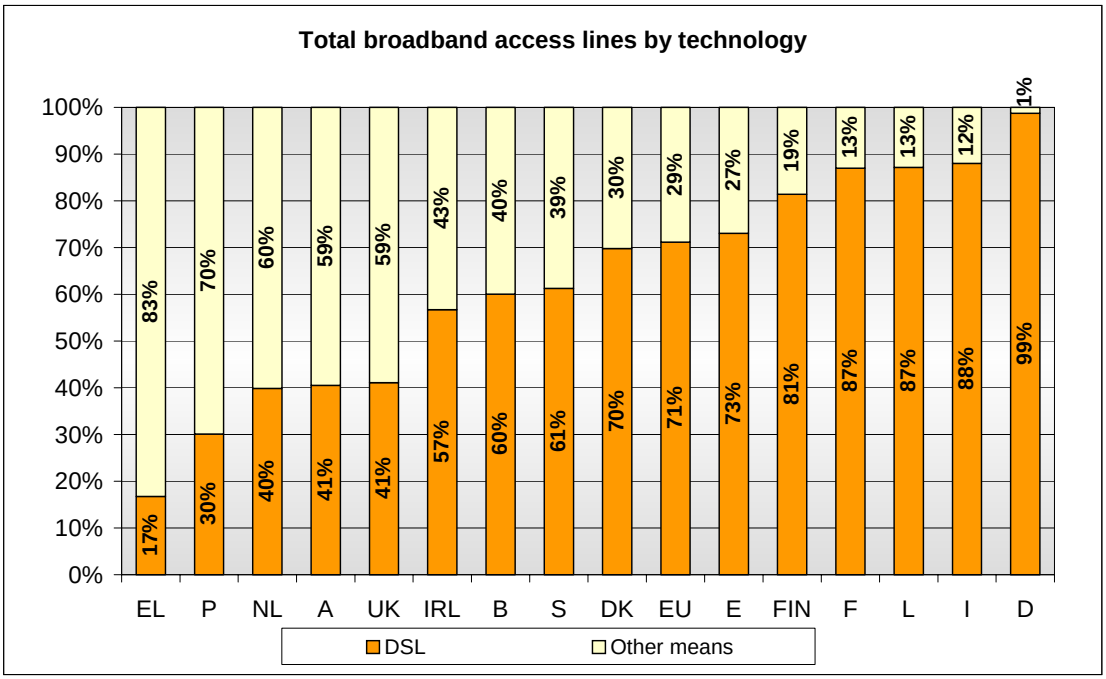


Figure 56 displays the breakdown of broadband lines by operator in each Member State.

Figure 56

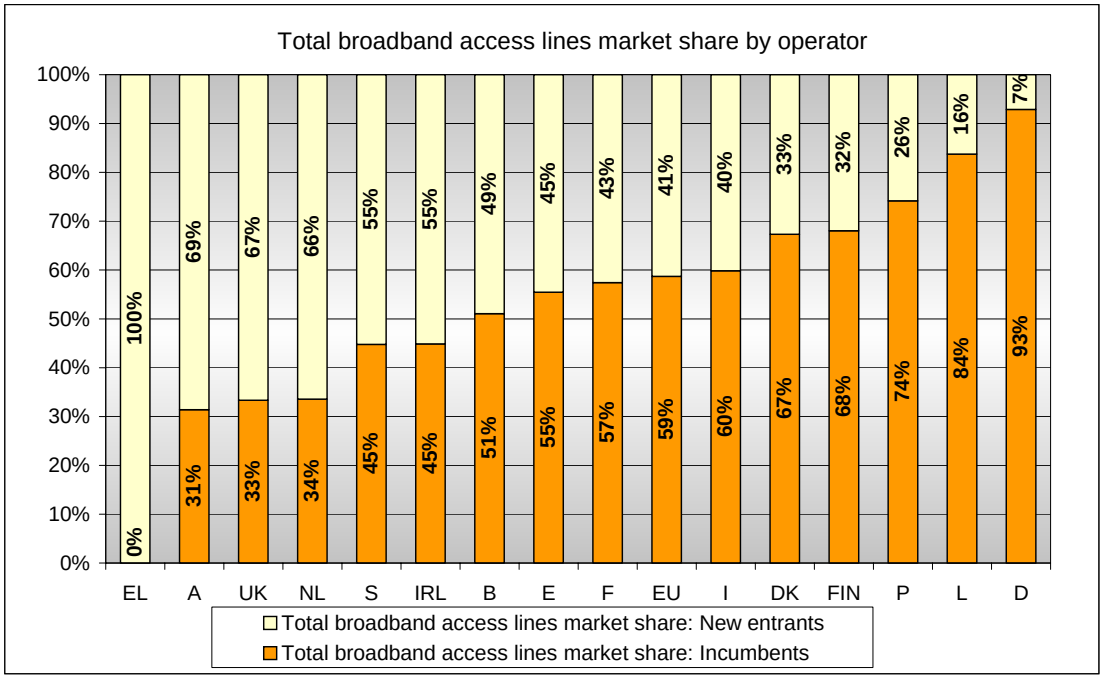
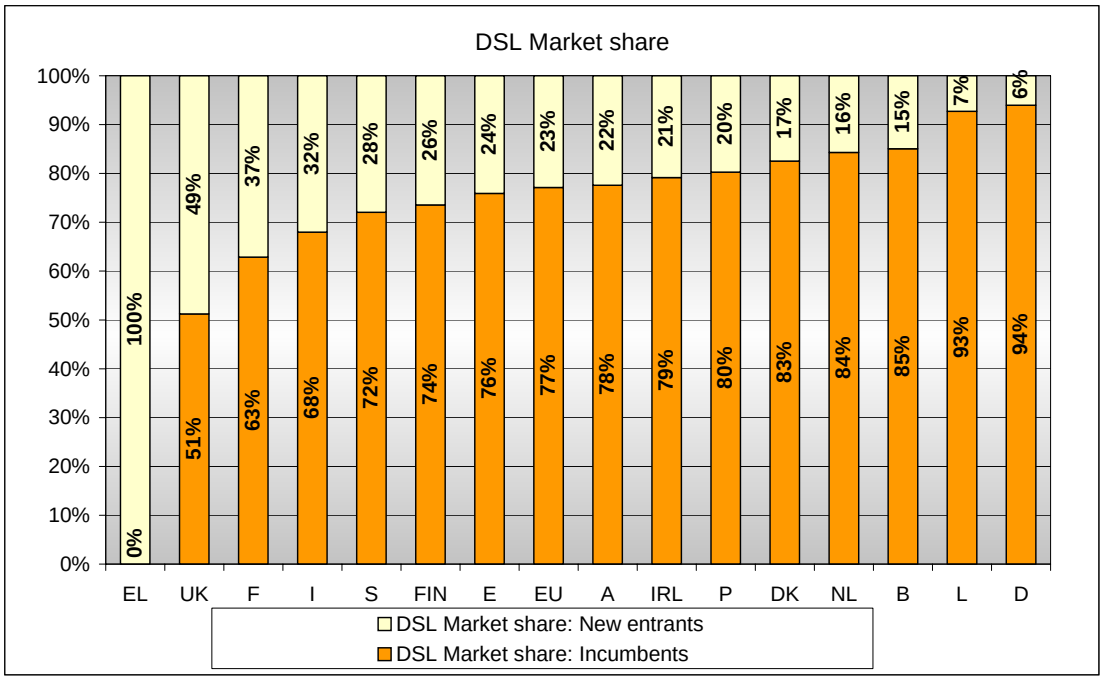


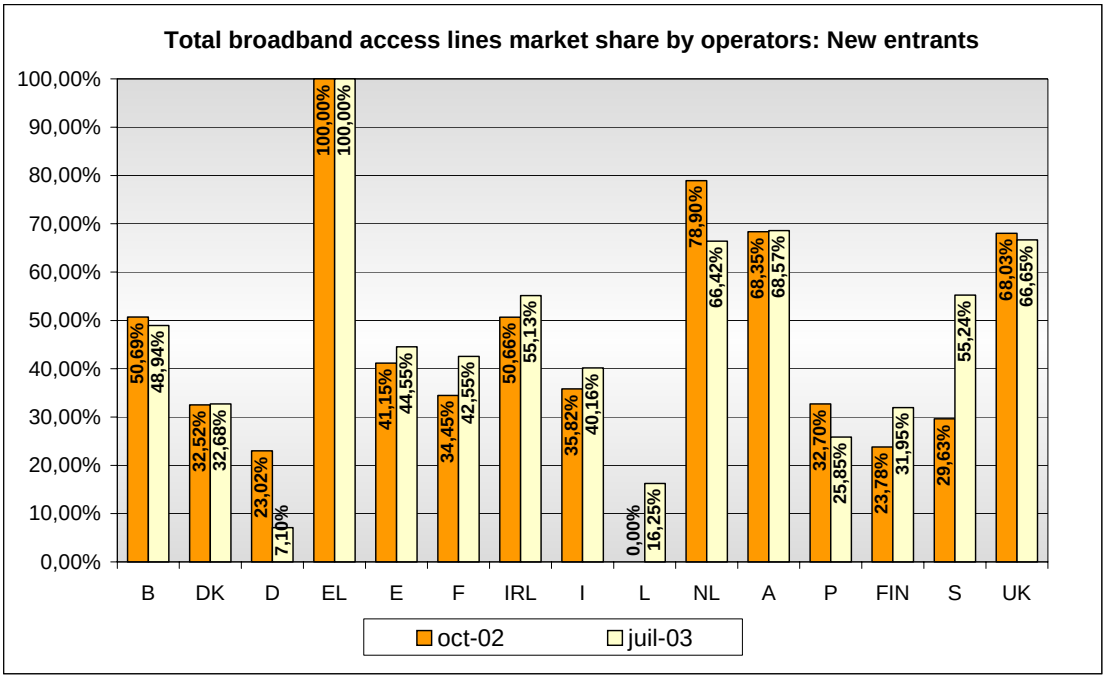
Figure 57 displays the market share of DSL lines by operator in each Member State.

Figure 57



The following chart shows the change in the percentage of broadband lines in the hands of the new entrants in the period from July 2002 to October 2003.

Figure 58



The following chart shows the change in the percentage of DSL lines in the hands of the incumbents in the same period.

Figure 59

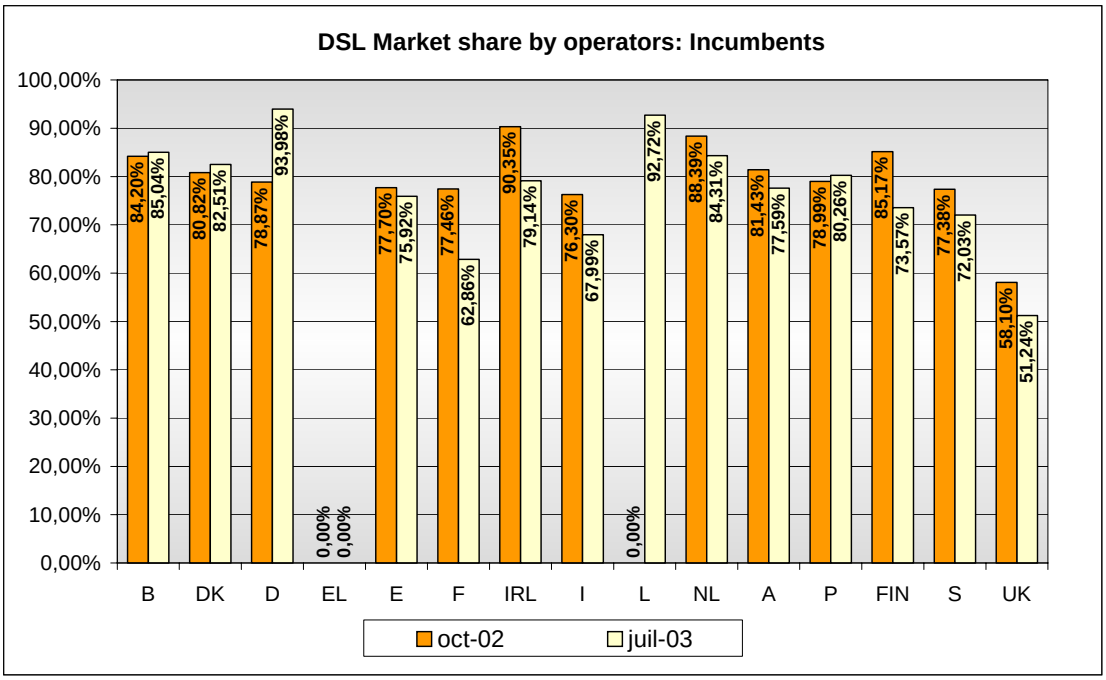
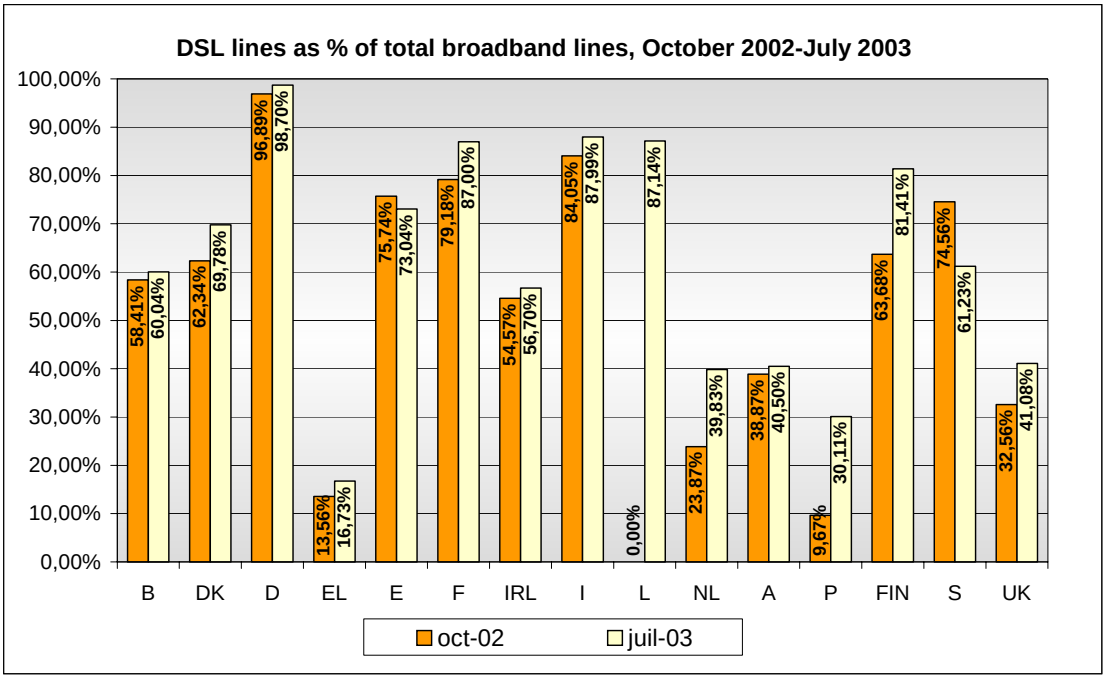


Figure 60 shows the evolution in the percentage of DSL lines over the total broadband lines.

Figure 60



The following chart displays the penetration rate of broadband lines measured as the total number of broadband lines divided by the population.

Figure 61

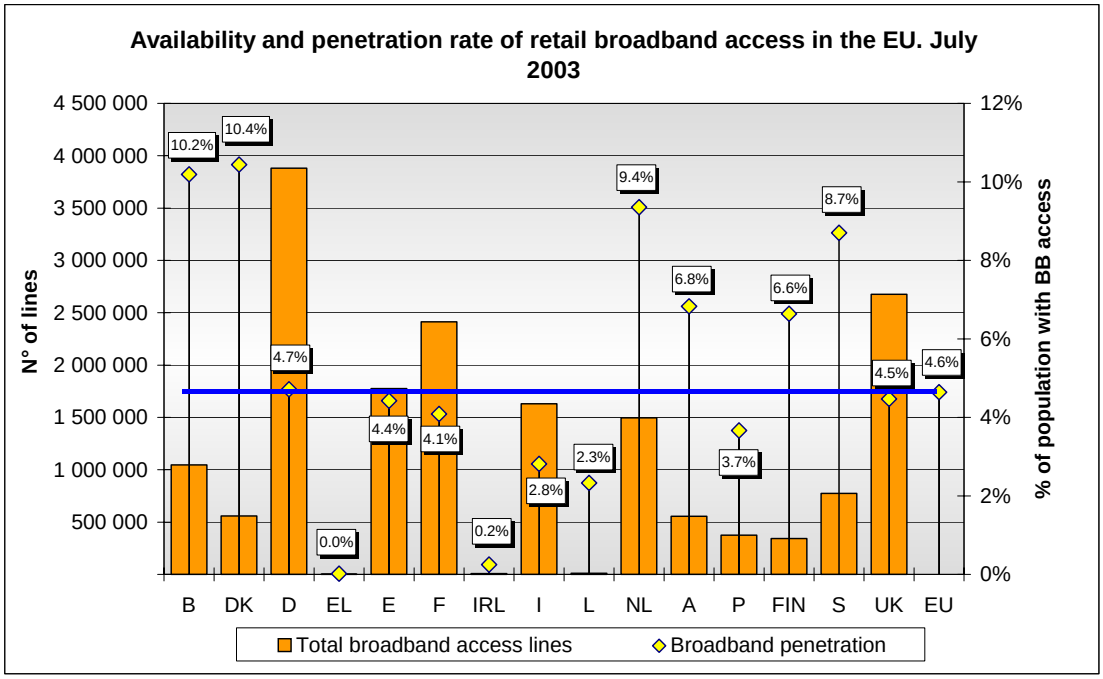
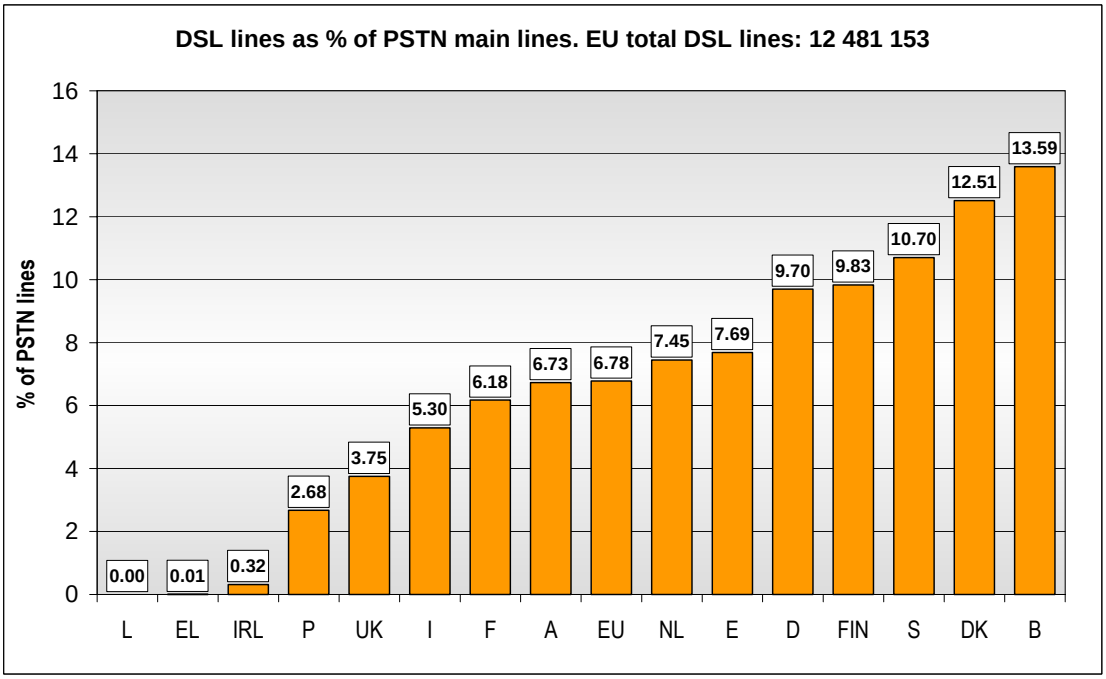


Figure 62 displays the number of DSL lines per 100 PSTN lines.

Figure 62



Availability of wholesale access at 1 July 03

Country	Incumbent's PSTN activated main lines	Fully unbundled lines			Shared access lines supplied by the incumbent to new entrants			Wholesale DSL lines supplied			
								Bitstream access		Simple resale	
		Unbundled lines	Requested lines	N. of agreements	Shared lines	Requested lines	N. of agreements	No. of lines	No. of agreements	Resale No. of lines	No. of agreements
B	4.620.560	3.057	134	8	2.307	42	8	5.501	9	88.416	21
DK	3.115.303	51.091	n.a.	13	10.812	n.a.	4	10.396	7	0	0
D	39.500.000	1.144.000	0	74	20	0	5	0	0	0	0
EL	5.485.020	359	60	7	0	8	0	38	0	0	0
E	16.884.000	9.749	1.648	9	0	0	9	308.514	40	NA	NA
F	34.000.000	2.659	0	9	60.274	10.000	9	n.a.	5	717.000	20
IRL	1.700.000	209	366	1	715	1.267	1	196	3	0	0
I	27.079.000	309.000	437.000	31	19	19	2	400.000	45	0	0
L	247.000	760	51	2	0	0	2	0	0	6	1
NL	8.000.000	28.752	n.a.	12	64.738	n.a.	12	0	1	0	0
A	3.090.000	15.640	1.300	17	0	0	0	36.900	24	0	0
P	4.092.000	303	21	4	0	0	n.a.	18.526	8	0	0
FIN	2.848.000	61.000	n.a.	n.a.	21.500	n.a.	n.a.	9.000	n.a.	0	n.a.
S	5.530.000	5.308	100	63	8.787	400	63	2.300	23	116.000	11
UK	29.300.000	3.567	188	57	2.305	101	7	N/A	N/A	1.093.646	535
EU	185.490.883	1 635 454	440868	307	171 477	11837	122	791 371	165	2015068	588

Fully unbundled lines	1635454
Shared access lines	171 477
Total unbundled lines	1 806 931
Total unbundled lines / PSTN lines	0,97%
Wholesale DSL-Bitstream access	791 371
Wholesale DSL-Simple resale	2015068
Wholesale DSL	2 806 439

Availability of incumbent's and new entrants' retail broadband access

July 03		New entrants' DSL lines on PSTN July 03					Incumbents' access lines by other means					New entrants' access lines by other means					Total number of new entrants	
	Incumbent's DSL lines	Full ULL	Shared access	Bitstream access	Resale	Total	WLL	Cable modem	Leased lines	Other	Tot.	WLL	Cable modem	Leased lines	Other	Tot.		
B	534008	1491	2159	2769	87543	93962	6	0	44	0	50	1	415617	2178	51	417847	21	B
DK	321645	47078	11986	9096	0	68160	0	50809	3604	0	54413	1211	106495	4656	2020	114382	19	DK
D	3600000	230690	20	0	0	230710	38	n.a.	n.a.	5262	5300	n.a.	45000	n.a.	n.a.	45000	800	D
EL	0	359	0	0	0	359	0	0	0	0	0	208	0	1577	2	1787	27	EL
E	985053	3996	0	308514	0	312510	-	-	-	-	0	56145	404473	5501	12736	478855	58	E
F	1320000	2659	60274	n.a.	717000	779933	0	66704	n.a.	n.a.	66704	1000	246003	n.a.	n.a.	247003	16	F
IRL	4249	209	715	196	0	1120	Trial	0	n.a.	n.a.	0	100	4000	n.a.	0	4100	40	IRL
I	975000	154000	0	305000	0	459000	0	0	283	n.a.	283	8	0	3300	192207	195515	15	I
L	8308	652	0	0	0	652	0	188	115	0	303	25	883	106	5	1019	0	L
NL	502391	28752	64738	0	0	93490	n.a.	0	n.a.	n.a.	0	n.a.	900000	n.a.	n.a.	900000	42	NL
A	174300	9750	0	40600	0	50350	0	0	n.a.	n.a.	0	0	330000	n.a.	n.a.	330000	100	A
P	90722	295	0	22023	0	22318	0	187608	n.a.	n.a.	187608	n.a.	74731	n.a.	n.a.	74731	15	P
FIN	206000	43500	21500	9000	0	74000	50	28000	n.a.	n.a.	28050	400	35000	n.a.	500	35900	50	FIN
S	341000	5308	8787	2300	116000	132395	0	0	5000	0	5000	2900	156400	0	135385	294685	n.a.	S
UK	563348	3567	2305	0	530298	536170	0	0	327000	2185	329185	2500	1098000	144000	3300	1247800	63	UK
EU	9626024					2855129					676896					4388624	EU 15	

		Market share
Incumbents' broadband	10302920	59%
Other operators' broadband	7243753	41%
Tot. Broadband on PSTN	12481153	71%
Tot. Broadband other means	5065520	29%
EU Tot. Broadband	17 546 673	100%
PSTN broadband lines/Total PSTN lines		6,73%

5.2.PRICES FOR UNBUNDLED LOCAL LOOP

This section shows the charges per unbundled loop (monthly rental and connection) in case of full unbundled and shared access of the loop. Estimates of total average monthly rental cost (based on the total costs for the first year) are also presented.

In the following we assume that the loop is active and will be used to provide DSL services. Belgium and Luxembourg charge a different price for the loop, depending on whether it is used for the voice telephony services or for DSL services. Furthermore, Belgium applied a different price for non-active loop and charges in some Member States are different in case of additional access.

5.2.1. PRICES FOR FULL UNBUNDLED LOCAL LOOP

In Belgium a supplementary fee of € 28.33 for disconnection is also charged. It should be noted that a disconnection fee is not charged for the incumbent's own retail market.

Data for the connection fee in Germany refer to a unique payment option.

The price in Italy for full-unbundled local loop includes POTS and ADSL.

Data for Finland refer to a weighted average of 44 SMP operators providing ULL. Prices vary between 8 and 29 € for the monthly rental and between 105 - 303 € for the connection fee.

Data for the connection fee in Sweden refer to the first access. Charges for the following access up to 20 is 86€ and 70.75€ for additional access.

Figures for the United Kingdom refer to an average based on a price of 177.81 € per annum for the monthly rental and on a price of 128.25 € per annum for connection fee.

Figure 63

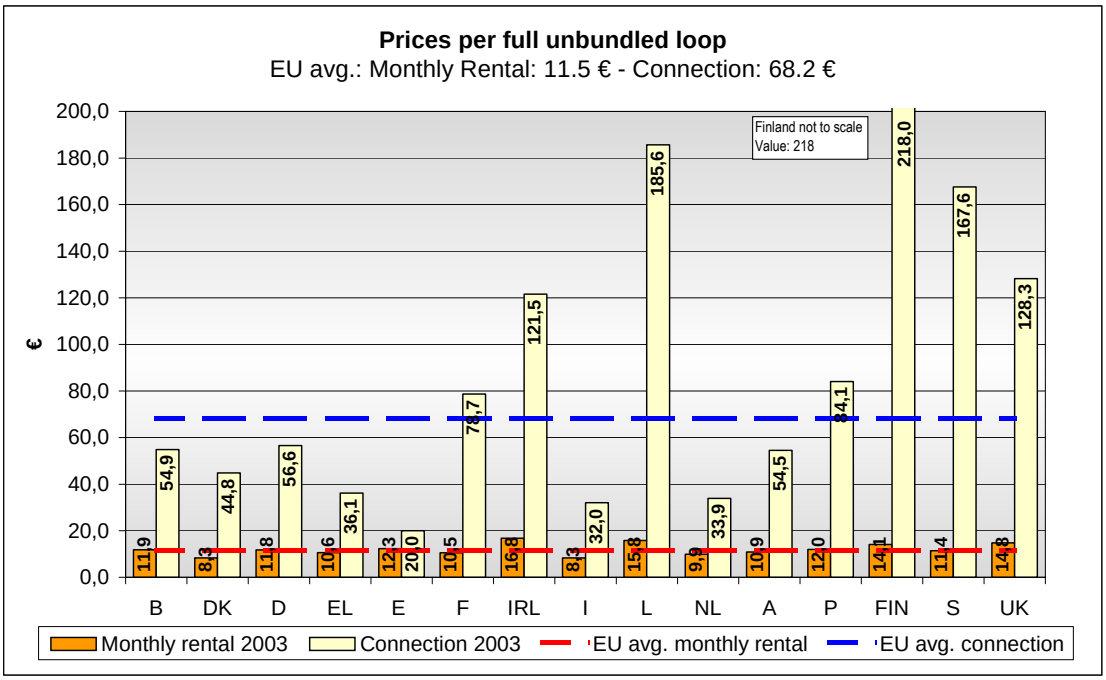
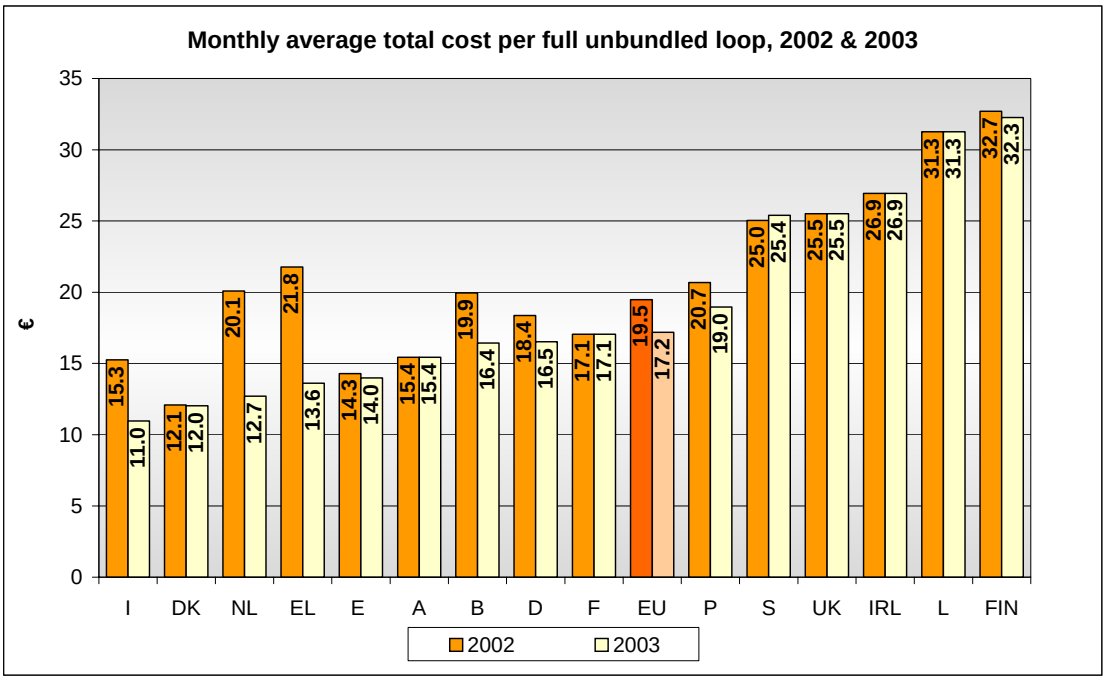


Figure 64



- Estimates are based on the total cost of the loop for the first year.

5.2.2. PRICES FOR SHARED ACCESS LOCAL LOOP

In Belgium a supplementary fee of €28.33for disconnection is also charged. It should be noted that a disconnection fee is not charged for the incumbent's own retail market.

The connection fee in Denmark decreases to 35.3€, when taking over an existing shared access connection.

Data for the connection fee in Germany refer to a unique payment option.

Data for the monthly rental in Luxembourg do not include the price of the splitter.

Data for Finland refer to a weighted average of 44 SMP operators providing shared access to local loop. Generally the monthly rental is 50 % of the monthly rental of the full ULL and the prices for the connection fee vary between 42 - 260 €.

Data for Sweden for connection fee refer to the first access. Charges for the following access is 86€.

Data for France includes the price of the splitter.

Data for the United Kingdom refer to an average based on a price of 77.24 € per annum for the monthly rental and on a price of 170.5 € per annum for connection fee.

Figure 65

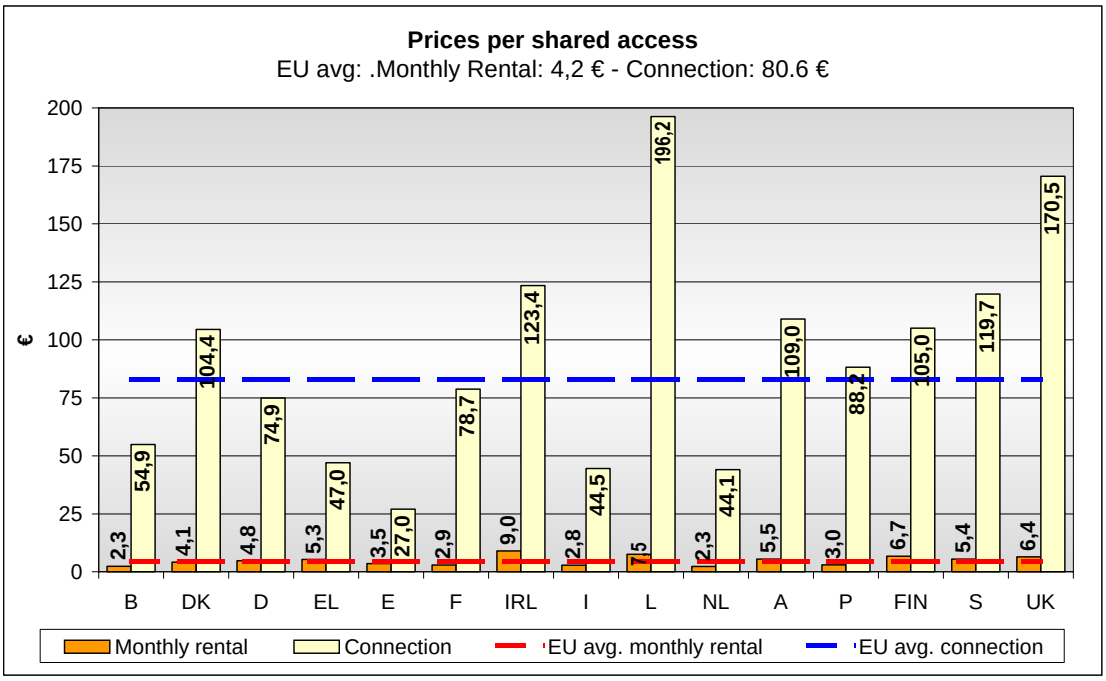
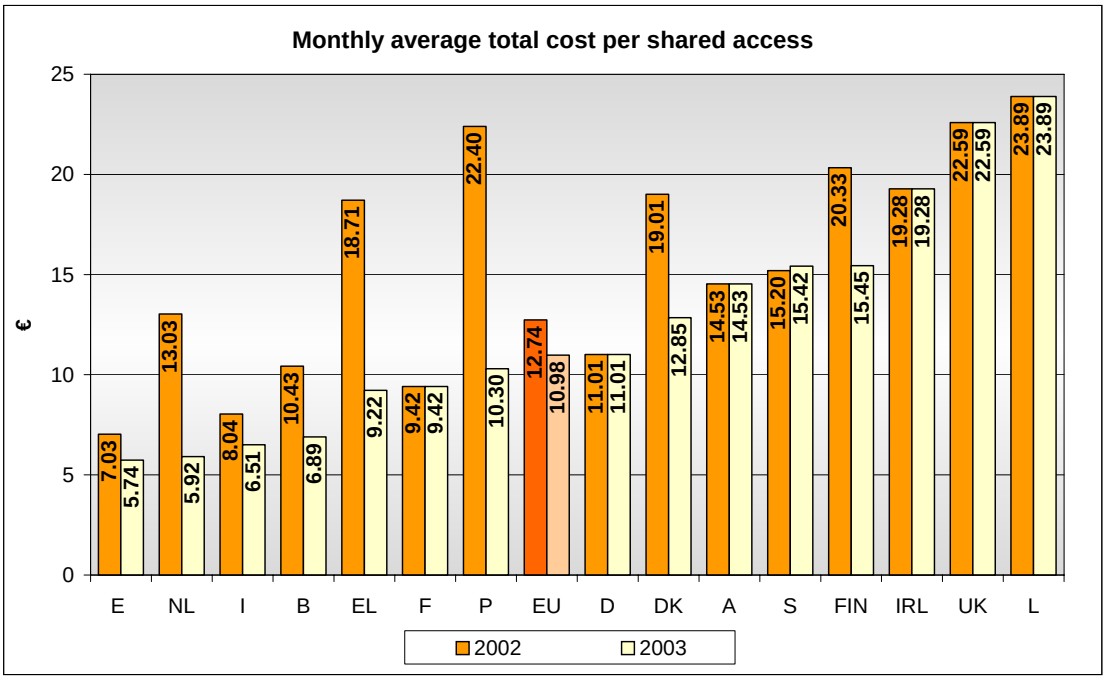


Figure 66



- Estimates are based on the total cost of the loop for the first year.

6 PUBLIC VOICE TELEPHONY TARIFFS

INCUMBENTS' RETAIL TARIFFS FOR PUBLIC FIXED VOICE TELEPHONY

This section examines the charging system, the line rental charges and the main tariffs for public fixed voice telephony charged by the incumbent operators in each Member State[19] in August 2003. The price trend over the past five years is also analysed.

The incumbent operators still retain a large market share, but new entrants are increasingly gaining market shares by offering cheaper prices for certain types of calls (usually long-distance or international) or destinations. The prices charged by incumbents do not necessarily, therefore, represent the lowest prices available. A comparison between the rates charged by incumbents and alternative operators is shown at the end of this section.

The figures and information are taken from a study carried out for the Commission by Teligen, HI Europe. The data were collected from primary sources (i.e. directly from the incumbent operators) and communicated to the National Regulatory Authorities (NRA), which checked the accuracy of these data before this report was produced.

Different sets of charges for fixed national voice telephony services are shown in the following sections:

- the minimum costs for different types of calls (local, long-distance, international calls and calls towards mobile networks), depending on the charging system adopted;

- the monthly rentals charged by incumbent operators;

- the charges for a composite basket of calls (local, long-distance, international fixed calls and calls to mobile), that gives an estimate of the average monthly spending by a typical "European business/residential user" for the whole range (national and international) of calls;

- the charges for a basket of national calls, that gives an estimate of the average monthly spending by a typical "European business/residential user" for fixed national calls;

- the basket of international calls for each country that indicates the average price of a single call from the originating country to all other OECD destinations. In addition, the price of individual calls to specific destinations are also shown.

- the price of some individual calls (3- and 10-minute local, long-distance and international calls) at peak time, inclusive of any initial charge. For incumbents which apply unit-based charging, the price of a whole unit is calculated.

For the various types of calls, a benchmark based on a comparison with US and Japan is also included. For the USA, the prices for national calls are those charged by Verizon,NY for local calls, Verizon,NY (1998/1999) and AT&T (2000/2003) for national (intra-state) calls and AT&T for international calls. For Japan, the national call prices are those charged by NTT and the international call prices are those charged by KDD.

[19] The incumbent operators considered are the following: Belgacom for Belgium, Tele Denmark for Denmark, Deutsche Telekom for Germany, OTE for Greece, Telefonica for Spain, France Telecom for France, Eircom for Ireland, Telecom Italia for Italy, P&T Luxembourg for Luxembourg, KPN for the Netherlands, Telekom Austria for Austria, Portugal Telecom for Portugal, Sonera for Finland, Telia for Sweden, British Telecom for the United Kingdom.

The EU average tariffs shown in the charts are weighted averages (by population of the Member States in 2003) rather than simple averages.

6.1. CHARGING SYSTEM

The billing system for public voice telephony services usually comprises two components: an initial charge applied at the beginning of a call and a charge for the remainder of the call (that may not depend on the type of initial charge used).

6.1.1. Initial charges

There are different types of charges applied at the beginning of a call, either alone or in combination. The charging method used for the remainder of the call may not depend on the type of initial charge used. The types of charges are:

- Call set-up charge raised at the start of the call (when the call is answered). This charge does not offer any call time.
- Initial charge that is used in the same way as call set-up, but in addition includes a certain number of seconds call time before normal time-based charging starts.
- Unit charge does in effect work the same way as the initial charge. A full unit is charged at the beginning of the call, providing a certain number of seconds call time until the next unit is charged. Depending on the principle used by the operator (synchronous / asynchronous) the number of seconds call time in the first unit may be less than the specified unit duration.
- Minimum charge is normally used with per second billing, to ensure the operator minimum revenue per call. If the call duration is short, the actual call charge may be less than the minimum charge. In such cases the minimum charge will be applied.

6.1.2. Charging system during the call

There are in principle 3 ways of charging calls. The fact that most operators tend to publish the duration charges on a per minute basis does not itself indicate which system is used. The 3 principles are:

- Real time charging (also known as per second billing) allows the cost of the call to be calculated to the exact duration of the call (normally nearest second). Call set-up charge, initial charge or minimum charge may be applied to this structure, in addition to the duration charge.
- Unit based charging uses a fixed price unit. The duration of this unit will vary with the destination of the call and time of day. Call duration will always be raised to a multiple of whole units, so the user will nearly always pay for more time than is used. Call set-up charge may be applied to this structure, but is relatively rare.
- Fixed period charging uses a variable price, but fixed duration unit. The call is normally charged on a per minute basis, or per 6 seconds. The price for the period will vary with destination and time of day. The charged duration of the call will be raised to a multiple of whole periods. A call set-up charge or initial charge is often implemented in the form of a higher charge for the first minute or period. This initial charge may vary with destination and time of day.

In August 2003 only the incumbents in Greece, Luxembourg, Austria and Germany still use a unit-based charging system for some types of calls. No changes are reported since the situation in August 2002.

The following charts show the minimum cost, due to initial charges, for local, long-distance and international calls and calls to mobile charged by the incumbent operators. The free call time (i.e. the number of seconds of call time before normal time-based charging starts) is shown in brackets. Values are expressed in €, including VAT.

Figure 67

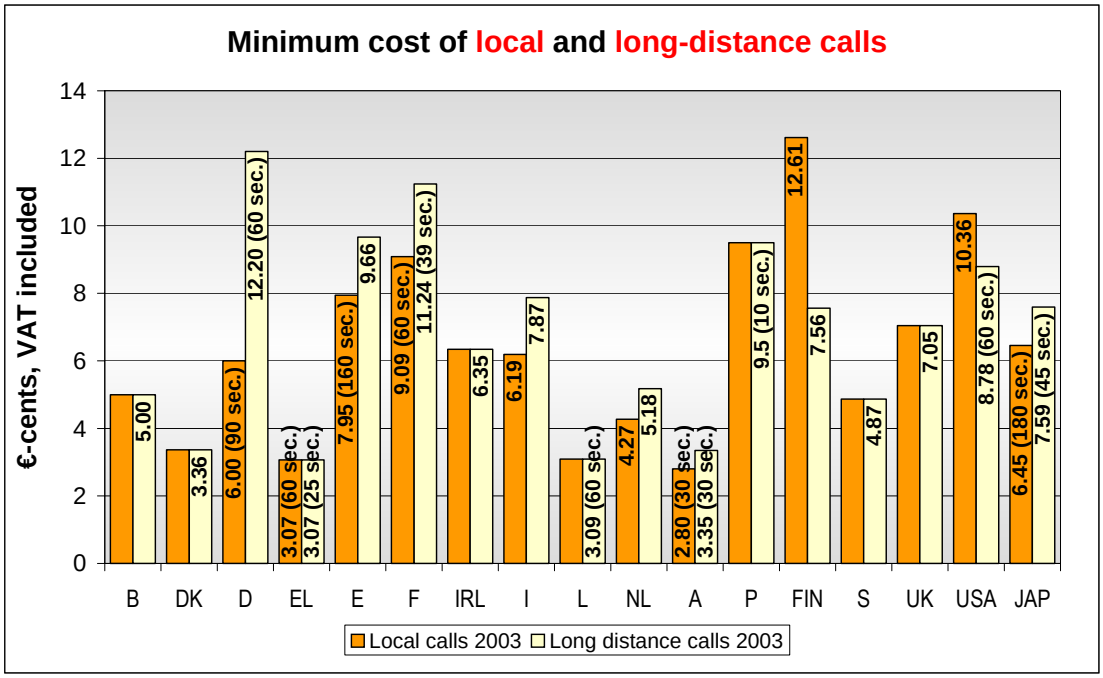


Figure 68

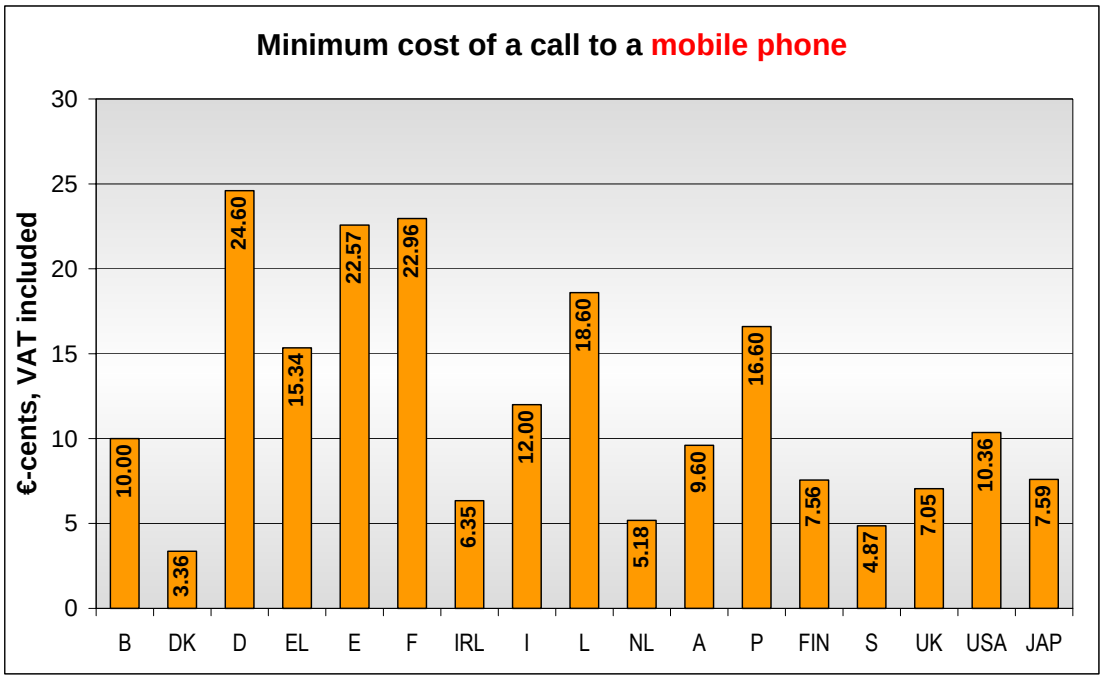
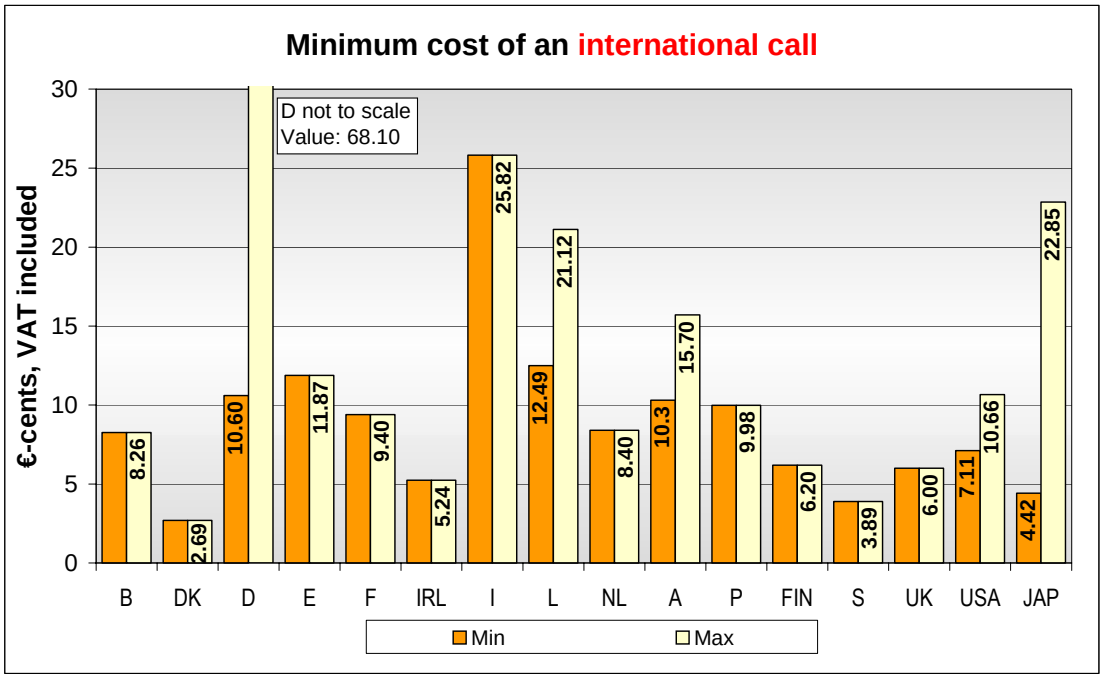


Figure 69



- Data for EL not available

6.2. MONTHLY RENTAL CHARGED BY THE INCUMBENT OPERATORS

The following charts show the incumbent's monthly line rental charges for residential and business users in each Member State in August 2003 and August 2002 and the variation in nominal terms of the EU average since August 1998. In order to reflect the real charges actually paid by users, values are expressed in €, including VAT for residential users and excluding VAT for business users.

The incumbent operators in Italy, Sweden, United Kingdom, USA and Japan apply different monthly line rental charges for residential and business users. In Austria two different packages have been chosen for residential and business users, hence different charges. In Finland the monthly

rental depends on where in the country the line is connected. In the other countries the differences between the types of users are due only to the exclusion of VAT for business users.

Figure 70

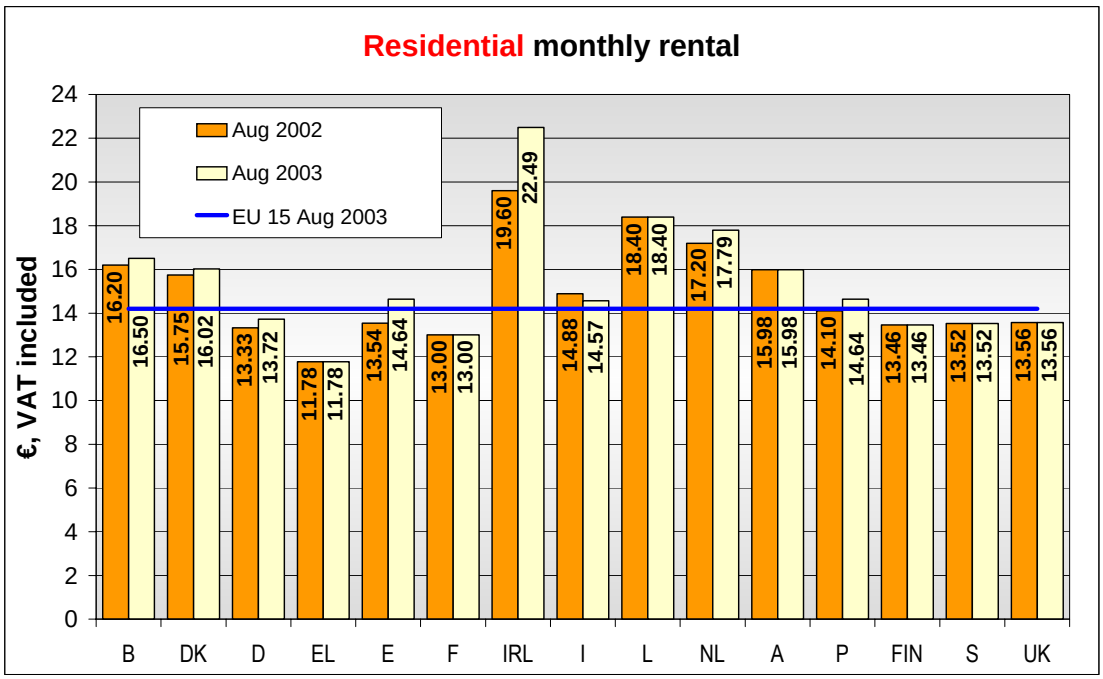
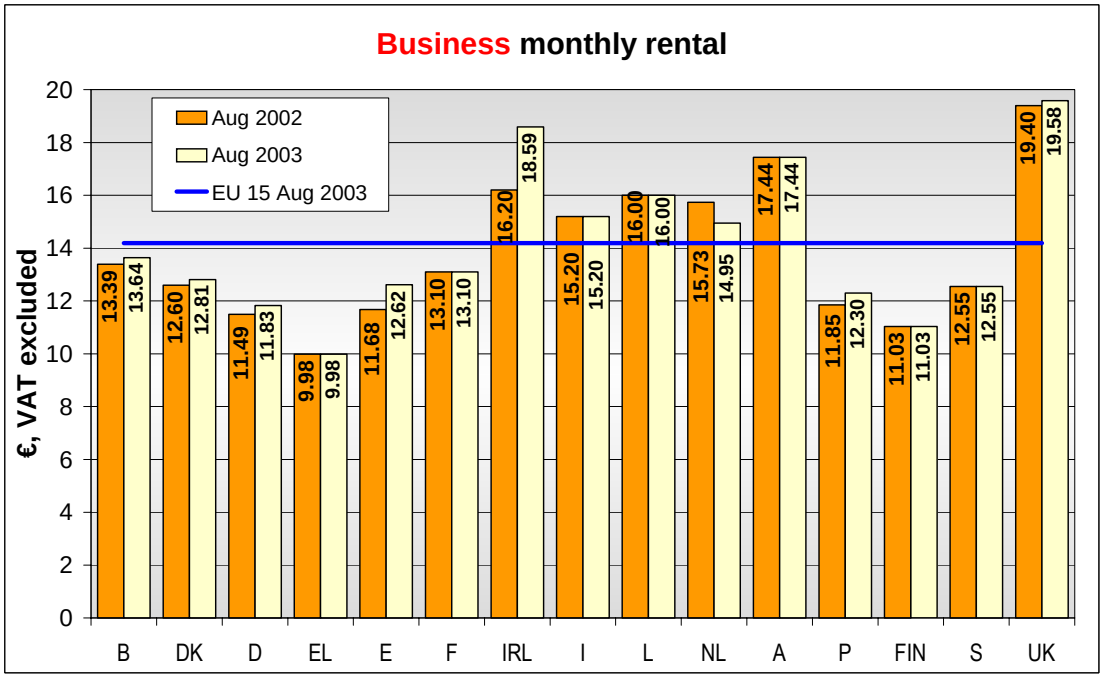


Figure 71



The following charts show the EU weighted average variation in nominal terms of the residential and business monthly line rental charge.

Figure 72

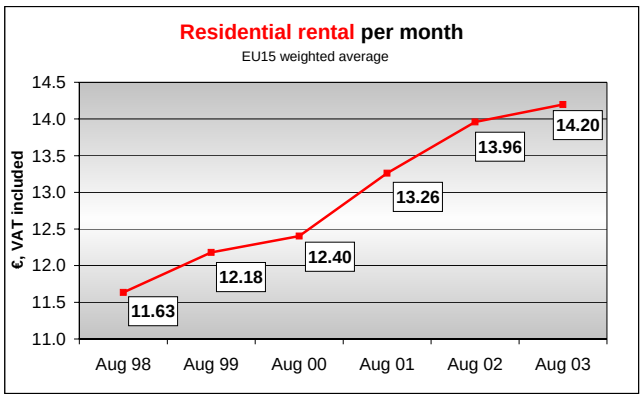
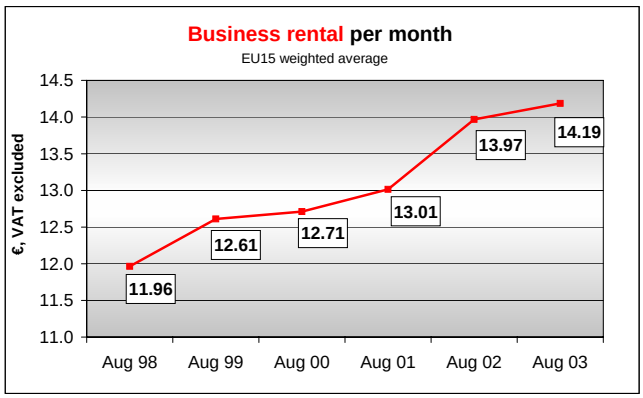


Figure 73



6.3. AVERAGE MONTHLY EXPENDITURE (composite call basket)

The figures presented in this section are intended to provide an estimate of the average monthly expenditure of a "standard" European consumer (business and residential). The Basket Methodology for Telecommunications Cost Comparison has been devised by the OECD and accepted in most countries as the most stable and neutral method of comparison.

The user is assumed to have a contract for the provision of voice telephony services with the incumbent operator, and to use only this operator for all types of calls (local, long-distance, international, calls to mobile). Since consumers are making increasing use of call-by-call carrier selection, in particular for specific highly discounted types of calls (i.e. international and long-distance), the figures given below are purely indicative, and do not necessarily reflect the cheapest solution available.

The charts below show the average monthly expenditure for standard residential and business users as of August 2003, expressed in €, based on the standard tariffs charged by the incumbent operators (i.e. excluding any discount packages). This means that lower costs can be achieved if the user subscribes to one or more discounted packages.

The basket of calls used to estimate average monthly expenditure is the new "composite OECD basket"[20], which includes not only fixed national calls (as did the old basket), but also fixed international calls and calls to mobile networks.

A full description of the methodology can be found at the end of this report.

[20] The revised OECD baskets were adopted in May 2000.

Figure 74

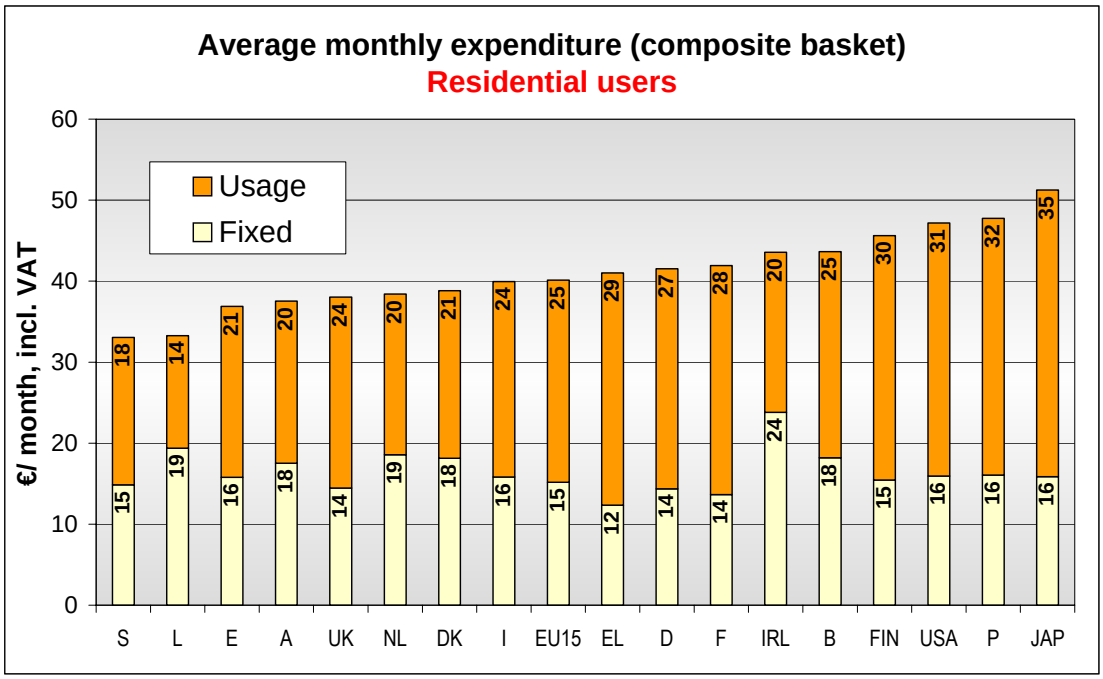
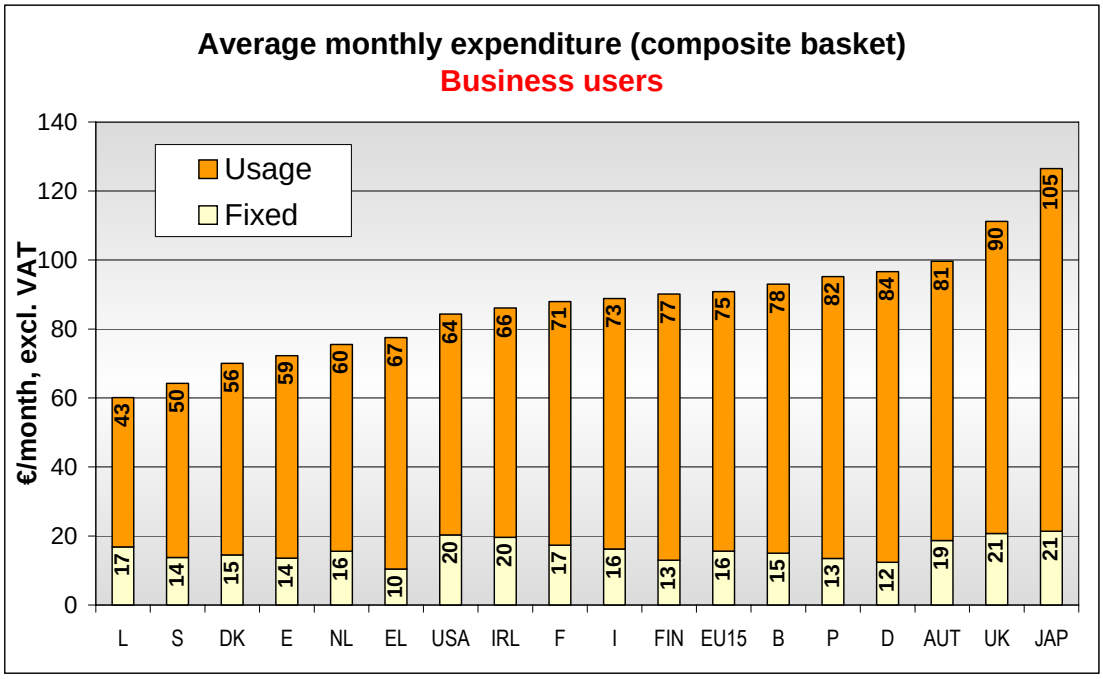


Figure 75



6.4. FIXED NATIONAL CALLS

6.4.1. Prices charged by the incumbent operators for individual fixed national calls

This section shows the prices charged by the incumbent operators for individual fixed calls. Where the incumbent operator uses a unit-based charging system, the price of calls of different duration and/or distances may in some cases be identical, where both calls are charged the same number of units. Any call set-up charges, minimum charges and/or call specific duration allowances have been taken into account.

Prices refer to peak hours (weekdays 11.00) and are expressed in € including VAT. Except where otherwise specified, the figures refer to August 2003.

Prices are indicated for three-minute and ten-minute calls over two distances: 3 km (equivalent to a local call) and 200 km (equivalent to a national call). In several countries the tariff changes at exactly one of these distances: in these cases, the rates for the lower distance band are used.

The price of a three-minute call is more affected by the magnitude of the call set-up charge than the price of a ten-minute call.

With the exception of Austria and the Netherlands, the standard tariff is used for this analysis. In the Netherlands the basic, residential package is selected. In Austria the Tik-Tak package has been selected for residential users and the Business 1 package for business users. No discount packages are taken into account.

The EU average value is the average of the EU countries weighted according to population in 1999.

Figure 76

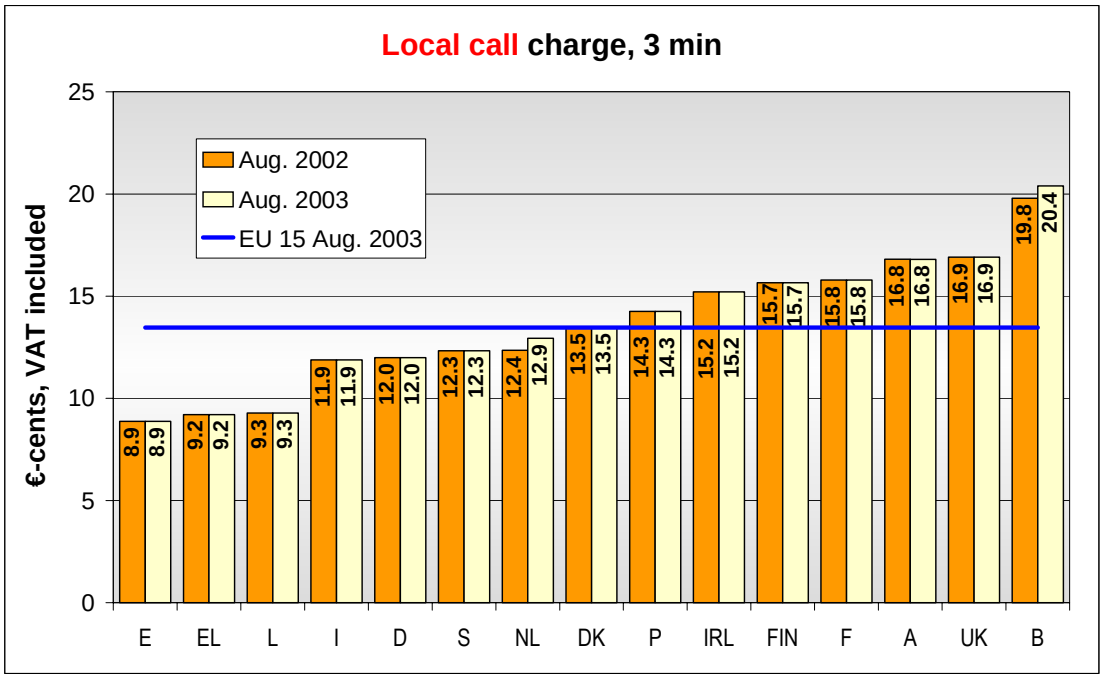


Figure 77

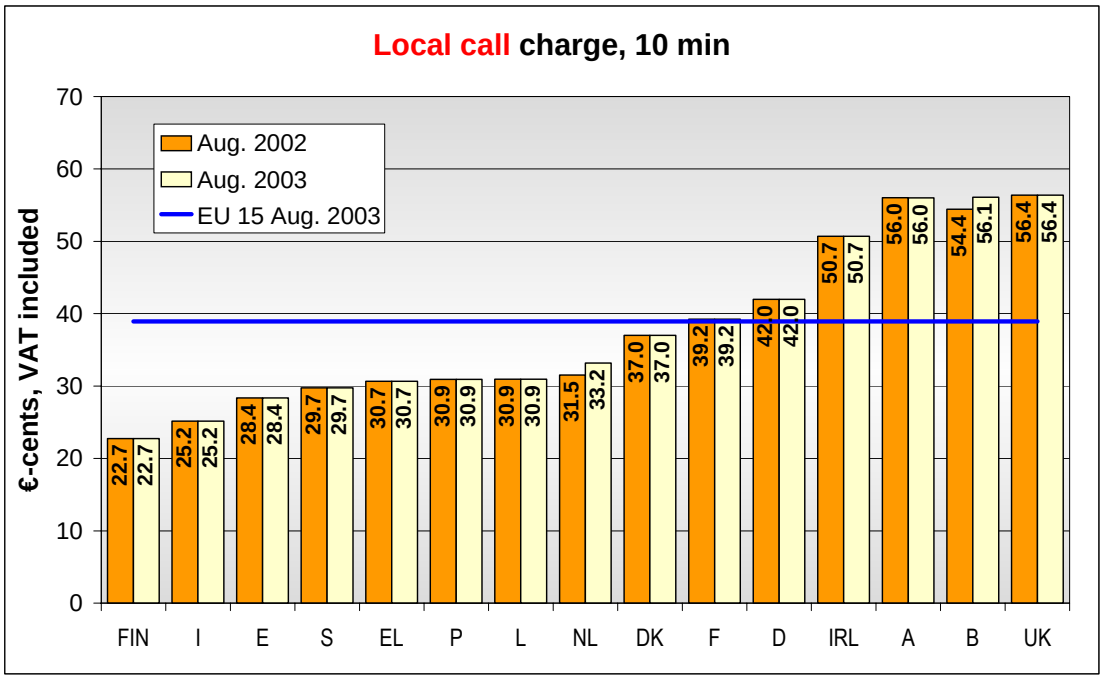


Figure 78

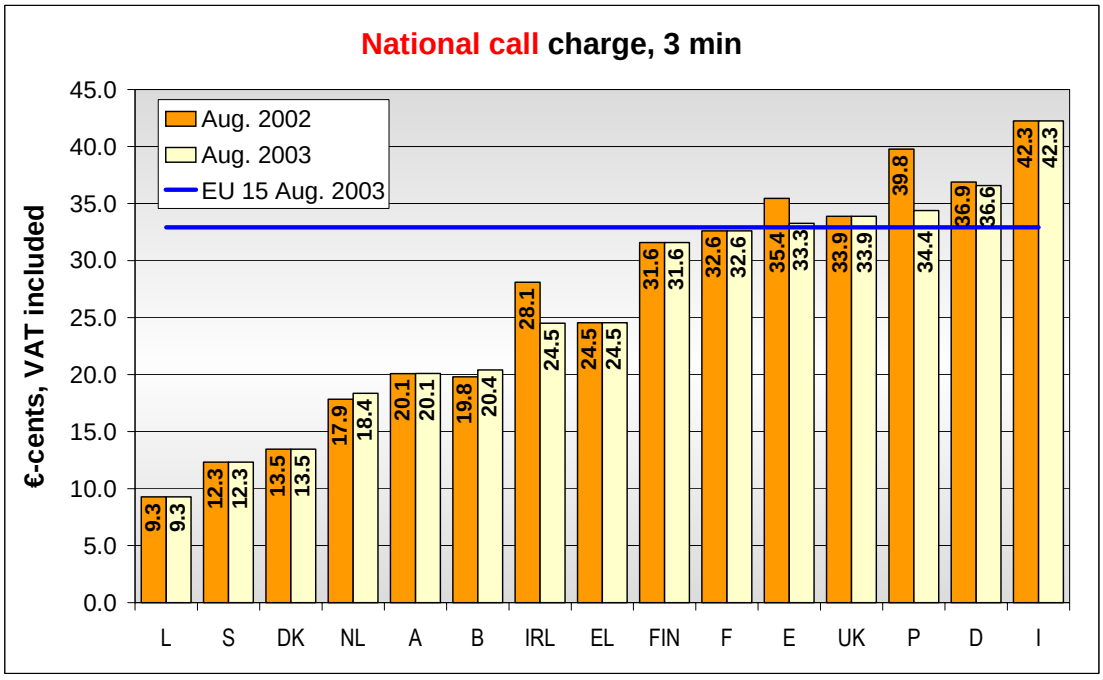


Figure 79

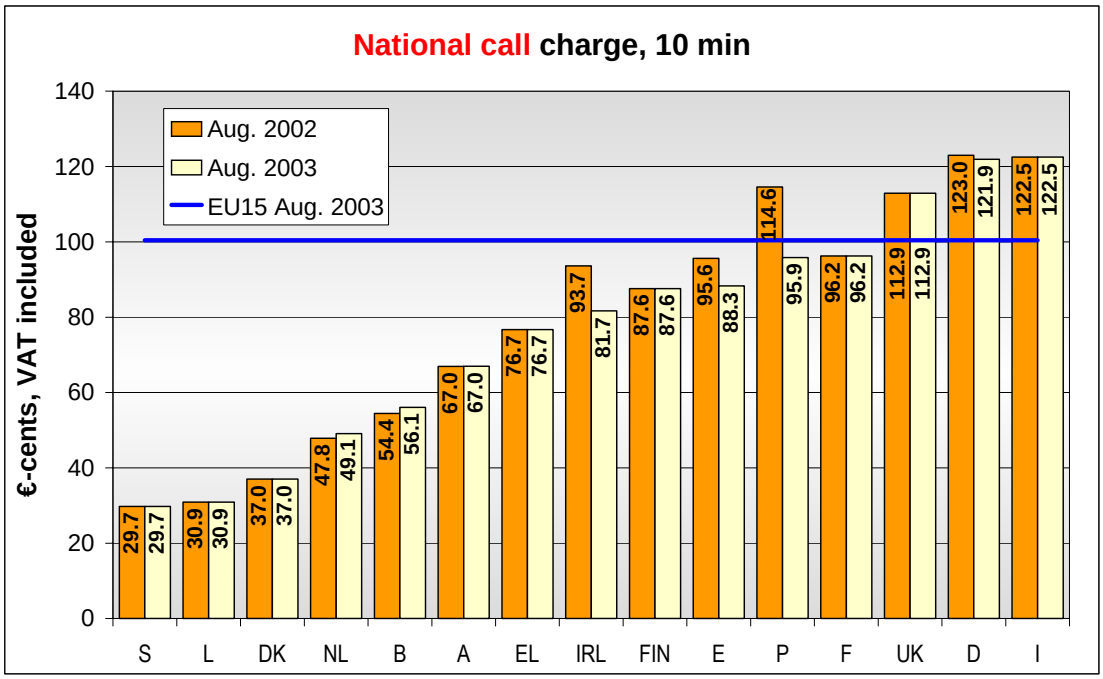


Figure 80

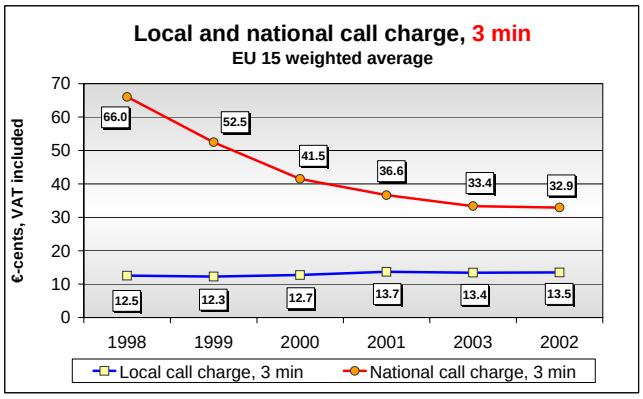
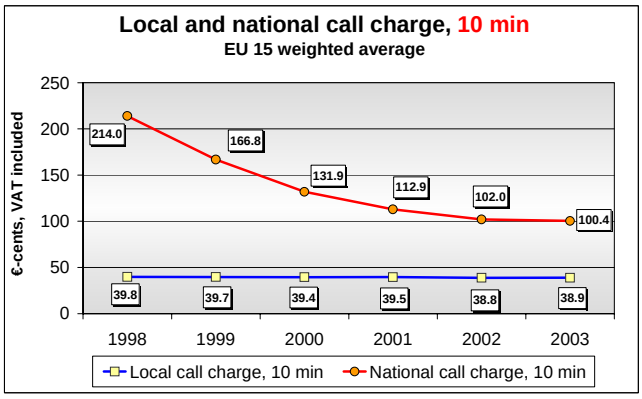


Figure 81



6.5. TREND OF THE BASKET FOR FIXED NATIONAL CALLS (NATIONAL BASKET)

The following chart shows the variation of the monthly expenditure of residential and business users on fixed national calls in each Member State between August 2001 and 2003 (in order to maintain consistency over time, the "old" OECD basket is used, which, unlike the "composite", does not include international calls).

Figure 83 displays the change in the EU average national basket for residential and business users in the period from August 1998 to August 2003.

The change in the international basket is shown in section 7.

A full description of the methodology can be found at the end of this report.

Figure 82

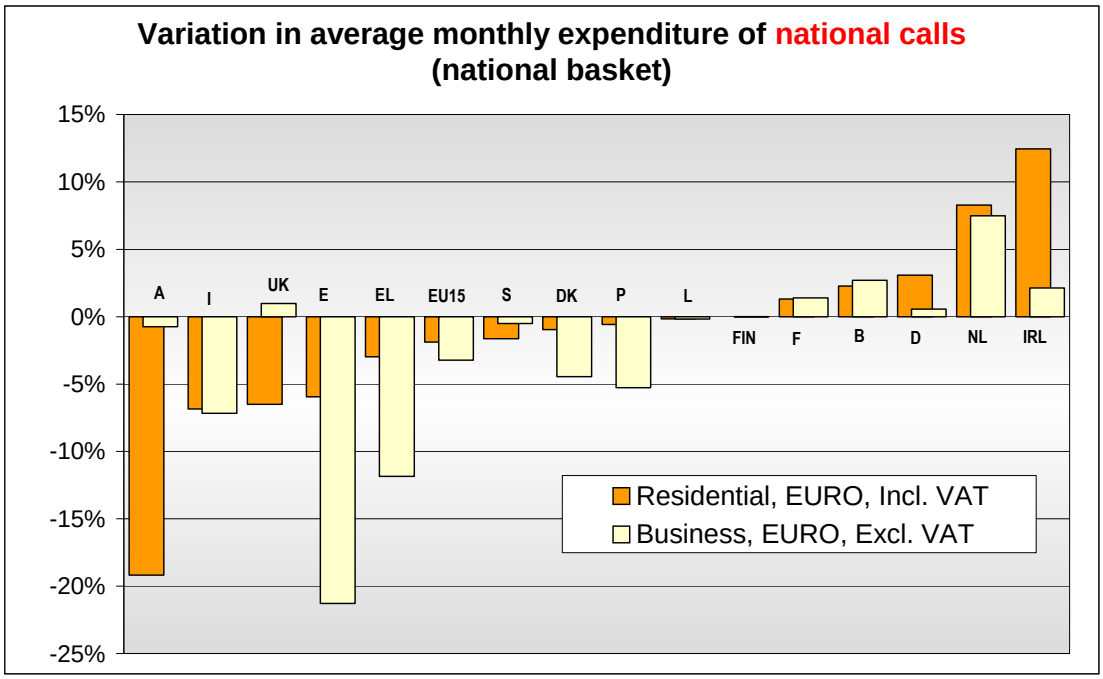
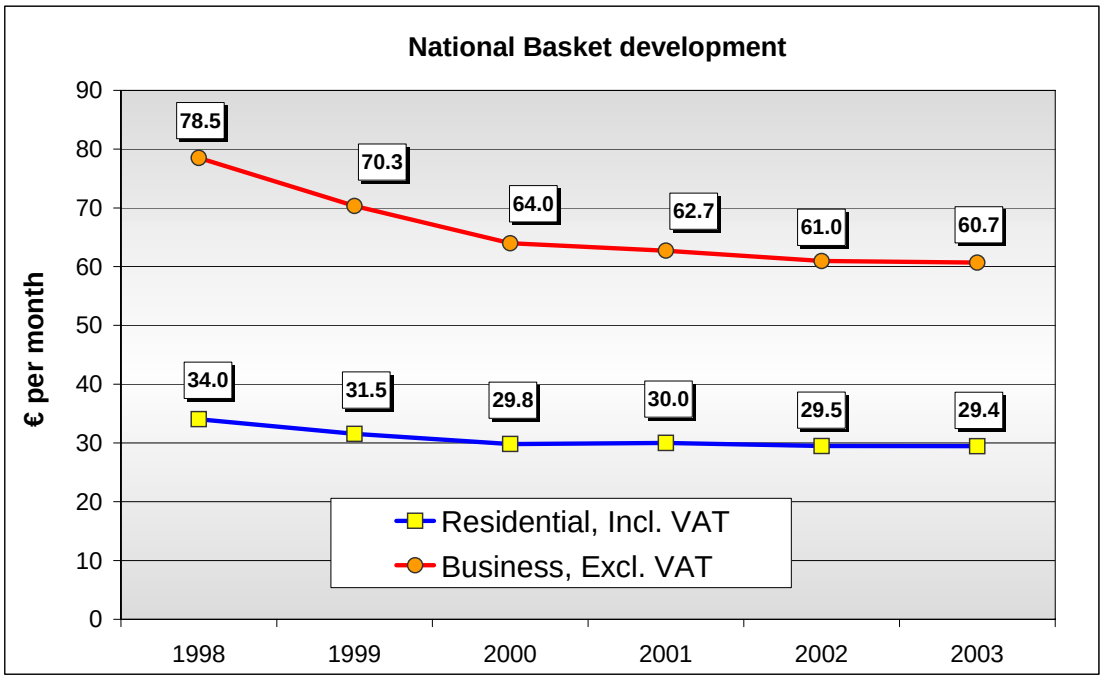


Figure 83



6.6. ALTERNATIVE NATIONAL OPERATORS

This section compares the prices charged for public voice telephony services by the incumbent operator by one competitor in each Member State.

Figure 84

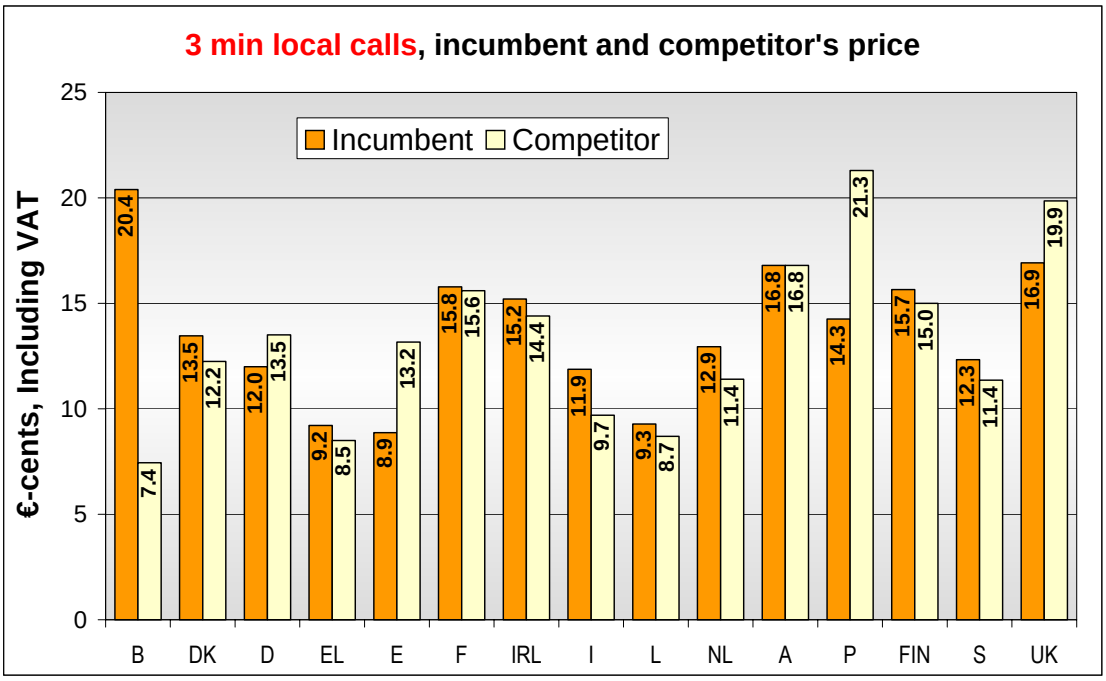


Figure 85

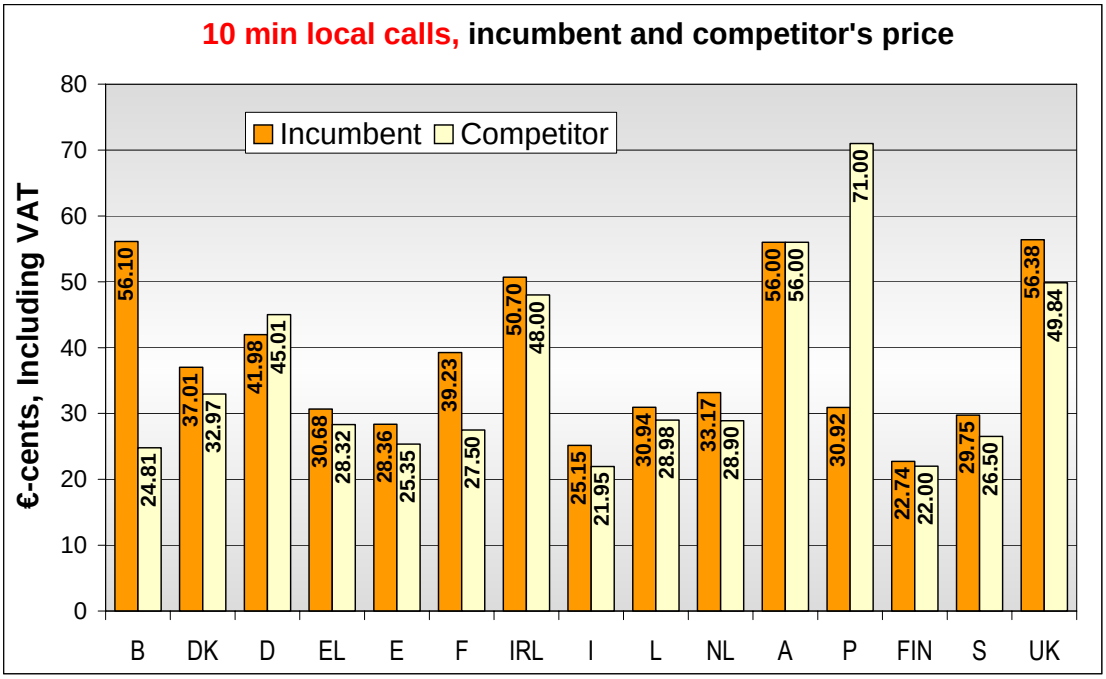


Figure 86

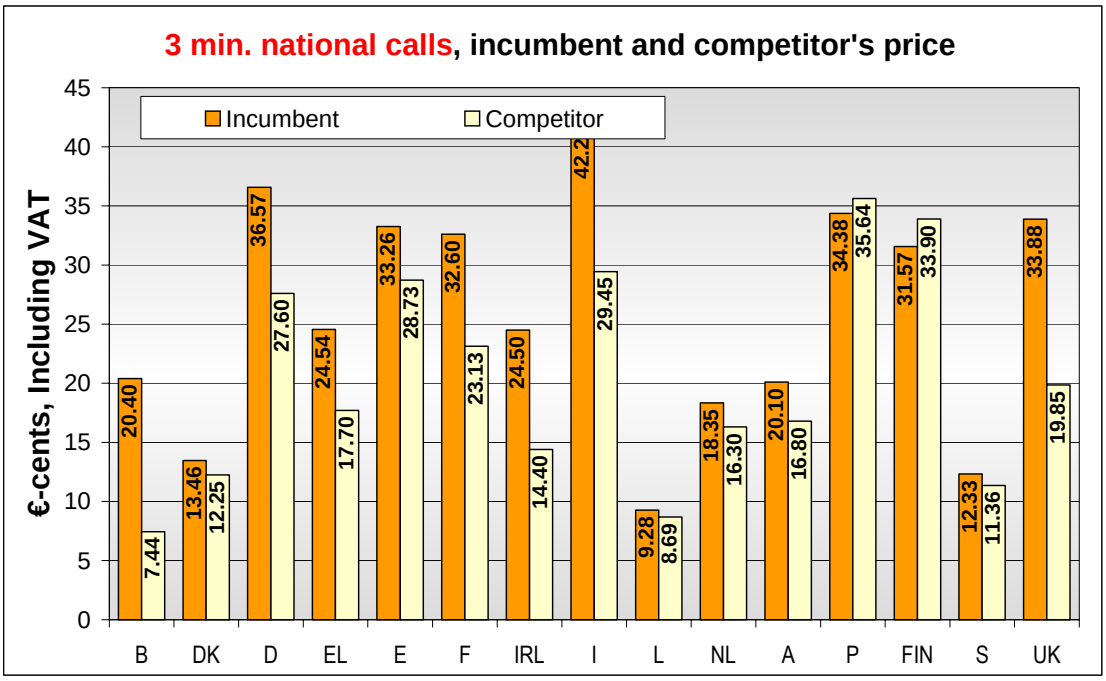
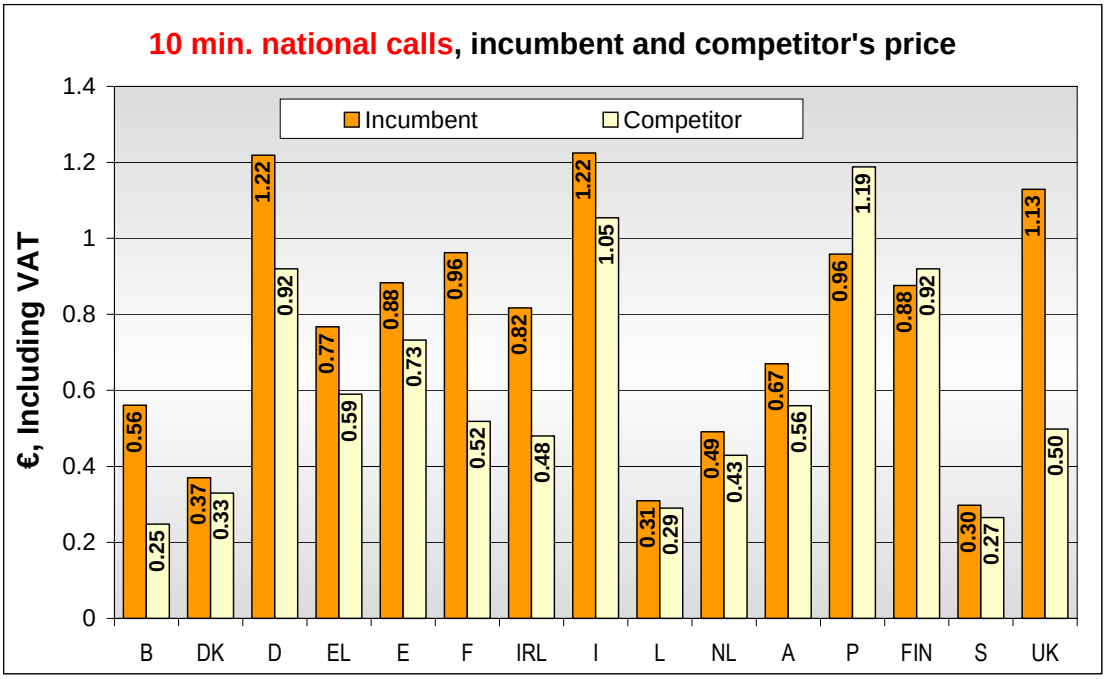


Figure 87



FIXED INTERNATIONAL CALLS

The following charts show the prices of the international call basket (an estimate of the average cost of an international call in each country) and the actual price of a 10-minute call to specified destinations (within the EU, to Japan and to the USA).

6.7. PRICE OF AN AVERAGE FIXED INTERNATIONAL CALL (international call basket)

The basket of international calls for each country provides an estimate of the average cost of an international call.

For the basket comparison of international PSTN call charges, the OECD Traffic weight basket methodology is used. The basket calculates **an average charge** for calls to all OECD destination countries.

The EU average value is the average of the EU countries weighted according to population in 2003.

A full description of the methodology can be found at the end of this report.

Figure 88

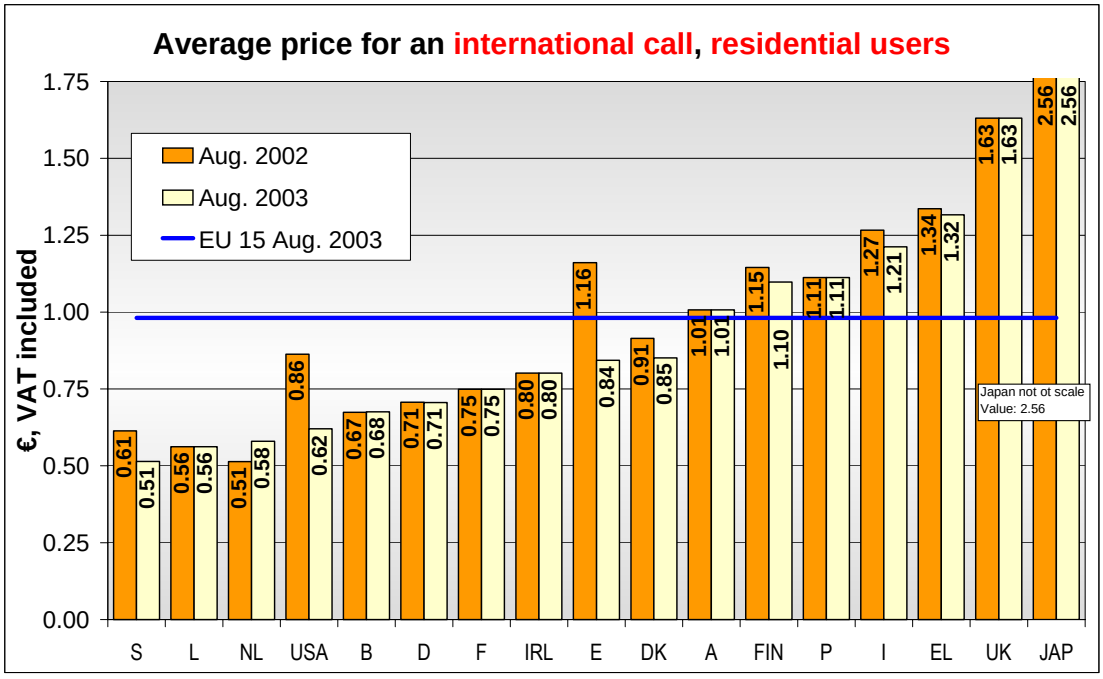


Figure 89

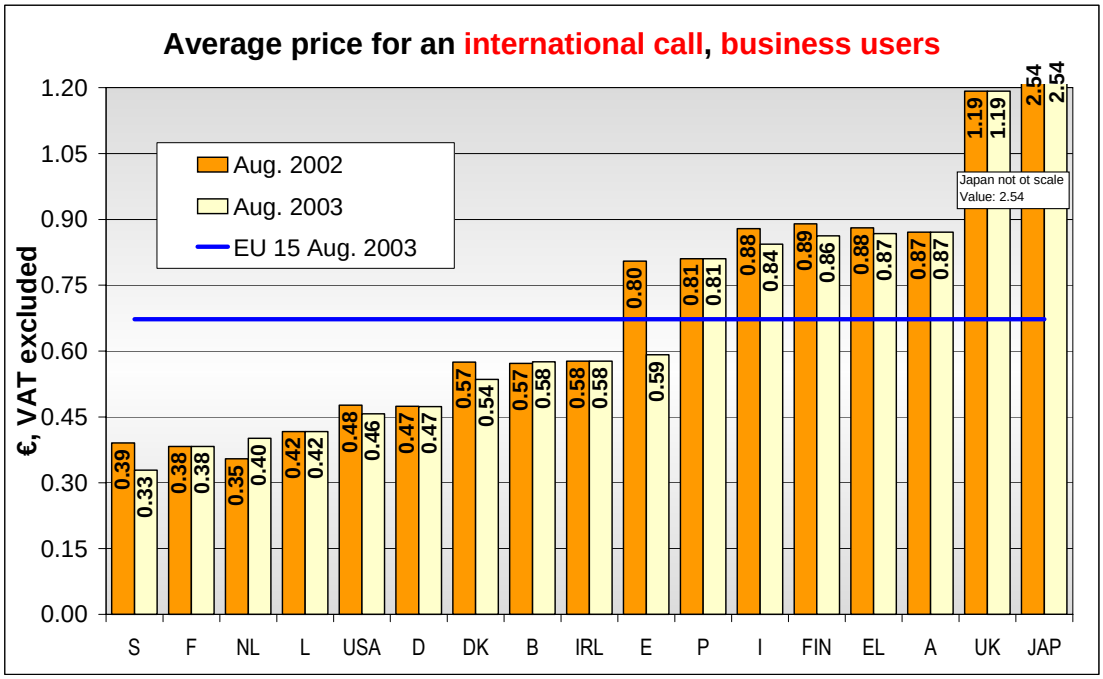
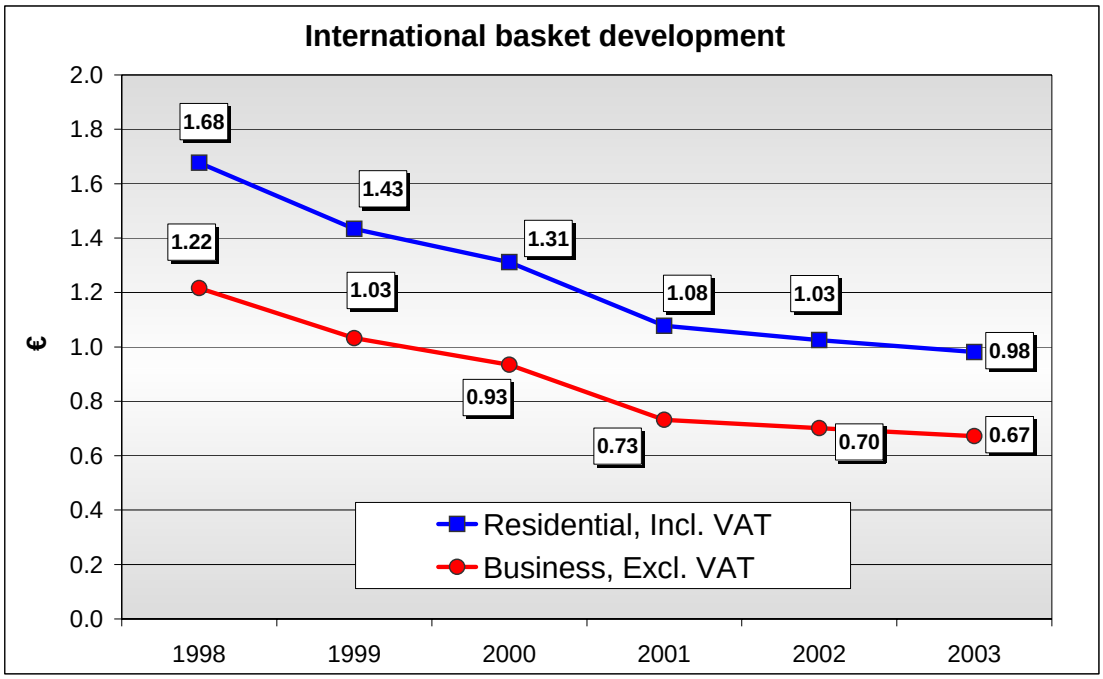


Figure 90



6.8. PRICE OF CALLS TO EU, JAPAN, USA

The following two charts show the prices of a 10-minute international call (including VAT) during peak hours (weekday 11.00) to four different destinations: neighbouring country[21] (near EU), more distant country[22] (far EU), Japan and the USA.

Figures are expressed in € at August 2003 values and they refer to the European incumbent operators and the EU weighted average.

[21] The neighbouring countries are defined as: France for Belgium (and *vice-versa*), Germany and the United Kingdom; Sweden for Denmark and Finland; Italy for Greece (and *vice-versa*); Portugal for Spain (and *vice-versa*); the United Kingdom for Ireland, the USA and Japan; Germany for Luxembourg, the Netherlands and Austria.

[22] The more distant countries are defined as: Greece for Belgium, Denmark, Germany, France, Ireland, Luxembourg, the Netherlands, Austria, Finland, Sweden, the United Kingdom, the USA and Japan; Denmark for Greece, Spain, Italy and Portugal.

Figure 91

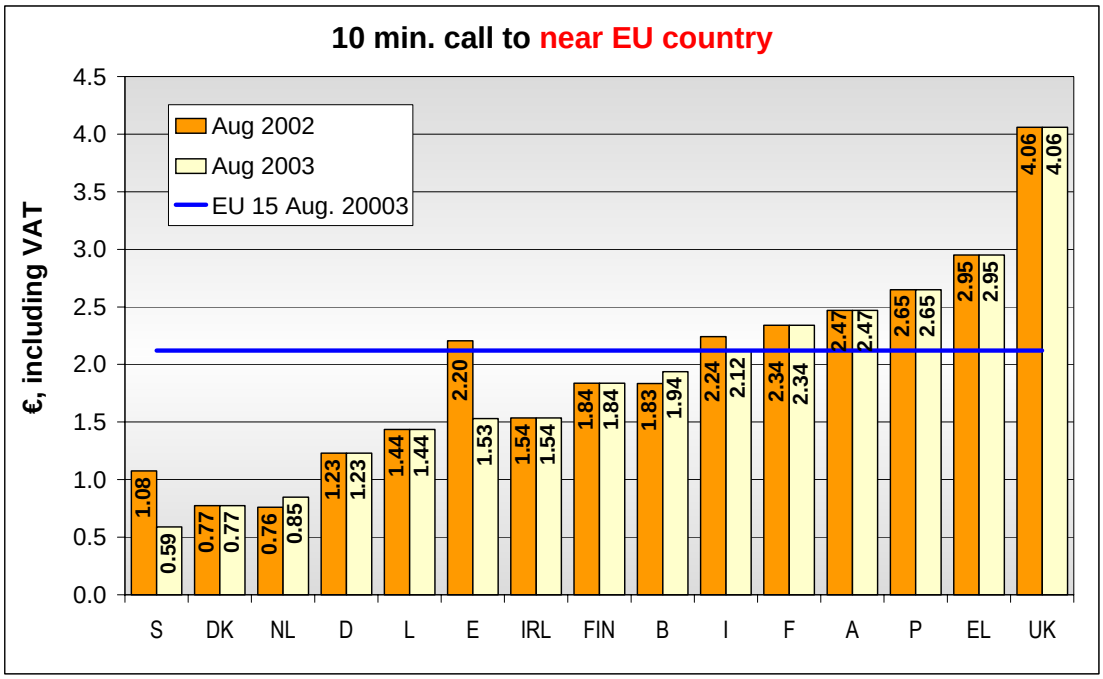


Figure 92

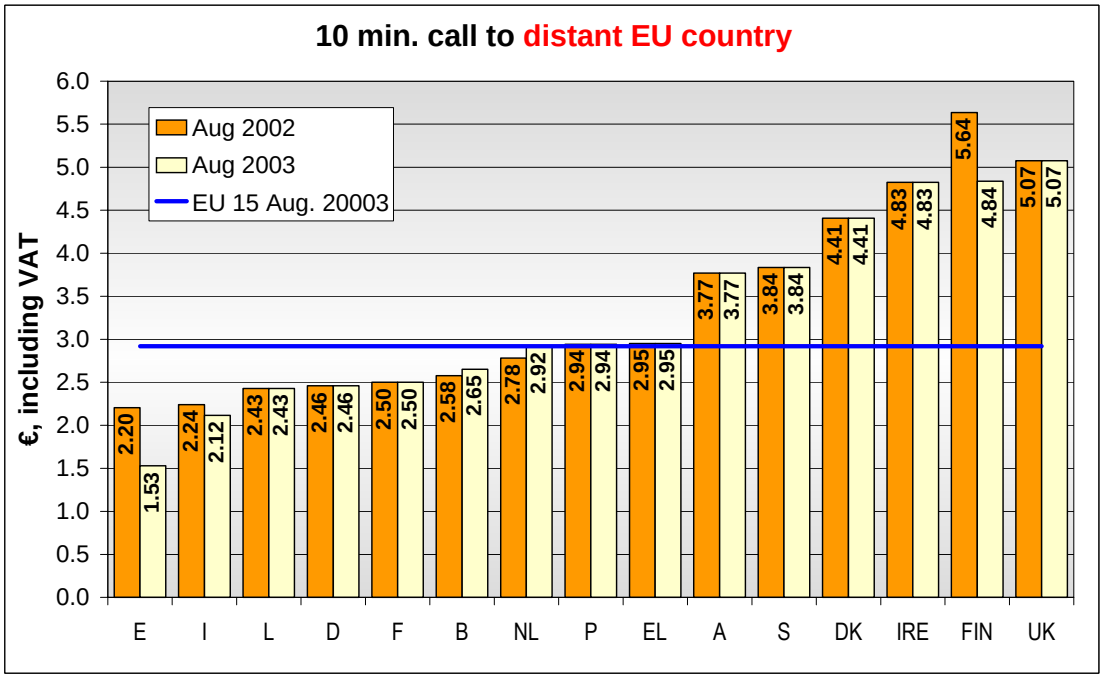


Figure 93

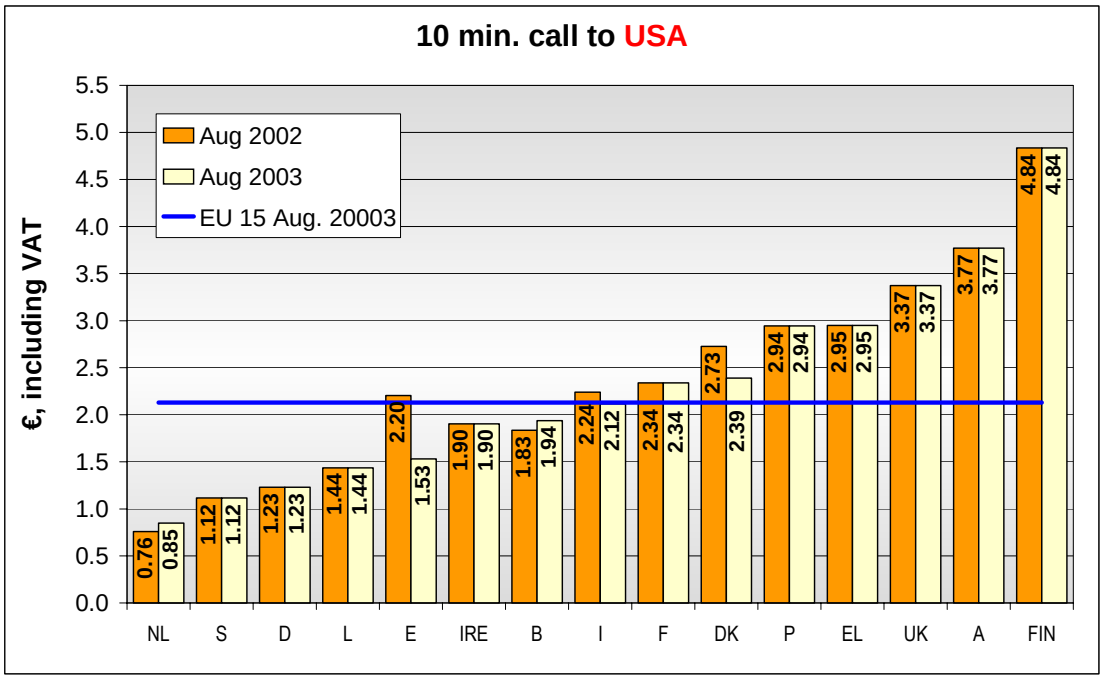
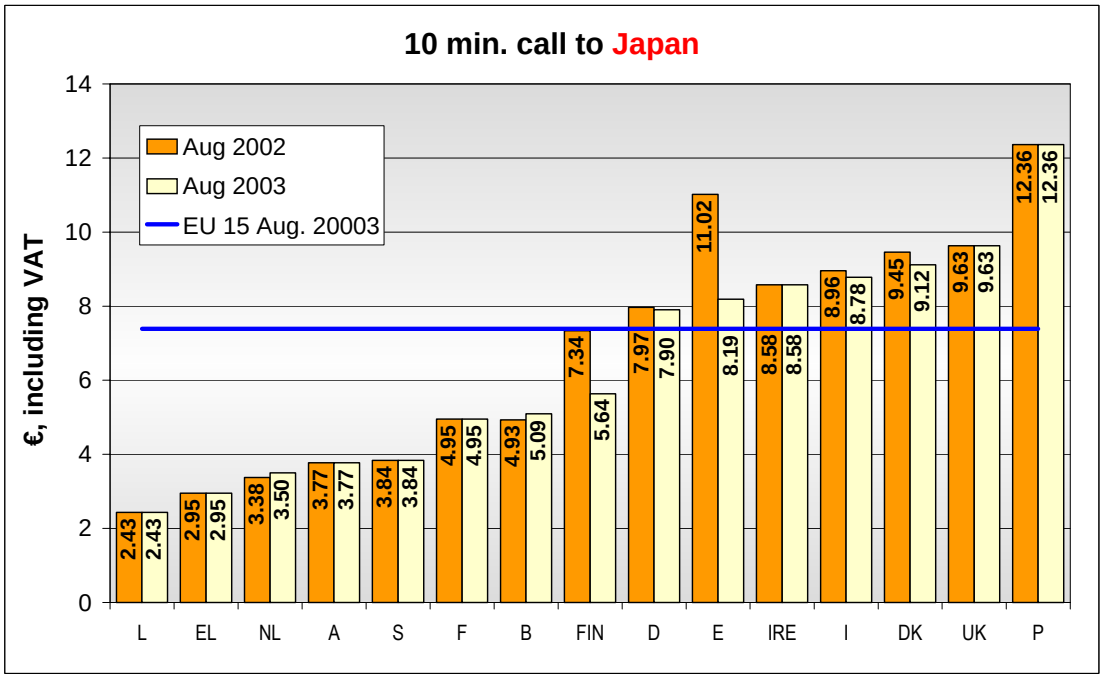


Figure 94



6.9. ALTERNATIVE OPERATORS. TARIFFS FOR INTERNATIONAL CALLS

The equivalent prices for competitor providers in the EU countries are shown in the charts below. One competitor per country has been analysed. The prices are shown for a 10 minute call, at peak time weekdays.

Prices include VAT and are applicable for August 2003.

Figure 95

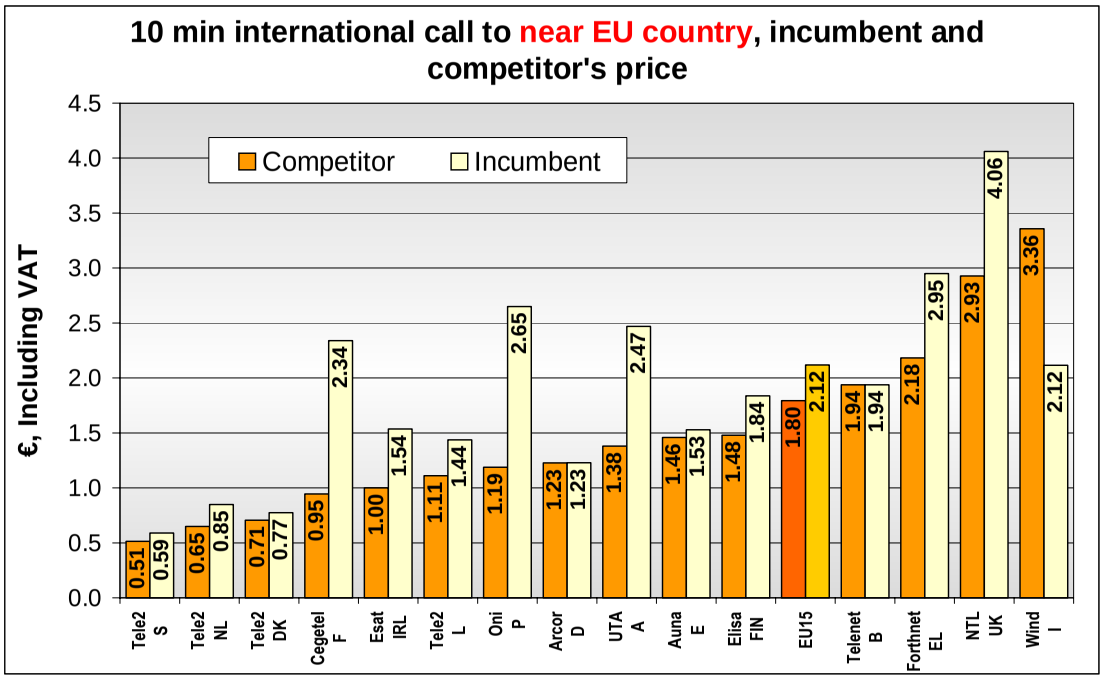


Figure 96

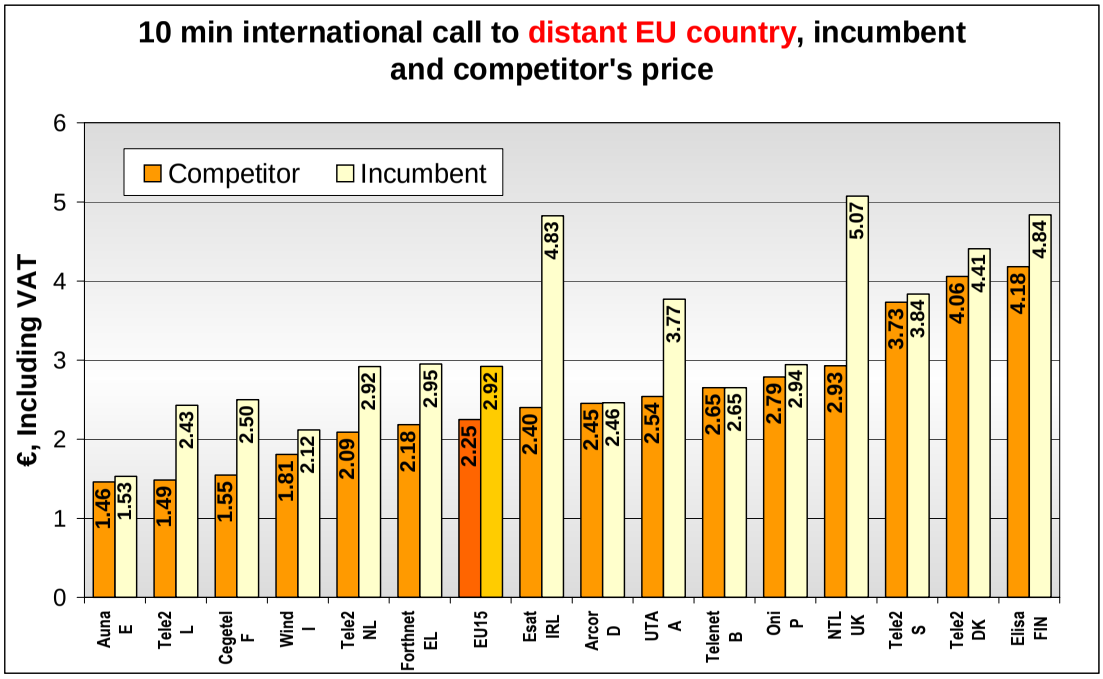


Figure 97

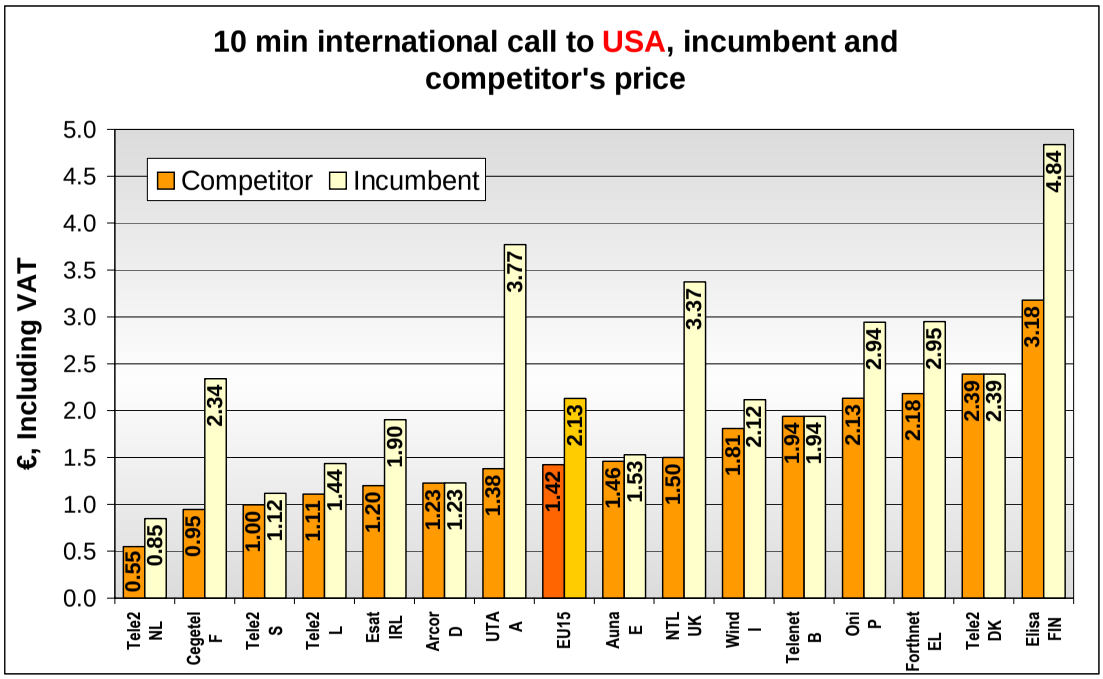
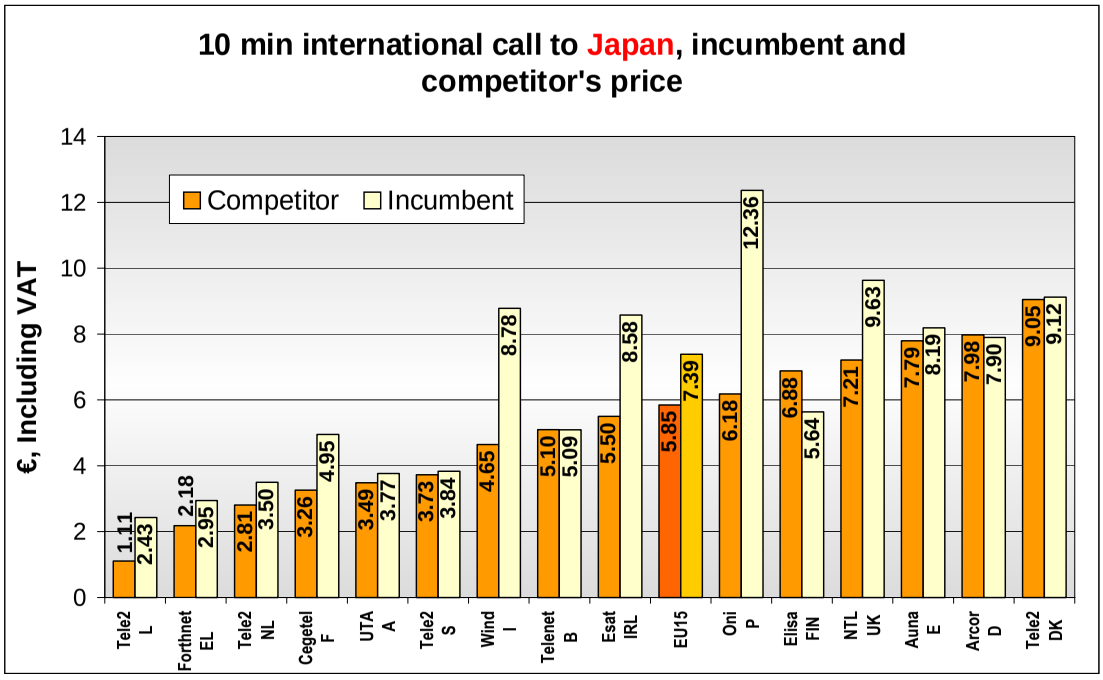


Figure 98



7 LEASED LINES RETAIL TARIFFS

This section contains an overview of prices charged by incumbent operators in each Member State for national and international leased line services as at 1 August 2003 to end users. Figures do not cover wholesale prices. Price developments are also analysed over the period August 1998-2003.

The figures and the information are taken from a study carried out by Teligen, HI Europe for the Commission. Data on standard retail prices charged by incumbent operators have been collected from the incumbent operators and communicated to the National regulatory Authorities (NRA), which checked the accuracy of these data before this report was produced.

7.1. INCUMBENTS' NATIONAL LEASED LINES

National leased line data are provided from 1998 onwards. 2 distances are covered: 2 km (local circuits), and 200 km. Tariffs are taken from the incumbent operator in each country. Other operators may offer other prices.

In order to properly reflect the tariff structures used in some countries the circuits may be considered in one of two different ways, depending on tariff structure. The one to apply will differ from carrier to carrier. The principles used in this report for calculating the price of a full circuit are:

	1: When tariff specifies local tail prices separately, in addition to main circuit.		2: When tariff specifies a single price for the circuit, end to end, including local tails.	
	Local tail length	Main circuit length	Local tail length	Main circuit length
2 km circuit	1 km	0	0	2 km
200 km circuit	2 km	196 km	0	200 km

Note: The local tail length is per tail, i.e. there will be 2 such tails with each circuit.

Where several tariff options exist depending on type of location, the criteria for choice is as follows:

- 2 km circuits are always within a major city (usually the Capital)
- 200 km circuits are between a major city and a “minor” city

As the definitions vary between countries, the type of tariff option chosen will also vary. The countries where the price may vary with location or other non-distance related definitions, are: Belgium, France, Austria, Finland, Sweden and the UK.

Some operators apply termination charges per local end, without necessarily covering the local tail circuit within that charge.

4 types of circuits are covered: 64 kb/s, 2 Mb/s, 34 Mb/s and 155 Mbit/s. As not all carriers publish tariffs for all these bitrates and all years, there may be some gaps in the information, especially for higher bitrates.

Some carriers offer 2 Mb/s circuits as both structured and unstructured. In this analysis only unstructured circuits are included.

Also, some carriers offer different types of leased lines, often in the form of “basic circuits” and circuits in a managed network. Only “basic circuits” are included in this analysis, as the managed network services are not comparable between carriers.

Lately a few carriers have decided not to publish their prices for some or all types of leased lines. This makes it increasingly difficult to present a full overview of the prices in all 15 EU countries.

For the USA the prices of Verizon intra-LATA circuits for New York state have been used. The bitrates of leased lines offered in some countries may be different from the ones found in most EU member States. Some operators may offer 56 kb/s instead of 64 kb/s, 1.5 Mb/s instead of 2 Mb/s, 45 or 50 Mb/s instead of 34 Mb/s, and 140 or 150 Mb/s instead of 155 Mb/s. Prices shown in the tables and graphs in this section of the report have been adjusted according to the difference in capacity.

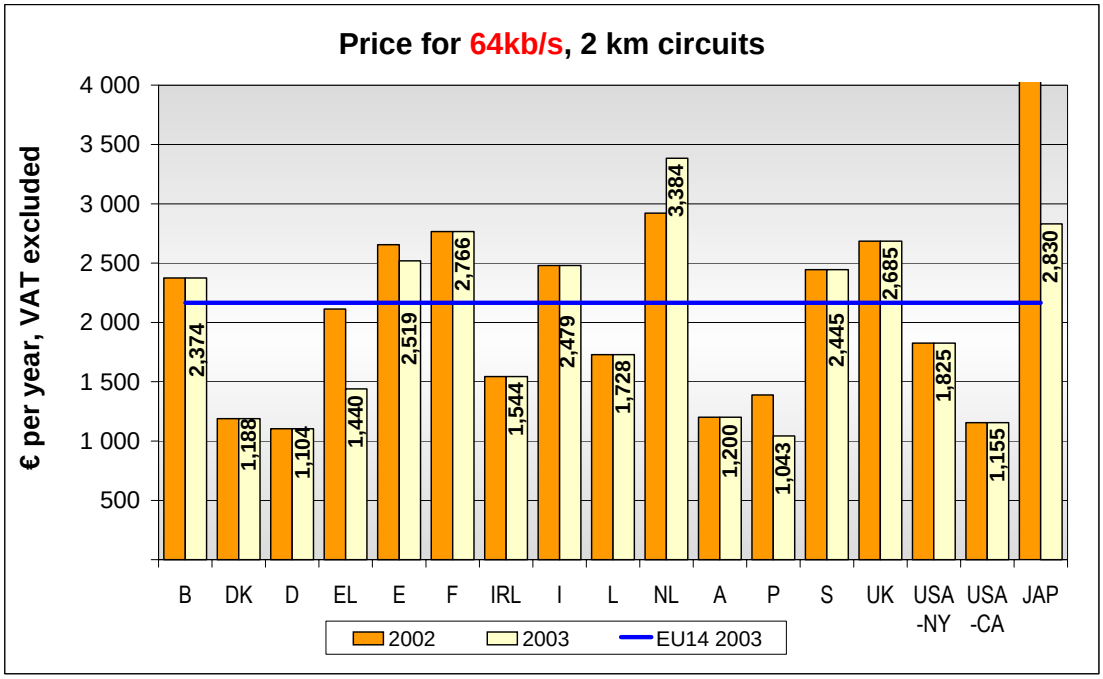
All prices are presented in EURO per month, excluding VAT.

The validity dates of the tariffs used in this section are:

Austria	01/09-01
Belgium	01/07-01
Denmark	01/01-03
Finland	
France	01/07-03
Germany	17/04-02
Greece	01/04-03
Ireland	18/06-03
Italy	01/11-00
Luxembourg	01/01-02
Netherlands	01/05-03
Portugal	01/03-03
Spain	01/01-03
Sweden	01/04-00
UK	01/12-02
USA, Verizon	13/05-02
USA, PacBell	08/08-02

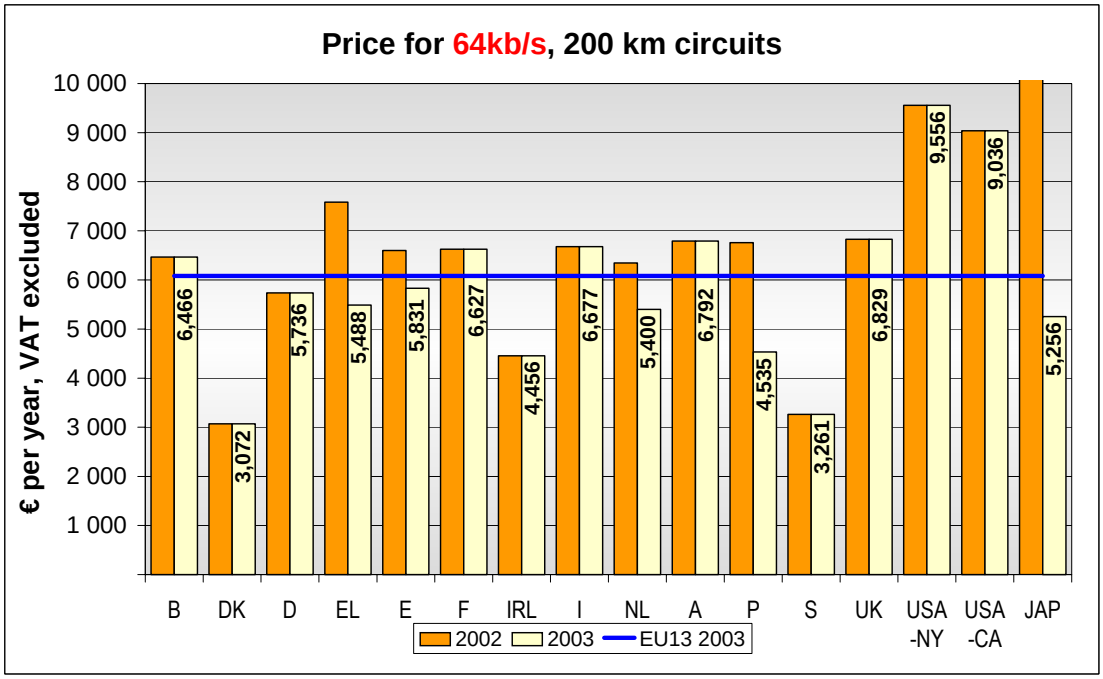
7.1.1. 64 Kbit/s

Figure 99



- Data for Finland not available.

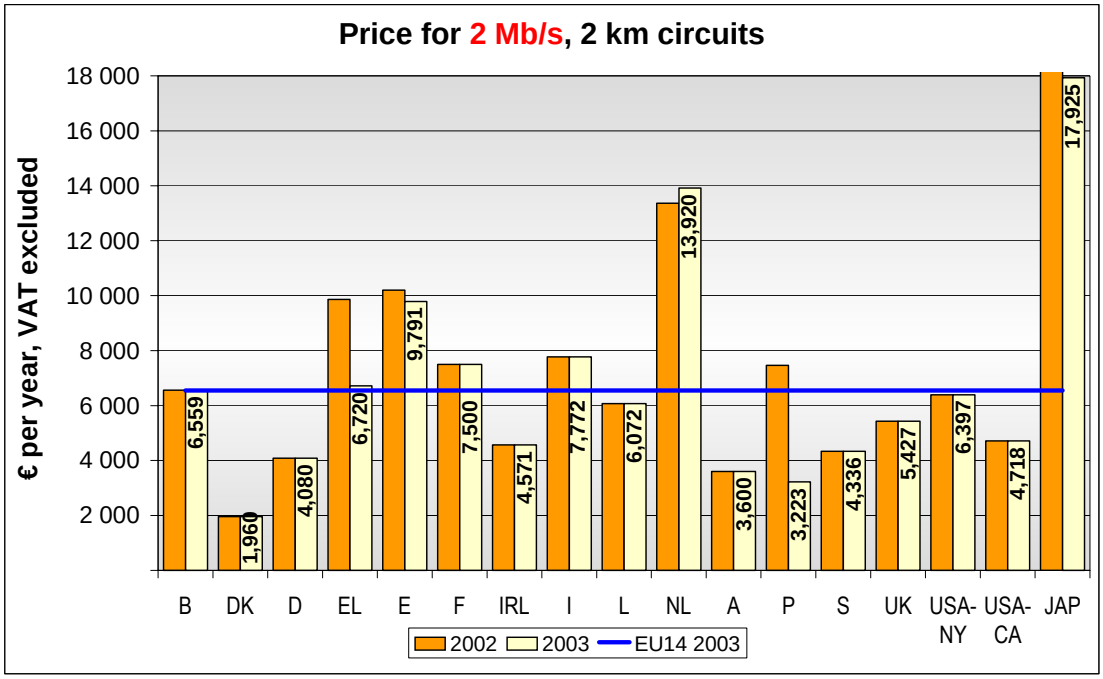
Figure 100



- Data for Finland not available.
- Distances at 200 Km not possible in Luxembourg.

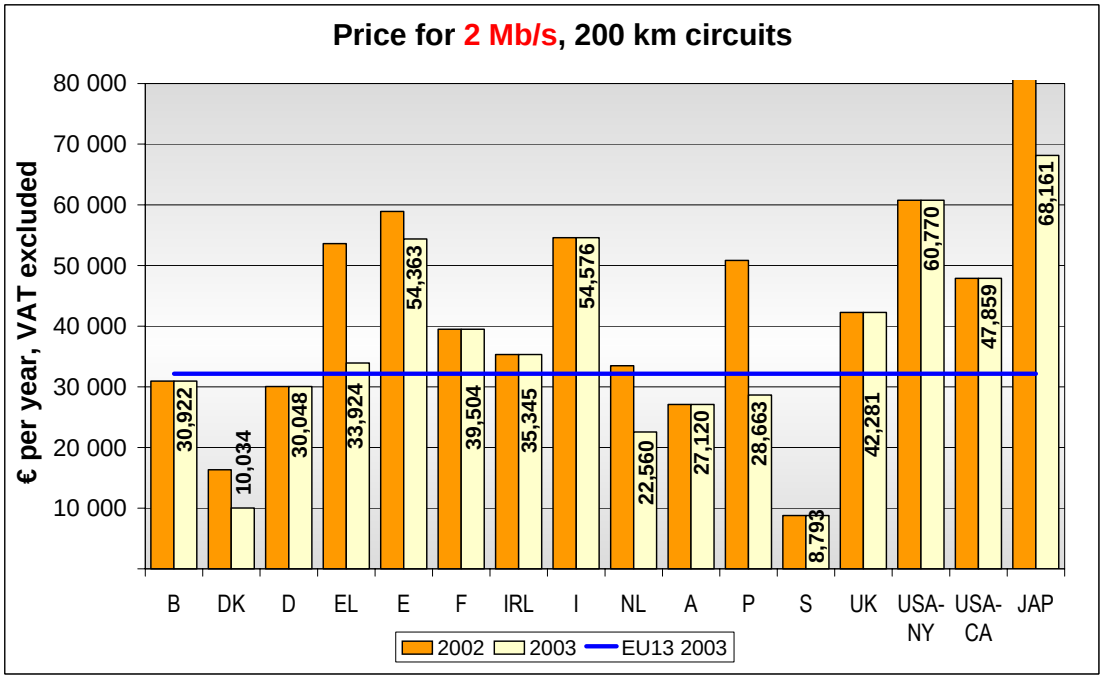
7.1.2. 2 Mbit/s

Figure 101



- Data for Finland not available.

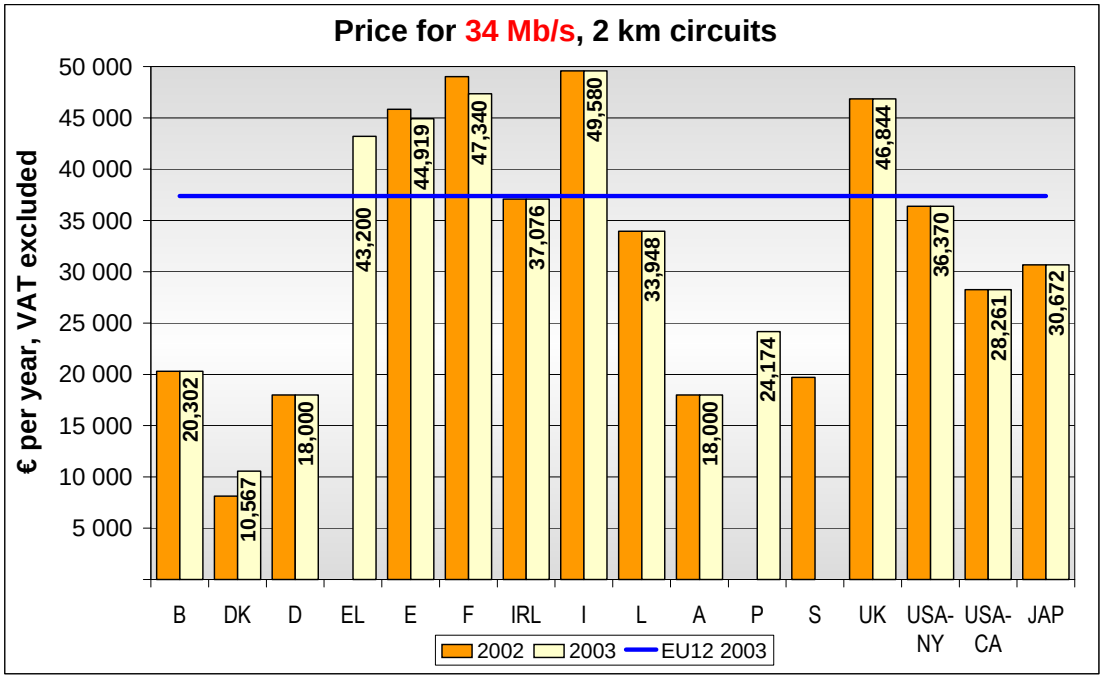
Figure 102



- Data for Finland not available.
- Distances at 200 Km not possible in Luxembourg.

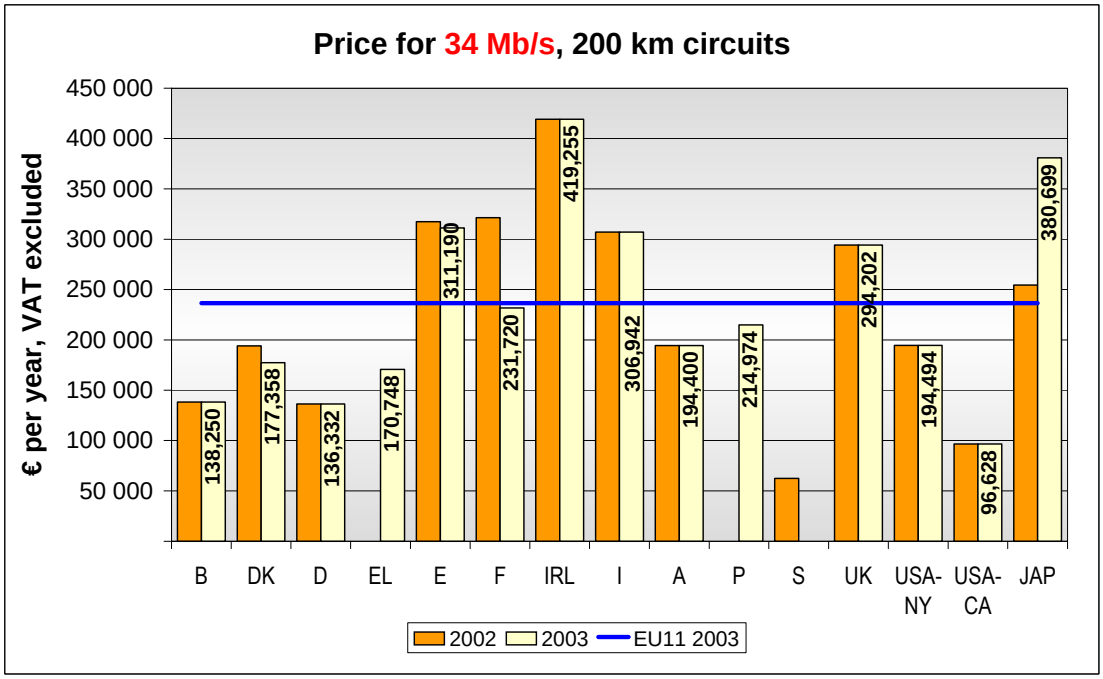
7.1.3. 34 Mbit/s

Figure 103



- Data for NL, S and FIN not available.

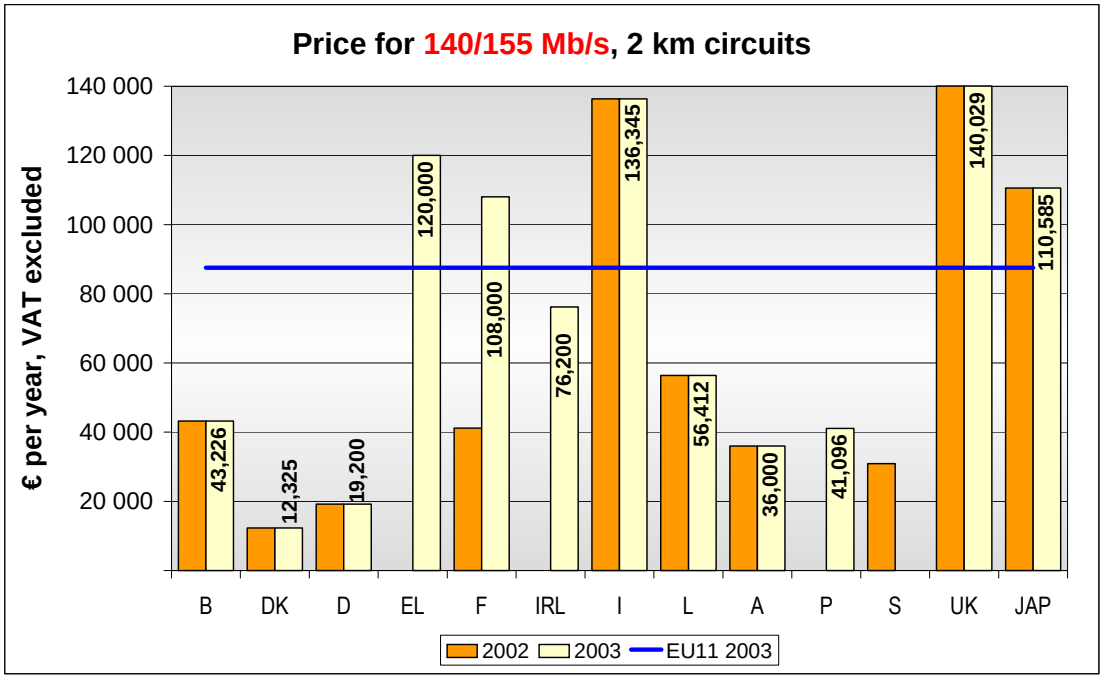
Figure 104



- Data for NL, S and FIN not available.
- Distances at 200 Km not possible in Luxembourg.

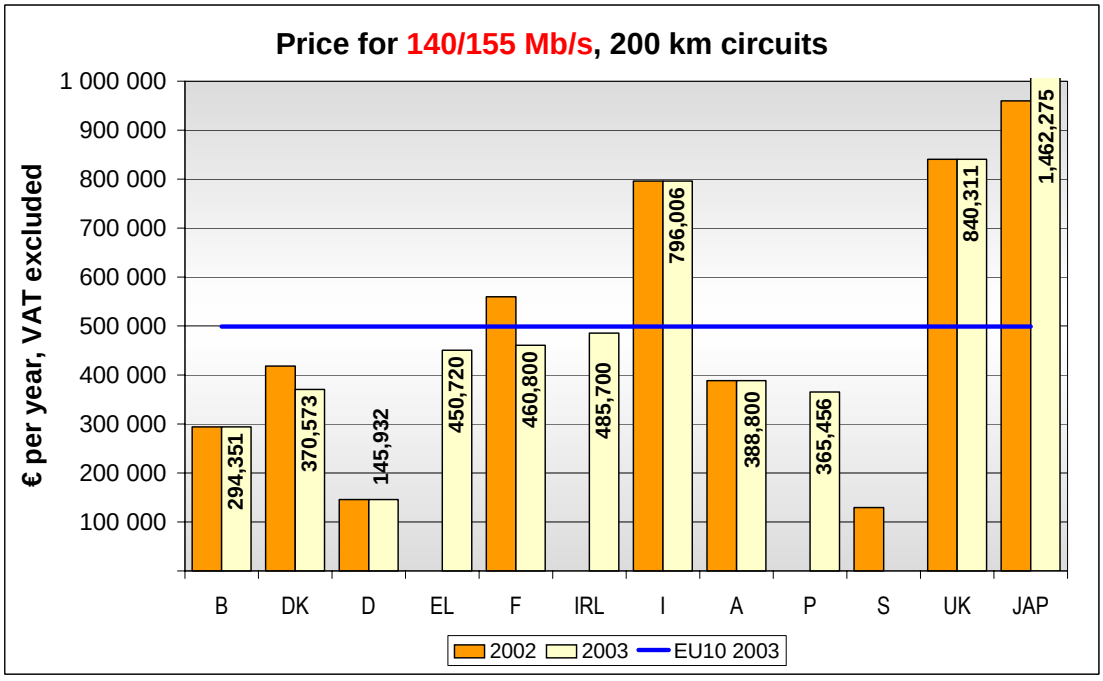
7.1.4. 155 Mbit/s

Figure 105



- Data for E, NL, FIN and S not available.

Figure 106



- Data for E, NL, FIN and S not available.
- Distances at 200 Km not possible in Luxembourg.

7.2. NATIONAL LEASED LINES PRICE TRENDS (1 AUGUST 1998 - 1 AUGUST 2003)

Figure 107

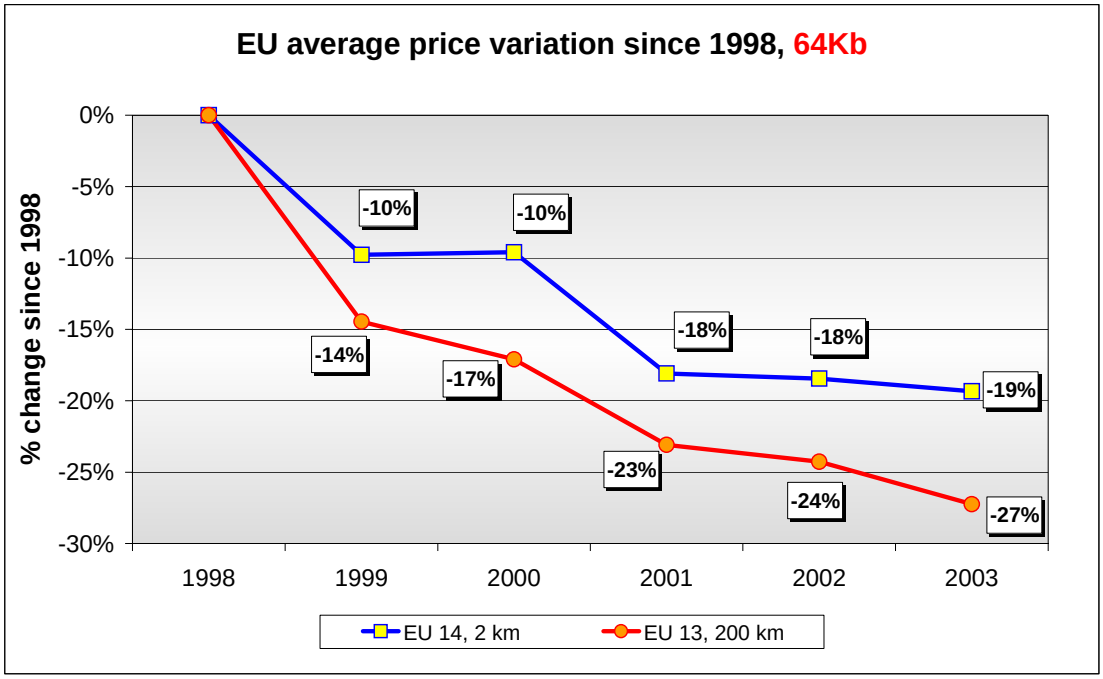
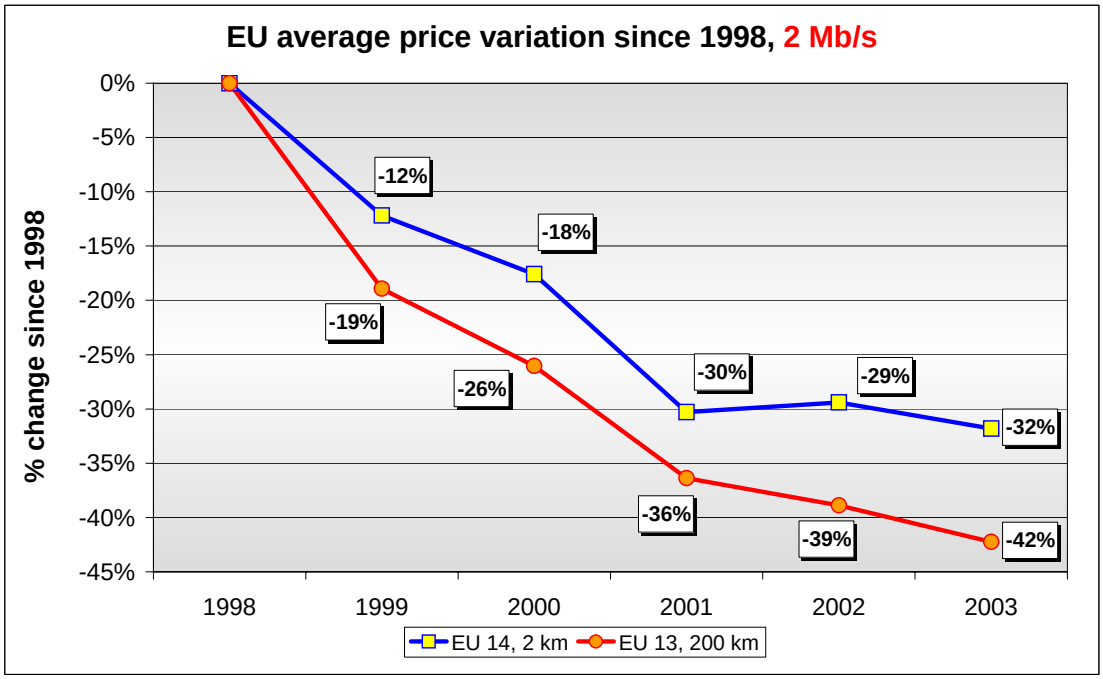


Figure 108



7.3. INTERNATIONAL LEASED LINES PRICES

This section examines the standard retail prices (annual rental) for international leased line services (half-circuits in each country) charged by the incumbent operators in each Member State. The corresponding half-circuit into the other country has not been taken into account, as it would severely distort the comparison.

An analysis of the price development over the period from August 1998 to August 2003 is also included.

Three destinations are covered: international half circuits to the nearest EU country (hereafter "near EU"), to the most distant EU country ("far EU") and to the USA.

Three types of circuits are considered: digital 64 Kbit/s, 2 Mbit/s and 34 Mbit/s. Given that price information on 155 Mbit/s international lines is only available for a few Member States, the analysis of these circuits is omitted.

The data is presented with the following parameters:

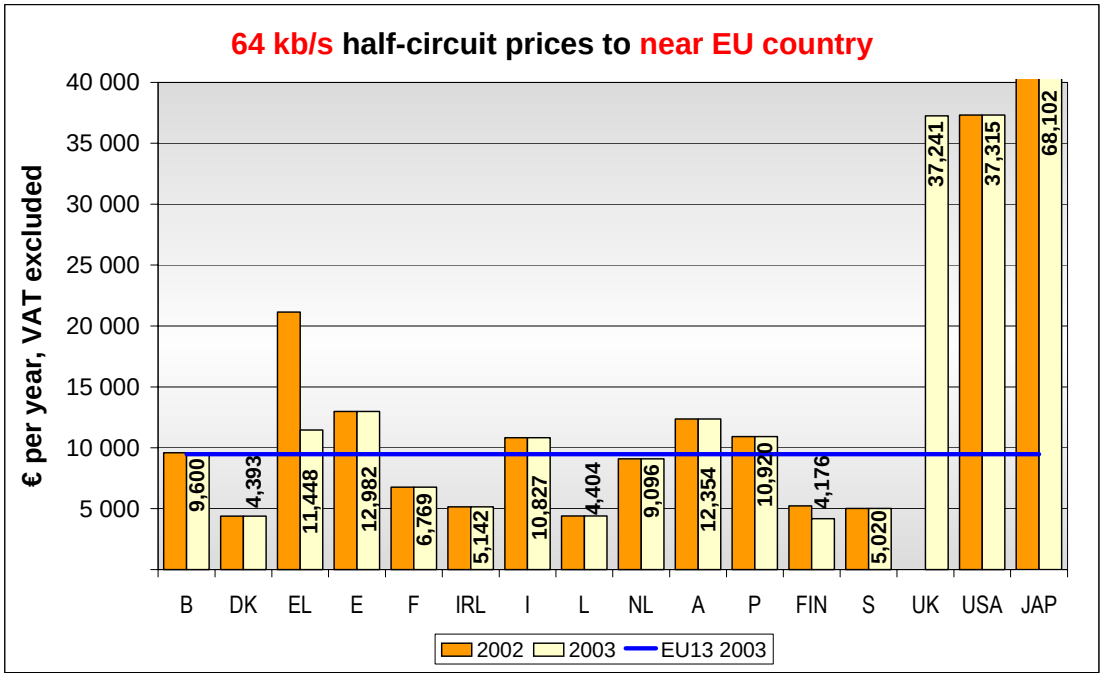
- All charges in Euro per month
- Excluding VAT
- Germany is not included in the analysis because Deutsche Telekom does not publish prices for international half circuits.
- The years from 1998 are covered
- Variable / 1 year contract (shortest term available).
- AT&T prices are used for USA

The validity of the tariffs is summarised below:

	Valid date	**Confirmed**
Belgium	01/04/2002	08/08/2003
Denmark	01/01/2003	08/08/2003
Germany	01/01/2000	-
Greece	31/03/2003	08/08/2003
Spain	01/01/2003	08/08/2003
France	01/10/2002	08/08/2003
Ireland	29/12/2001	08/08/2003
Italy	01/11/2001	08/08/2003
Luxembourg	01/01/2002	08/08/2003
Netherlands	01/01/2001	08/08/2003
Austria	01/07/1999	08/08/2003
Portugal	02/06/2002	08/08/2003
Finland	01/02/2003	01/08/2003
Sweden	01/01/1999	08/08/2003
UK	18/11/2002	08/08/2003
Japan	01/10/2000	08/08/2003

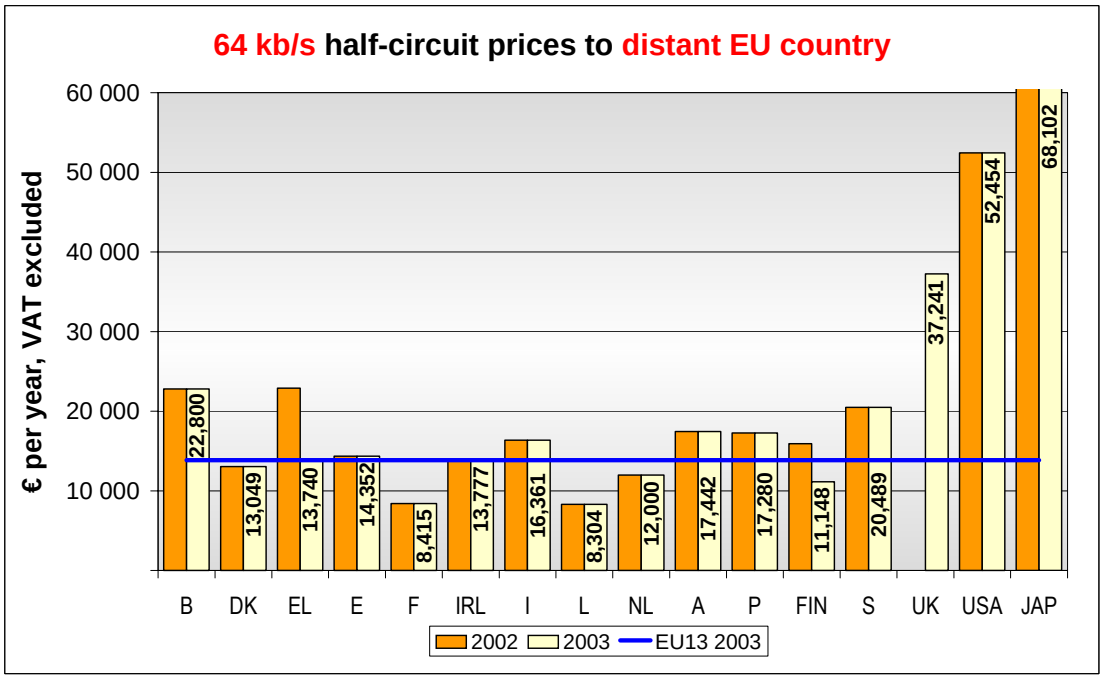
7.3.1. 64 Kbit/s

Figure 109



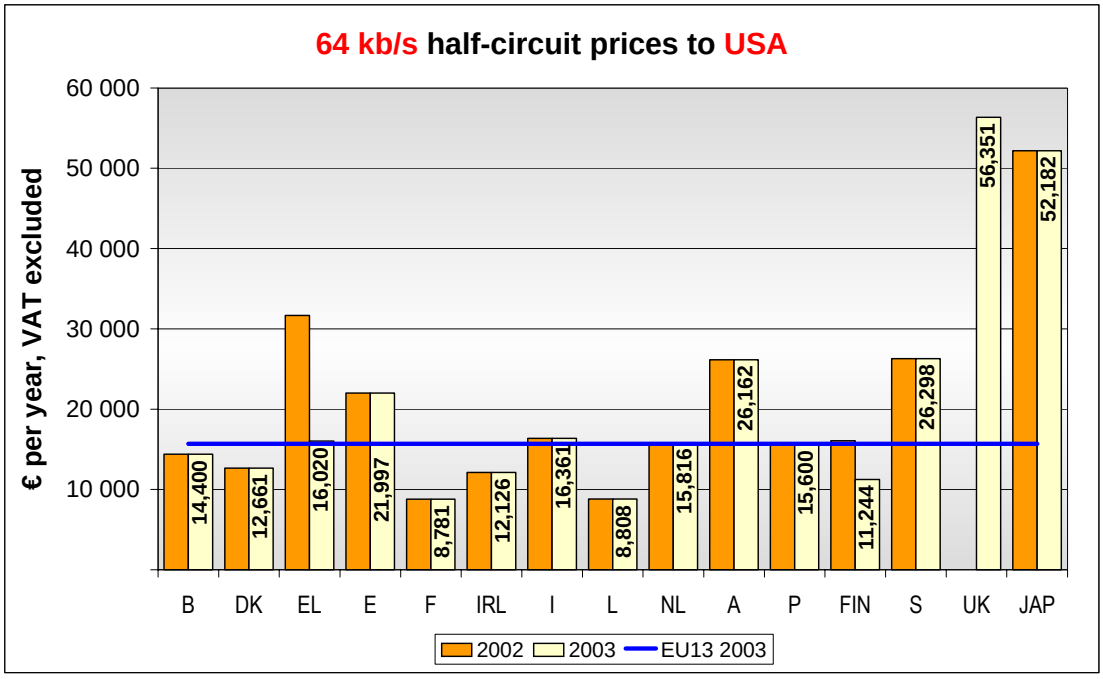
- Data for Germany not available.
- BT in the UK has stopped providing actual prices, and instead publishes the so-called "Baseline prices", which are used as a basis for any discounts applied. This is the reason for the seemingly sharp increase in 2003. 2002 prices are therefore not displayed.

Figure 110



- Data for Germany not available.
- BT in the UK has stopped providing actual prices, and instead publishes the so-called "Baseline prices", which are used as a basis for any discounts applied. This is the reason for the seemingly sharp increase in 2003. 2002 prices are therefore not displayed.

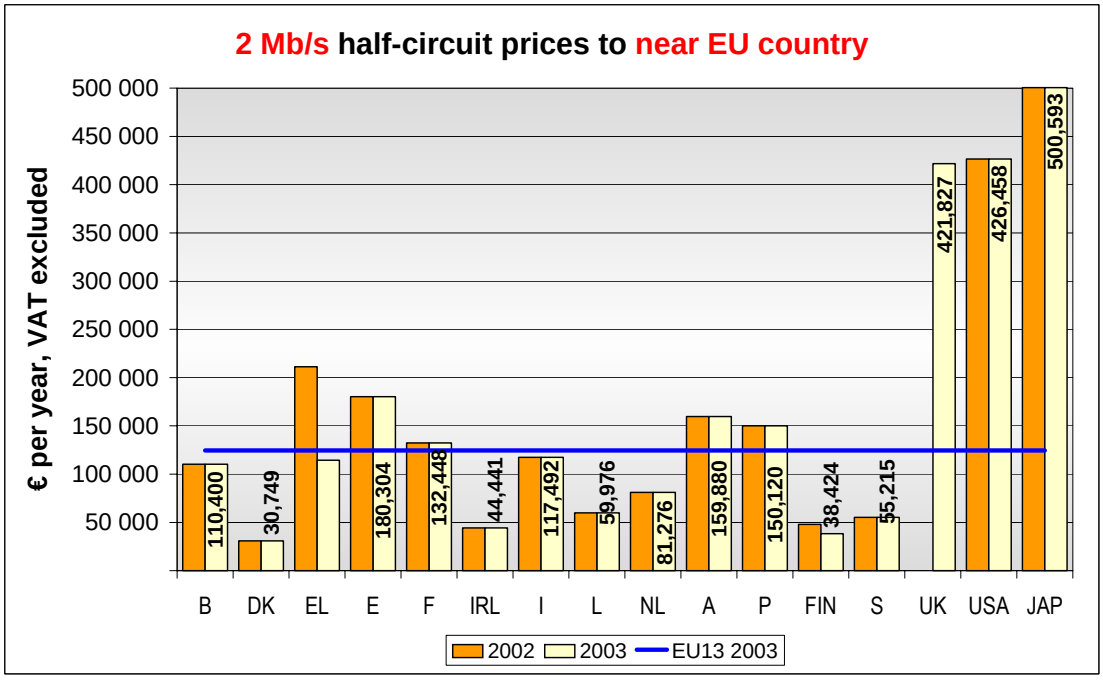
Figure 111



- Data for Germany not available.
- BT in the UK has stopped providing actual prices, and instead publishes the so-called "Baseline prices", which are used as a basis for any discounts applied. This is the reason for the seemingly sharp increase in 2003. 2002 prices are therefore not displayed.

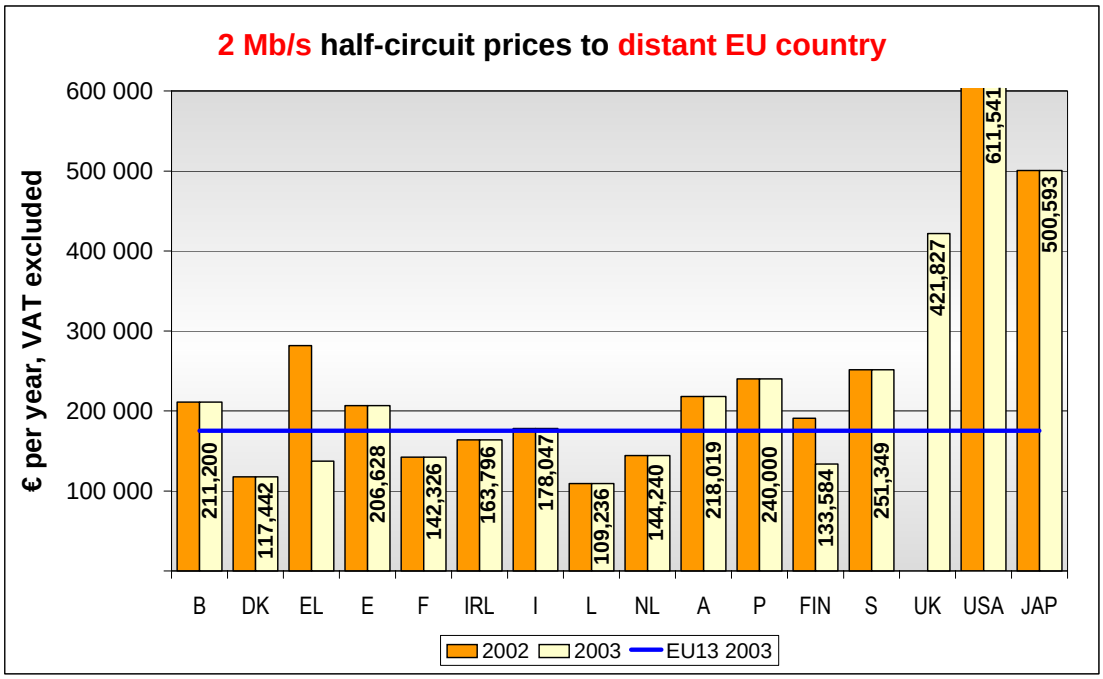
7.3.2. 2 Mbit/s

Figure 112



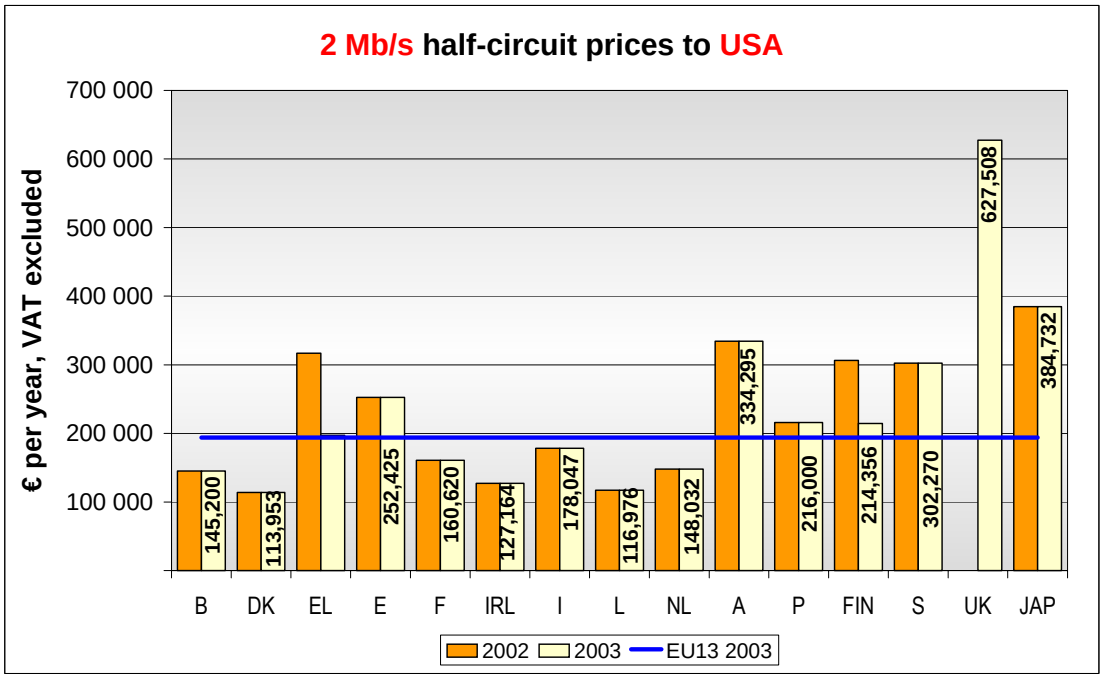
- Data for Germany not available.
- BT in the UK has stopped providing actual prices, and instead publishes the so-called "Baseline prices", which are used as a basis for any discounts applied. This is the reason for the seemingly sharp increase in 2003. 2002 prices are therefore not displayed.

Figure 113



- Data for Germany not available.
- BT in the UK has stopped providing actual prices, and instead publishes the so-called "Baseline prices", which are used as a basis for any discounts applied. This is the reason for the seemingly sharp increase in 2003. 2002 prices are therefore not displayed.

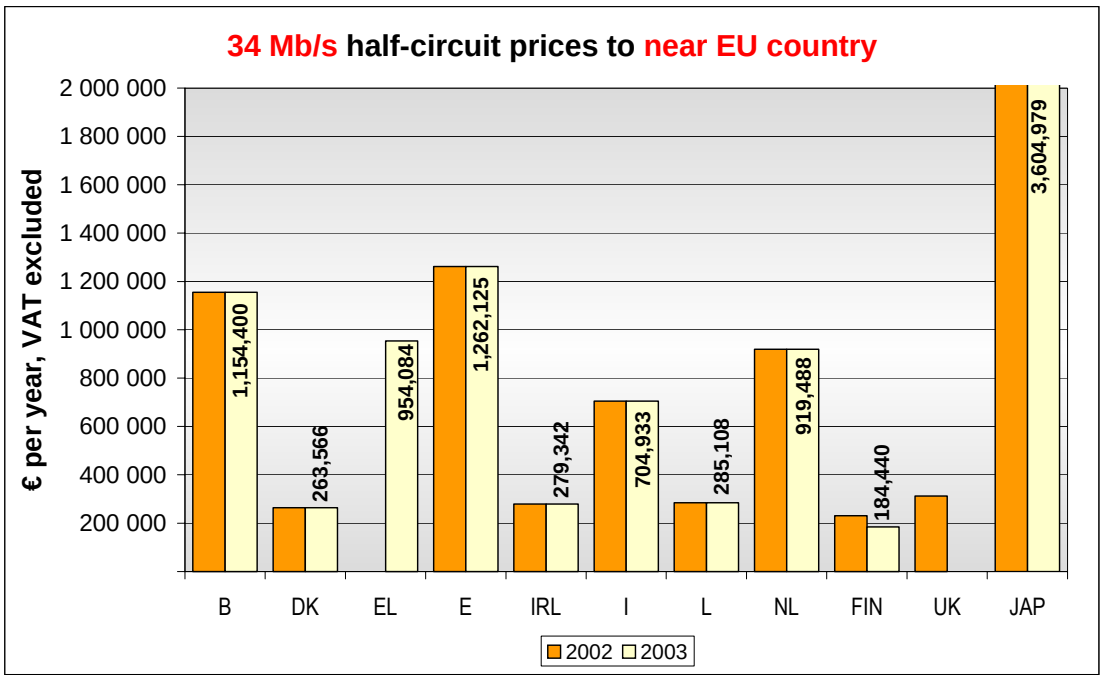
Figure 114



- Data for Germany not available.
- BT in the UK has stopped providing actual prices, and instead publishes the so-called "Baseline prices", which are used as a basis for any discounts applied. This is the reason for the seemingly sharp increase in 2003. 2002 prices are therefore not displayed.

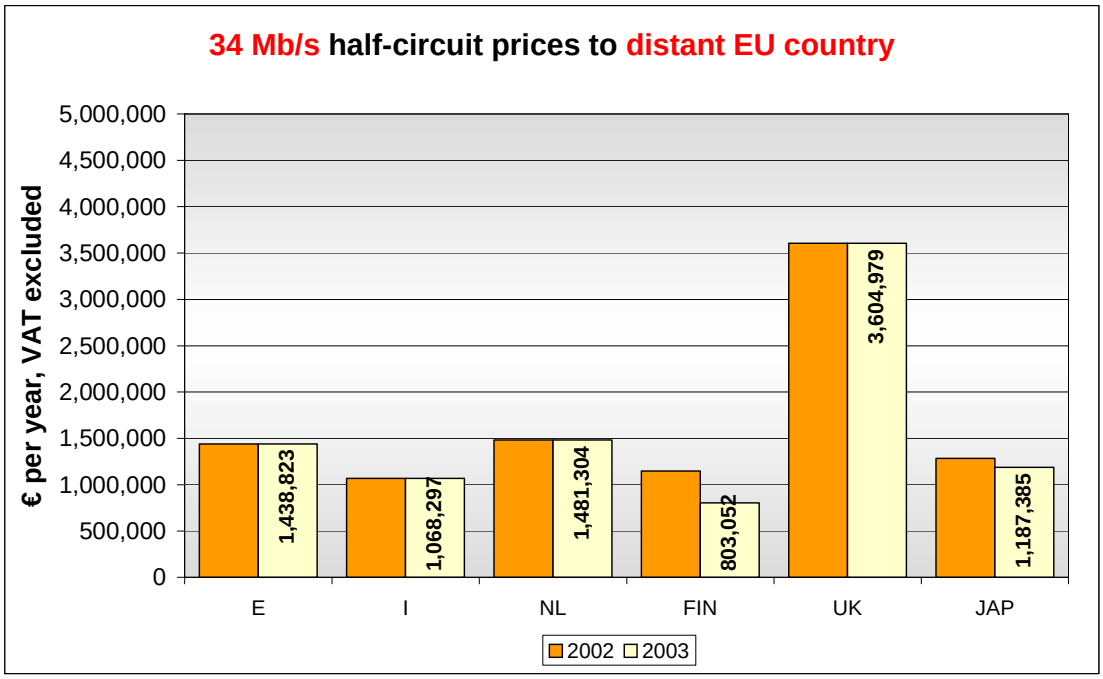
7.3.3. 34 Mbit/s

Figure 115



- Data for D, EL, F, A, P and S not available.

Figure 116



7.4. INTERNATIONAL LEASED LINES PRICE TRENDS (1 AUGUST 1998 - 1 AUGUST 2003)

Figure 117

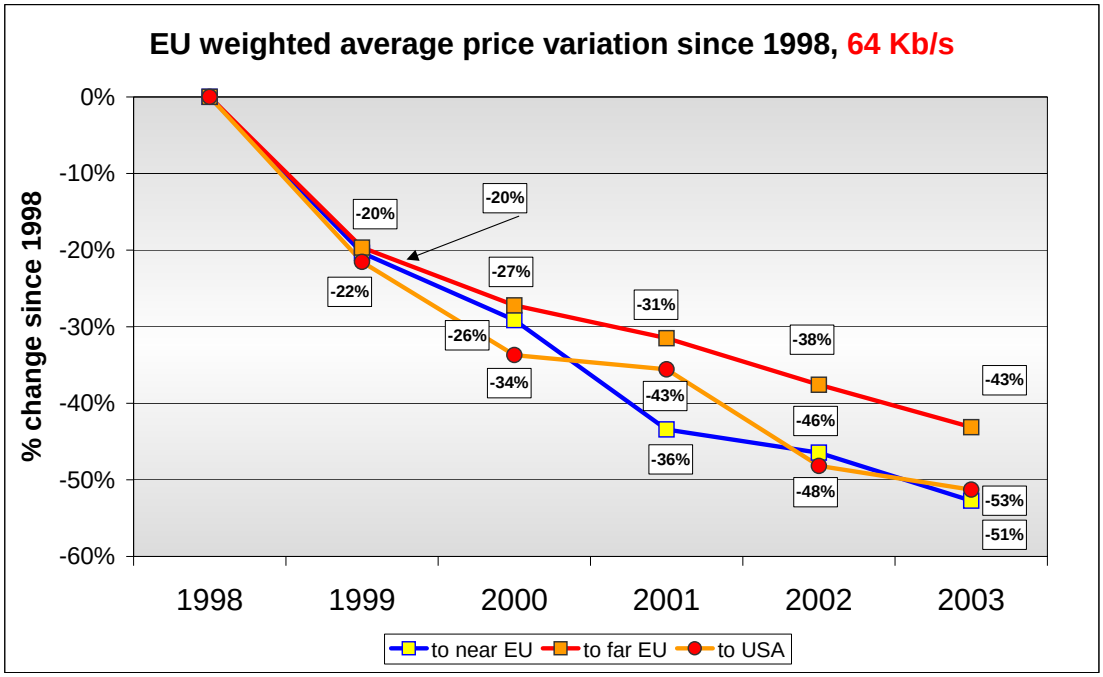
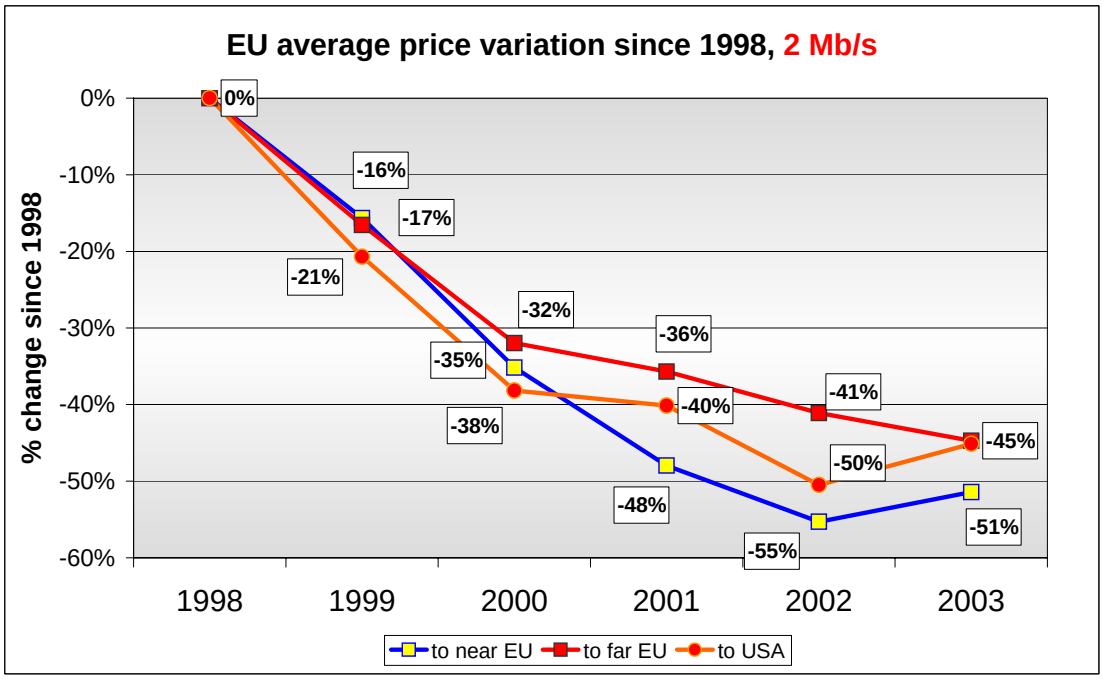


Figure 118



8 DIGITAL TELEVISION

This chapter provides information on the EU market for digital television. The following areas are covered:

Market penetration.
Operators and interactive TV services.
DTV equipment.

As it was the case last year, the services of the European Commission sent a questionnaire to Member States requesting relevant information. The quality of the replies received varies, for instance, whereas three MS did not reply, some others provided detailed information. In addition, information from different MS is not always consistent, so that data provided in reply to one particular question may reflect different assumptions and timing. It was therefore difficult to present data received in reply to the questionnaire in a standard format that would facilitate comparison between MS.

As a result of these statistical shortcomings, the EC services decided to prepare certain of the tables and charts on the basis of data from another source.[23] Data received from MS, which in some cases diverge from those in the tables and charts, are reported in footnotes.

The following abbreviations are used in this chapter: digital television (DTV), European Commission (EC), free-to-air (FTA) or "free-to-view" (FTV)[24], households (HH), integrated digital television receiver (iDTV), interactive television (iTV), Member States (MS), set-top-box (STB), digital subscriber line (DSL).

8.1. EU DIGITAL TELEVISION MARKET PENETRATION

General considerations

No consistent information was obtained as to the market share of premium digital pay TV, received against payment of a subscription fee, and FTA DTV. Consequently, market penetration data presented here cover both pay and FTV services and comments are provided where additional information is available. In general, it can be assumed that pay-TV operators still account for most of EU DTV penetration.[25] This being said, some MS provided data on the share between pay and FTV DTV for the different delivery networks.[26]

[23] Namely data from a report by independent consultant *Strategy Analytics*: *"Digital TV Devices: European Market Forecast, July 2003"*. Whereas 2003 figures provided by MS reflect the market status when those data were collected, 2003 figures by *Strategy Analytics* are an estimation for the whole year. In addition, information from *Strategy Analytics* does not cover Luxembourg, where data provided by the Member State have been used.

[24] Whereas the two concepts FTA/FTV are used here interchangeably, that is not always the case in other contexts, where they are understood as follows: free-to-view services are normally on satellite and encrypted for rights purposes, but there is no subscription payment, only a once-off payment for the card. Free-to-air services are normally terrestrial, non-encrypted, non-pay.

[25] It was indicated in the 7th *implementation report* that consultancy firm 'IDATE' estimated that in 2000 only 5% of DTV households received exclusively FTA services. However, in many cases, DTV subscribers receive certain FTA channels in addition to pay channels

[26] Figures are given in millions of HH.

In addition, some MS provided data on the number of households within TV networks coverage.[27]

Unless otherwise specified, percentages of DTV HH are expressed as a percentage of TV HH.

Market penetration data are broken down by TV delivery mechanism (cable, satellite, terrestrial).[28] There should be no overlaps in the market data if the statistics provided correspond to one single TV set (the main TV set in the home). However, this approach may not always have been respected so that there may be some overlapping corresponding to those HH which receive services from different TV networks on secondary TV sets.[29]

Germany: cable pay-DTV (1.5), satellite pay-DTV (1.1), satellite FTV DTV (1.0), terrestrial pay-DTV (0), terrestrial FTV DTV (0.12)
Italy: cable pay-DTV (>0.1), satellite pay-DTV (3.2), satellite FTV DTV (0),
Netherlands: cable pay-DTV (0.1), cable FTV DTV (0), satellite pay-DTV (0.4), satellite FTV DTV (0.07).
Spain: satellite pay-DTV (2.2).
Sweden: cable pay-DTV (0.16), satellite pay-DTV (0.475), terrestrial pay-DTV (0.17).
UK: cable pay-DTV (2.1), satellite pay-DTV (6.4), satellite FTV DTV (0.6), terrestrial FTV DTV (1.6), DSL pay-DTV (0.012)
France: cable pay-DTV (0.82), satellite pay-DTV (3.2).
Greece: satellite pay-DTV (0.2), satellite FTV DTV (0.5)

[27] Figures are given in millions of HH.
Denmark: satellite DTV (2.3), terrestrial DTV (0.23).
Finland: cable DTV (0.9), satellite DTV (2.32), terrestrial DTV (1.7).
France: cable DTV (7.5), satellite DTV (25.2).
Germany: cable DTV (20.6), satellite DTV (37.0), DSL (4.0).
Greece: satellite DTV (3.8).
Italy: cable DTV (1.3), satellite DTV (22.2), DSL (1.2).
Netherlands: cable DTV (5.73).
Portugal: satellite DTV (5.02).
Spain: cable DTV (3.83), satellite DTV (7.46), terrestrial DTV (1.79).
Sweden: cable DTV (1.9), satellite DTV (4.0), terrestrial DTV (3.6), DSL (1.1).
UK: cable DTV (12.4), satellite DTV (24.0), terrestrial DTV (18.6).

[28] Although satellite, cable and terrestrial are the main platforms for the delivery of digital television, new technologies are evolving, such as digital television over ADSL, which has already been introduced in some Member States. However, the penetration rates for DSL TV are still very low and do not exceed 1% of total EU TV households.

[29] It was not possible to obtain reliable data on secondary TV reception in the EU. However some MS indicated the percentage of HH with more then one TV set. For instance in France there are 59.4% of HH with only one TV set, 30.3% HH with two TV sets, 7.9% HH with three TV sets and 2.4% with four or more TV sets.

1. Market data

Table 1: TV households (analogue and digital) in 2003
(in millions and in percentage of national households)

	Total TV HH	Cable TV		Satellite TV		Terrestrial TV - only	
		TV HH	%	TV HH	%	TV HH	%
Austria	3,2	1,32	40,8%	1,6	49,6%	0,31	9,6%
Belgium	4,2	3,9	93,0%	0,1	2,0%	0,21	5,0%
Denmark	2,3	1,1	46,4%	0,6	26,5%	0,61	27,1%
Finland	2,3	1,0	43,9%	0,24	10,5%	1,04	45,6%
France	24,4	2,9	11,9%	5,0	20,5%	16,51	67,6%
Germany	36,6	20,6	56,3%	14,0	38,3%	1,96	5,4%
Greece	3,0	0,00	0,0%	0,25	8,6%	2,72	91,4%
Ireland	1,31	0,47	35,8%	0,38	28,7%	0,47	35,5%
Italy	20,9	0,06	0,3%	3,2	15,5%	17,59	84,2%
Luxembourg	0,2	0,16	91,7%	0,01	5,8%	0,00	2,4%
Netherlands	7,1	6,3	89,0%	0,27	3,8%	0,51	7,2%
Portugal	3,1	0,90	28,7%	0,42	13,2%	1,82	58,1%
Spain	12,6	0,9	7,1%	1,8	14,3%	9,89	78,5%
Sweden	4,5	2,10	47,1%	0,8	17,9%	1,56	35,0%
UK	24,4	3,8	15,6%	7,6	31,3%	12,98	53,2%
TOTAL EU	**149,94**	**45,4**	**30,3%**	**36,3**	**24,2%**	**68,2**	**45,5%**

Figures in this table come from *Strategy Analytics: "Digital TV Devices: European Market Forecast, July 2003"*, except for Luxembourg, where figures provided by national authorities for 2002 were used.

No reliable data were available for HH with only terrestrial TV reception. This has been estimated as follows: total TV HH minus satellite and cable HH.

Figure 119

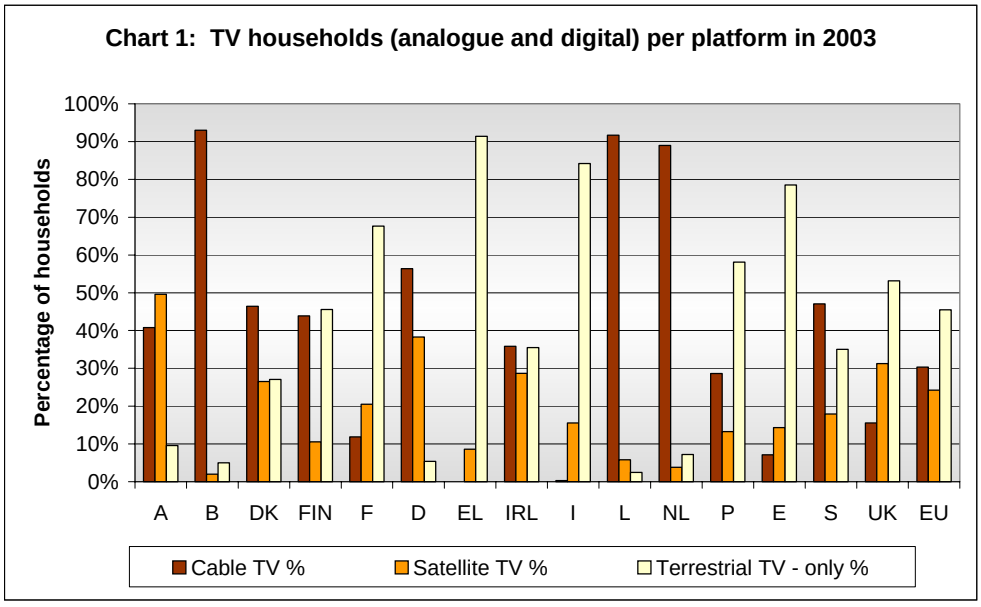


Table 2: Digital TV households in 2003
(in millions and in percentage of national households)

	Total TV HH	Total Digital TV HH		Cable DTV		Satellite DTV		Terrestrial DTV	
		TV HH	%	TV HH	%	TV HH	%	TV HH	%
Austria	3,2	0,55	17,1%	0,05	1,6%	0,50	15,5%	0,00	0,0%
Belgium	4,2	0,18	4,3%	0,16	3,8%	0,02	0,5%	0,00	0,0%
Denmark	2,3	0,35	15,5%	0,08	3,5%	0,27	11,9%	0,00	0,0%
Finland	2,3	0,21	9,2%	0,02	0,9%	0,10	4,4%	0,09	3,9%
France	24,4	4,62	18,9%	0,92	3,8%	3,70	15,2%	0,00	0,0%
Germany	36,6	5,16	14,1%	1,63	4,5%	3,15	8,6%	0,38	1,0%
Greece	3,0	0,25	8,4%	0,00	0,0%	0,25	8,4%	0,00	0,0%
Ireland	1,3	0,46	35,1%	0,10	7,6%	0,36	27,4%	0,00	0,0%
Italy	20,9	2,85	13,6%	0,00	0,0%	2,85	13,6%	0,00	0,0%
Luxembourg	0,2	0,01	5,3%	0,00	1,0%	0,01	4,2%	0,00	0,0%
Netherlands	7,1	0,69	9,7%	0,11	1,6%	0,55	7,8%	0,03	0,4%
Portugal	3,1	0,51	16,2%	0,02	0,6%	0,49	15,6%	0,00	0,0%
Spain	12,6	2,38	18,9%	0,15	1,2%	2,06	16,4%	0,17	1,3%
Sweden	4,5	1,25	28,0%	0,17	3,8%	0,88	19,7%	0,20	4,5%
UK	24,4	13,14	53,8%	2,29	9,4%	8,04	32,9%	2,81	11,5%
TOTAL EU	149,94	32,6	21,7%	5,7	3,8%	23,2	15,5%	3,7	2,5%

Figures in this table come from *Strategy Analytics: "Digital TV Devices: European Market Forecast, July 2003"*, except for Luxembourg, where figures provided by national authorities for 2002 were used. Figures provided by other national authorities are indicated in footnote.[30]

[30] Figures are given in million HH.
Finland: satellite DTV (0.045), cable and terrestrial DTV (0.097).
France: cable DTV (0.82), satellite DTV (3.2).
Germany: cable DTV (1.62), satellite DTV (2.1), terrestrial DTV (0.12).
Greece: satellite DTV (0.7).
Italy: cable DTV (>0.1), satellite DTV (3.2).
Netherlands: cable DTV (0.107), satellite DTV (0.47).
Spain: satellite DTV (2.2).
Sweden: cable DTV (0.16), satellite DTV (0.475), terrestrial DTV (0.17).
UK: cable DTV (2.1), satellite DTV (7.2), terrestrial DTV (1.6), DSL TV (0.012).

Figure 120

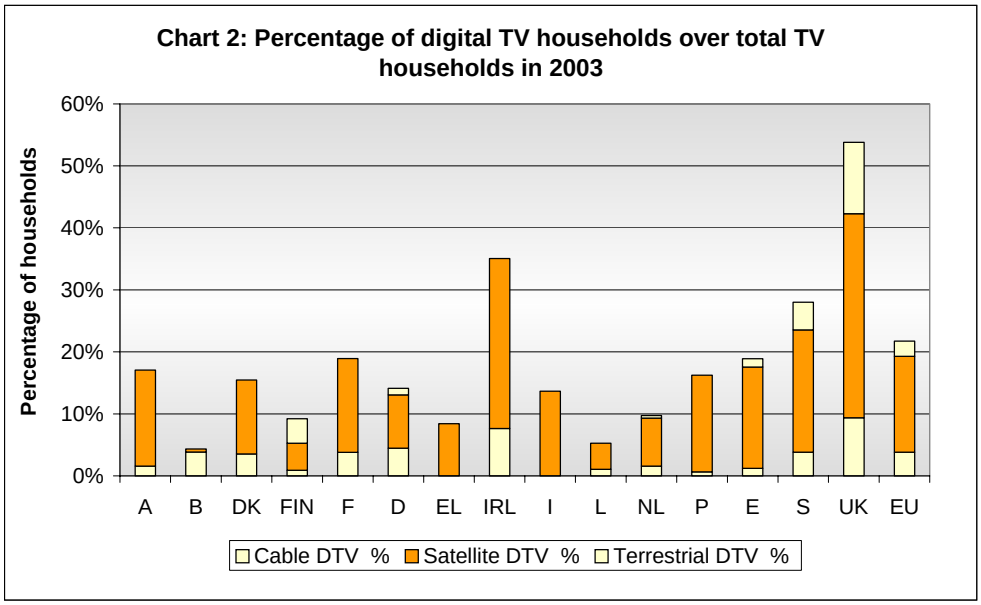
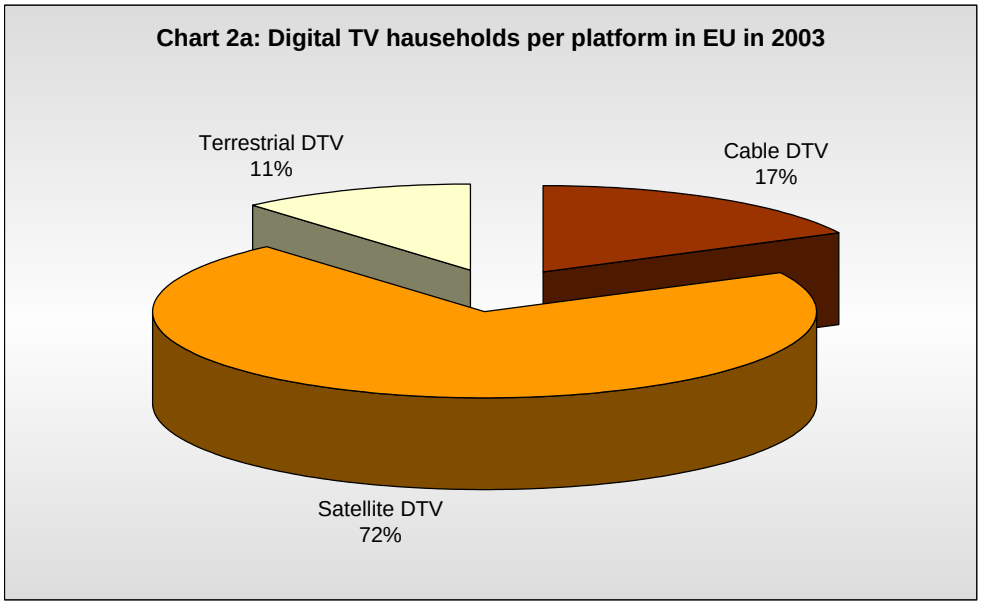


Chart 2: Percentage of digital TV households over total TV households in 2003
Percentage of households
60%
50%
40%
30%
20%
10%
0%
A
B
DK
FIN
F
D
EL
IRL
I
L
NL
P
E
S
UK
EU
Cable DTV %
Satellite DTV %
Terrestrial DTV %

Figure 121



Charts 120 to 127: Percentage of EU digital TV households over total EU TV households in 2002 and 2003 for total TV, cable TV, satellite TV and terrestrial TV

Figure 122

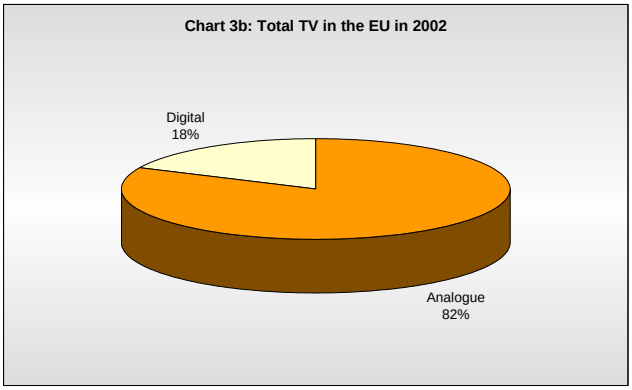


Figure 124

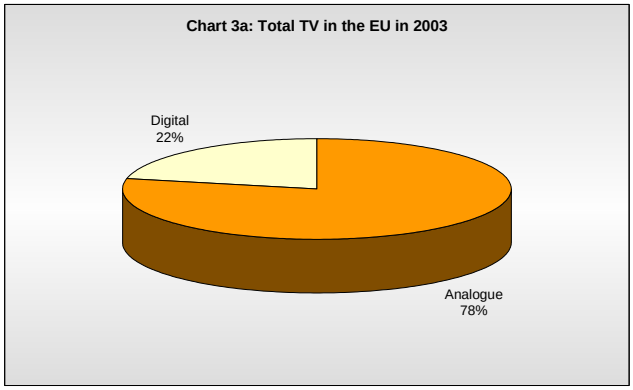


Figure 123

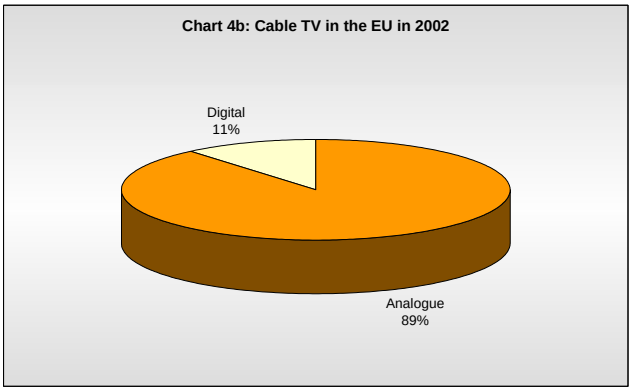


Figure 125

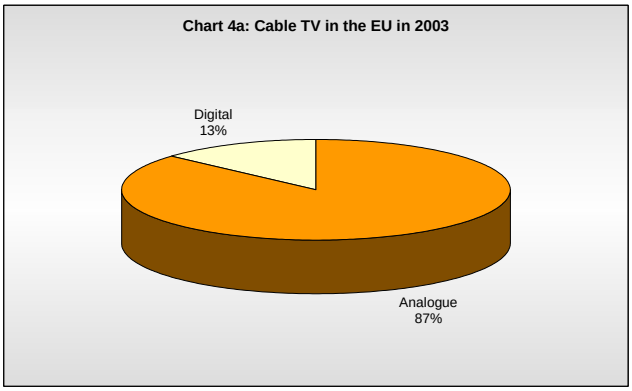


Figure 126

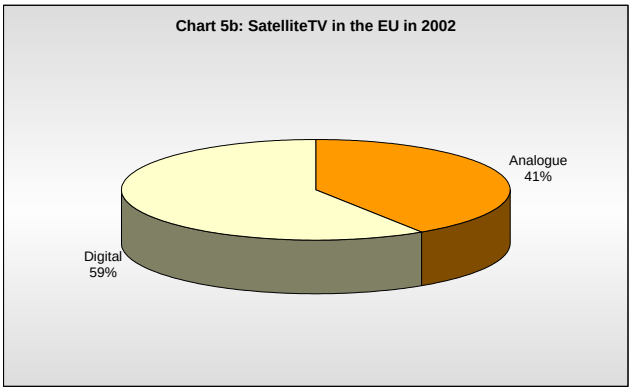


Figure 128

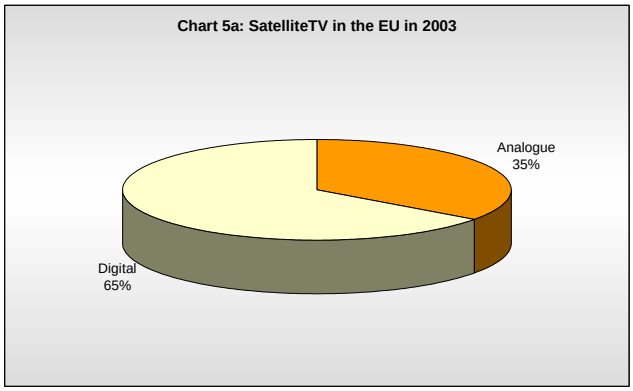


Figure 127

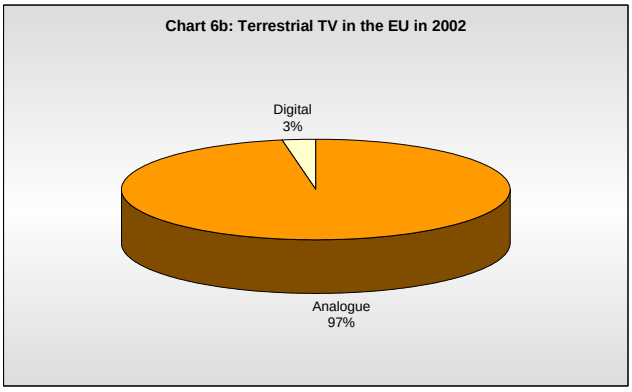
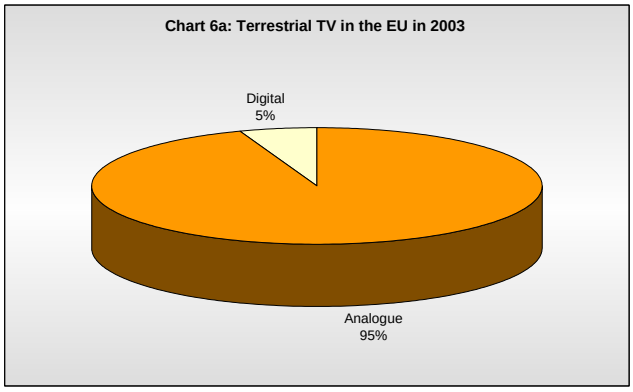


Figure 129



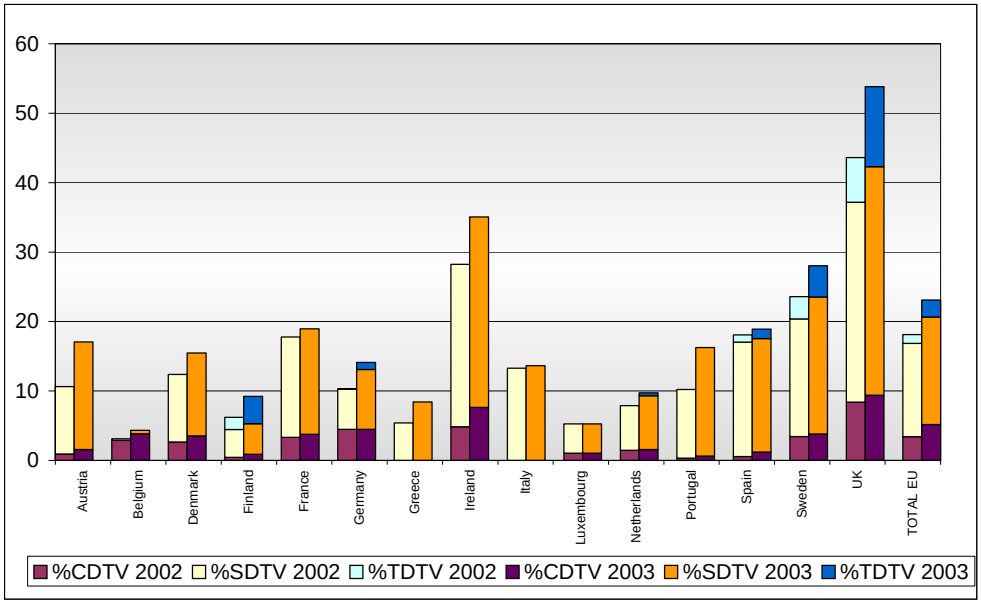
2003 charts were calculated with data from tables 1 and 2. 2003 charts were calculated using data from *Strategy Analytics: "Digital TV Devices: European Market Forecast, July 2003"*

(in millions and in percentage of national HH)																		
			Total Digital TV HH				Cable DTV				Satellite DTV				Terrestrial DTV			
	Total HH		TV HH		%		TV HH		%		TV HH		%		TV HH		%	
	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003
Austria	3,2	3,2	0,34	0,55	10,628%	17,060%	0,03	0,05	0,938%	1,551%	0,31	0,50	9,691%	15,509%	0,00	0,00	0,000%	0,000%
Belgium	4,2	4,2	0,13	0,18	3,118%	4,317%	0,12	0,16	2,878%	3,837%	0,01	0,02	0,240%	0,480%	0,00	0,00	0,000%	0,000%
Denmark	2,3	2,3	0,28	0,35	12,385%	15,468%	0,06	0,08	2,654%	3,536%	0,22	0,27	9,731%	11,933%	0,00	0,00	0,000%	0,000%
Finland	2,3	2,3	0,14	0,21	6,208%	9,216%	0,01	0,02	0,443%	0,878%	0,09	0,10	3,991%	4,389%	0,04	0,09	1,774%	3,950%
France	24,1	24,4	4,29	4,62	17,777%	18,928%	0,80	0,92	3,315%	3,769%	3,49	3,70	14,462%	15,159%	0,00	0,00	0,000%	0,000%
Germany	36,4	36,6	3,75	5,16	10,311%	14,114%	1,62	1,63	4,455%	4,458%	2,10	3,15	5,774%	8,616%	0,03	0,38	0,082%	1,039%
Greece	3,0	3,0	0,16	0,25	5,387%	8,418%	0,00	0,00	0,000%	0,000%	0,16	0,25	5,387%	8,418%	0,00	0,00	0,000%	0,000%
Ireland	1,2	1,3	0,35	0,46	28,226%	35,068%	0,06	0,10	4,839%	7,623%	0,29	0,36	23,387%	27,444%	0,00	0,00	0,000%	0,000%
Italy	20,8	20,9	2,76	2,85	13,276%	13,644%	0,00	0,00	0,000%	0,000%	2,76	2,85	13,276%	13,644%	0,00	0,00	0,000%	0,000%
Luxembourg	0,2	0,2	0,01	0,01	5,256%	5,256%	0,00	0,00	1,048%	1,048%	0,01	0,01	4,208%	4,208%	0,00	0,00	0,000%	0,000%
Netherlands	7,0	7,1	0,55	0,69	7,871%	9,748%	0,10	0,11	1,431%	1,554%	0,45	0,55	6,440%	7,770%	0,00	0,03	0,000%	0,424%
Portugal	3,1	3,1	0,32	0,51	10,191%	16,242%	0,01	0,02	0,318%	0,637%	0,31	0,49	9,873%	15,605%	0,00	0,00	0,000%	0,000%
Spain	12,5	12,6	2,26	2,38	18,074%	18,894%	0,07	0,15	0,560%	1,191%	2,06	2,06	16,475%	16,353%	0,13	0,17	1,040%	1,350%
Sweden	4,4	4,5	1,03	1,25	23,597%	28,014%	0,15	0,17	3,436%	3,810%	0,74	0,88	16,953%	19,722%	0,14	0,20	3,207%	4,482%
UK	24,4	24,4	10,65	13,14	43,612%	53,808%	2,05	2,29	8,395%	9,378%	7,03	8,04	28,788%	32,924%	1,57	2,81	6,429%	11,507%
TOTAL EU	148,97	149,94	27,02	32,61	18,137%	21,748%	5,08	5,70	3,411%	3,803%	20,0	23,23	13,444%	15,491%	1,91	3,68	1,282%	2,454%

Figures in this table come from *Strategy Analytics*: *"Digital TV Devices: European Market Forecast, July 2003"*, except for Luxembourg, where figures provided by national authorities for 2002 were used. In some cases data from both sources differ. However, it has to be remembered that the period covered by both sets of data is different. [31]

Chart : Evolution in the percentage of digital TV households from 2002 to 2003

Figure 130



[31] Whereas *Strategy Analytics* made estimations for the whole year 2003, MS provided the most up-to-date data available when replying to the questionnaire, i.e. in some cases some months before august 2003. It is therefore normal that the former are bigger than the latter. In addition, as it was mentioned in the last year's report, it seems that data in the 8th Implementation report did not take into account 2002 bankruptcies of terrestrial digital pay-TV operators in the UK and Spain. As a result, the numbers of DTV households have been over-estimated. For that reason the data for 2002 have also been taken from *Strategy Analytics* and not the last year's report.

8.2. OPERATORS AND INTERACTIVE TV SERVICES.

TABLE 2: DIGITAL TV OPERATORS AND INTERACTIVE SERVICES

	DTV operators	Transmission starting date	Network (cable, satellite, terrestrial, DSL)	business model (pay, free-to-air, hybrid)	conditional access technology (CAS)	application programme interface technology (API)	interactive TV services
Denmark							
Finland	Yleisradio Oy	8/2001	Terrestrial	Free-to-air	Conax	MHP	EPG, supertext tv (news, weather, etc.) traffic information, games
	MTV Oy	8/2001	Terrestrial	Free-to-air	Conax	MHP	EPG, MTV3 supertext tv, lottery, banking services, special services related to individual programmes
	Oy Ruutunelonen Ab	8/2001	Terrestrial	Free-to-air	Conax	MHP	EPG, supertext tv
	Sub TV Oy	8/2001	Terrestrial	Free-to-air	Conax	MHP	EPG, MTV3 supertext tv, lottery, banking services, special services related to individual programmes
	Suomen Urheilutelevisio Oy	8/2001	Terrestrial	Free-to-air	Conax	MHP	EPG, MTV3 Textchannel, lottery, banking services
	Canal+ Finland Oy	4/2004	Terrestrial	Pay	Conax	MHP	
	Janton Oyj	4/2004	Terrestrial	Free-to-air	Conax	MHP	
	Turun Kaapelitelevisio Oy	4/2004	Terrestrial	Free-to-air	Conax	MHP	
	Vizor Oy	4/2004	Terrestrial	Free-to-air	Conax	MHP	

	Digita Oy	4/2004	Terrestrial	Free-to-air	Conax	MHP	
	Cable operators[32]	-	Cable	-	-	-	-
	Satellite operators[33]	-	-	-	-	-	-
France	TPS	1996	Satellite	Pay	Viaccess	Open TV	-
	Canal satellite	1996	Satellite	Pay	Mediaguard	MediaHighway	games
	AB Sat	1995	Satellite	Pay	Viaccess	-	
	France Telecom Cable	1997	Cable	Pay	Viaccess	Open TV	
	NC Numericable	1996	Cable	Pay	Mediaguard	MediaHighway	
	Noos	-	Cable	Pay	Viaccess	Open TV	
	UPC France	-	Cable	Pay	Viaccess		
	Valvision	1991	Cable	Pay	Viaccess		
	Vialis	1998	Cable	Pay			
	EST-videocommunication	1999	Cable	Pay	Viaccess		
	Terrestrial operators[34]	2005	Terrestrial	Pay/free-to-air			
Germany	Satellite operators[35]	Since 1997	Satellite	Hybrid	None/Beta crypt/ Nagravision	None/ MHP/ OpenTV	EPG, Online Channel; News Tickers; content related additional information
	Cable operators[36]	Since 1994	Cable	Hybrid	None	None/ MHP/ Betanova	Internet; Betting; F1 Interactive

[32] In addition to the authorised dtv operators mentioned above there are about 50 cable tv service and/or network operators and most of them provide also digital tv channels.
[33] There are also some satellite tv service operators (DTH 2, SMATV >2) providing foreign digital satellite channels.
[34] It is envisaged that 23 terrestrial operators will start transmission in 2005 – 8 FTA (Bollore Media, MCM, NRJ TV, NT1, Tele Monte Carlo, EDI TV, France Television 1, Metropole Television) and 15 pay-TV (Canal +, AB1, Canal J, Cine-Cinema Cable, S.E.C.C., Cuisine.TV, Eurosport France, SESI, La chaine info, Match TV, Paris Premiere, Planete Cable, Sport +, TF6, TPS Star)
[35] More than 100 TV channels.
[36] Up to 50 TV channels.

	Terrestrial operators[37]	2002/ 2003	Terrestrial	Free-to-air	None	MHP	EPG; Digitext; News-Ticker
Greece	NOVA	1999	Satellite	Pay	Irdeto	OpenTV	Enhanced TV, selection of viewpoint (selection of different coverage cameras), games, teletext, stock market on-line
Italy	Sky Italia[38]	8/2003	Satellite	Pay	Irdeto, Mediaguard, Videguard	OpenTV, MediaHighway	PPV (pay-per-view)
	RTI	1997	Satellite	Free-to-air			
	RAI	1997	Satellite	Free-to-air			
	TV Internazionale	1997	Satellite	Free-to-air			
	Fastweb	2001[39]	Fiber optic, xDSL	Pay	IP-based		PPV, VOD (Video-on-demand), web DVD
	Other operatos		Satellite, xDSL	Free-to-air/Pay			
Netherlands	UPC	1999	Cable	Pay	Cryptoworks	Liberate	Games, enhanced TV
	Essent TV Home	1999	Cable	Pay	Viaccess	OpenTV	Games, enhanced TV
	Casema	1999	Cable	Pay	Viaccess	OpenTV	enhanced TV
	Multikabel	1999	Cable	Pay	Viaccess	OpenTV	Games, enhanced TV
	Kabelfoon	11/2003	Cable	Pay			
	Digitenne	4/2003	Terrestrial	Hybrid	Mediaguard	MHP	
	NOS	4/2003	Terrestrial	Hybrid	Mediaguard	MHP	
	Canal Digital	1998	Satellite	Pay	Irdeto, Mediaguard	Proprietary API	
Sweden	Boxer-TV-Access AB	1999	Terrestrial	Hybrid	Viaccess	OpenTV	EPG
	Viasat	2000	Satellite	Pay	Viaccess, NDS	OpenTV	PPV, EPG

[37] 28 TV channels in the Berlin/Potsdam area.
[38] Sky Italia is a merger of Telepiu and Stream.
[39] Refereed to digital TV services based on fiber optic.

					Videoguard		
	Canal Digital	1998	Satellite	Pay	Conax	MediaHighway	PPV, EPG, games, news, weather
	UPC	2001	Cable	Pay	Cryptoworks	Liberate	No itv services
	Com heb ab	1997	Cable	Pay	Conax	OpenTV	PPV, EPG, games, subscription management, news, etc.
	Canal Digital (SOL)	1999	Cable	Pay	Conax	MediaHighway	PPV, EPG, games, news, weather
Spain	TVE	4/2002	Terrestrial	Free-to-air			
	Antena 3	4/2002	Terrestrial	Free-to-air			
	Telecinco	4/2002	Terrestrial	Free-to-air			
	Canal +	4/2002	Terrestrial	Hybrid	Mediaguard		
	Net TV	6/2002	Terrestrial	Free-to-air			
	Veo TV	6/2002	Terrestrial	Free-to-air			
	Quiero TV	10/2000	Terrestrial	Free-to-air			
	Onda Seis TV	10/2000	Terrestrial	Free-to-air			
	Rioja TV	2004	Terrestrial	Free-to-air			
	Cope TV	2004	Terrestrial	Free-to-air			
	Digital +	1997	Satellite	Pay	Mediguard/ Nagra	MediaHighway/ OpenTV	Games, assisted navigation, t-commerce, transaction services
	ONO	7/2003	Cable	Pay	Motorola Mediacipher		
	Auna Cable	12/1999	Cable	Pay	NDS Videguard	NDS Core, Open TV, Core V1.0	
	Telefonica Cable		DSL	Pay			
Portugal	CATVP		Cable/satellite				EPG, VOD, T-commerce, news, selection of different cameras
	Cabovisao		Cable				
	TVTEL Gransde Porto		Cable				
	Pluricanal Gondomar		Cable				

	Pluricanal santerem		Cable				
	Pluricanal Leiria		Cable				
UK	BSkyB	10/198	Satellite	Pay	NDS Videguard	OpenTV	Enhanced TV and interactive[40]
	NTL	1999	Cable	Pay	Nagravision	Liberate 1.2	Enhanced TV and interactive[41]
	Telewest	1999	Cable	Pay	Nagravision	Liberate 1.2	Enhanced TV and interactive[42]
	BBC	11/1998	Terrestrial	Free-to-air	N/a	MHEG 5.1	Enhanced TV
	Crown Castle	10/2002	Terrestrial	Free-to-air	N/a	MHEG 5.1	Enhanced TV
	D3&4	11/1998	Terrestrial	Free-to-air	N/a	MHEG 5.1	Enhanced TV
	SDN	11/1998	Terrestrial	Free-to-air	N/a	MHEG 5.1	Enhanced TV
	Freeview[43]	10/2002					
	Kingston Interactive Television	9/2000	DSL	Pay	N/k	iMagic TV	Enhanced TV, interactive and VoD
	Homechoice	9/2000	DSL	Pay	N/k	N/k	None (VOD only)
	Wightcable	N/k	Cable	Pay	N/k	N/k	None
	Omne	N/k	N/k	N/k	N/k	N/k	N/k

This table contains information provided by certain MS in reply to the questionnaire sent by the EC services, which included a working definition of iTV.[44]

[40] "red button" services, near VOD, EPG, online games, shopping, banking, e-mail, eGovernment (UK online)

[41] "red button" services, near VOD, EPG, online games, shopping, e-mail, limited T-commerce.

[42] "red button" services, near VOD, EPG, online games, shopping, e-mail, limited T-commerce.

[43] 'Freeview' was launched on 30 October 2002, as an umbrella brand for UK DTT. It is promoted by DTV Services Ltd, a joint venture between the BBC, Crown Castle International, and BSkyB. It is not, however, a licensed multiplex operator in its own right.

[44] "interactive TV services here refer to services and contents other than traditional linear broadcasting programmes available through the TV set. These services can be either "true" interactive TV services (where the user requests the service through a return channel) or "enhanced" services (where no return channel is involved), and delivered within or outside the main video/audio stream. Examples of these services are: can be online games, enhancements to TV programmes, transactional services, internet services such as web access and e-mail, etc. This definition is indicative and carry no legal value whatsoever. In particular, it does not prejudge in any way the approach of the Commission regarding TV markets segmentation.

8.3.DTV EQUIPMENT.

DTV equipment in 2003 *(in millions of units and millions of dollars)*									
	Installed base (M)			***Annual sales (M)***			***Retail market value ($M)***		
	STB	iDTV	Total	STB	iDTV	Total	STB	iDTV	Total
Austria	0,56	0,00	0,56	0,22	0,00	0,22	48,61	0,00	48,61
Belgium	0,19	0,00	0,19	0,06	0,00	0,06	13,65	0,00	13,65
Denmark	0,38	0,00	0,38	0,11	0,00	0,11	24,45	0,00	24,45
Finland	0,21	0,01	0,22	0,07	0,01	0,07	12,05	7,50	19,55
France	4,92	0,00	4,92	0,81	0,00	0,81	178,10	0,00	178,10
Germany	5,34	0,03	5,37	1,82	0,02	1,84	374,45	30,00	404,45
Greece	0,26	0,00	0,26	0,10	0,00	0,10	22,00	0,00	22,00
Ireland	0,49	0,00	0,49	0,15	0,00	0,15	36,00	0,00	36,00
Italy	3,06	0,00	3,06	0,48	0,00	0,48	105,10	0,00	105,10
Luxembourg	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Netherlands	0,73	0,00	0,73	0,24	0,00	0,24	49,55	0,00	49,55
Portugal	0,51	0,00	0,51	0,21	0,00	0,21	45,60	0,00	45,60
Spain	2,49	0,00	2,49	0,38	0,00	0,38	79,80	0,00	79,80
Sweden	1,32	0,02	1,34	0,33	0,01	0,34	68,20	15,00	83,20
UK	13,51	0,45	13,96	3,57	0,15	3,72	752,10	112,50	864,60
TOTAL EU	**33,98**	**0,51**	**34,49**	**8,53**	**0,19**	**8,71**	####	####	####

All Figures in this table come from *Strategy Analytics.* [45]

Moreover, some MS provided details on DTV equipment installed in HH. For details see footnote.[46]

[45] *"Digital TV Devices: European Market Forecast, July 2003"*, and *"iDTV (Integrated DTV Receivers): European Market Forecast, July 2003"*. No data are available on Luxembourg.

[46] Figures are given in units.

Denmark: Installed base: STB – n/a, iDTV - 0

Finland: Installed base: STB – 134,000, iDTV – 4,000; Sales over the last months (Jan – June 03) 71,000; Average price: STB – 260 €

France: Installed base: STB – 4,013,555.

Germany: Sales over the last months (2002) – 48,000; Average price: STB – 230 €

Greece: Installed base: STB – 700,000; Sales over the last months (?) 50,000; Average price: STB – 200 € (100 € for FTA, 300 € for Pay-TV)

Italy: Installed base: STB – 3,500,000

Netherlands: n/a

Portugal: n/a

Spain: n/a

Sweden: Sales over the last months – app. 7,000 per month

UK: Installed base: STB – 1.23 million, iDTV – 0.37 million; Sales over the last 12 months (to 31/03/2003) STB - 874,000, iDTV – 103,400; Average price: STB – 92 £, iDTV – 896 £

Charts 12 to 14: Digital TV equipment in 2003

Figure 131

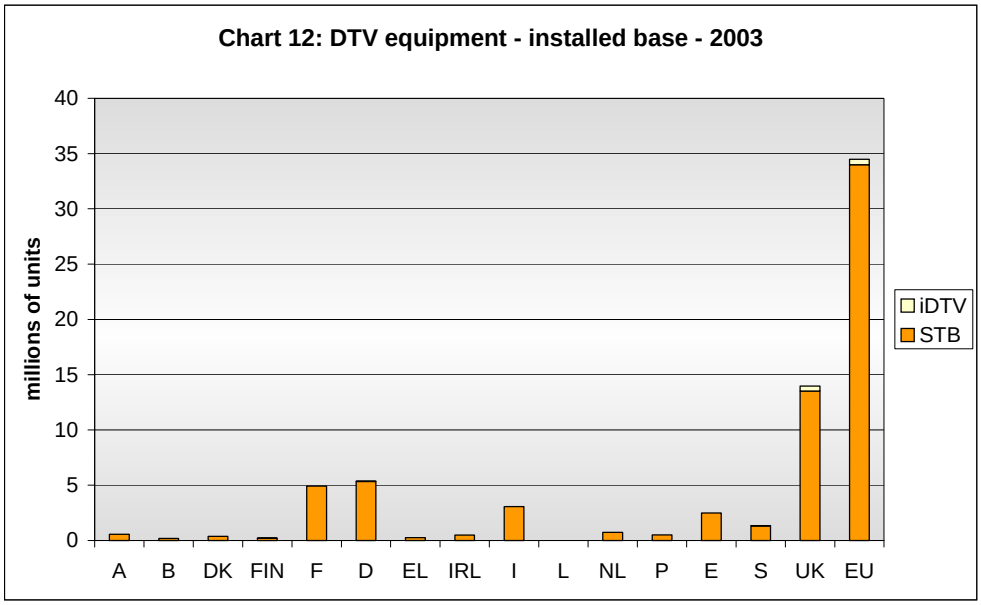


Figure 132

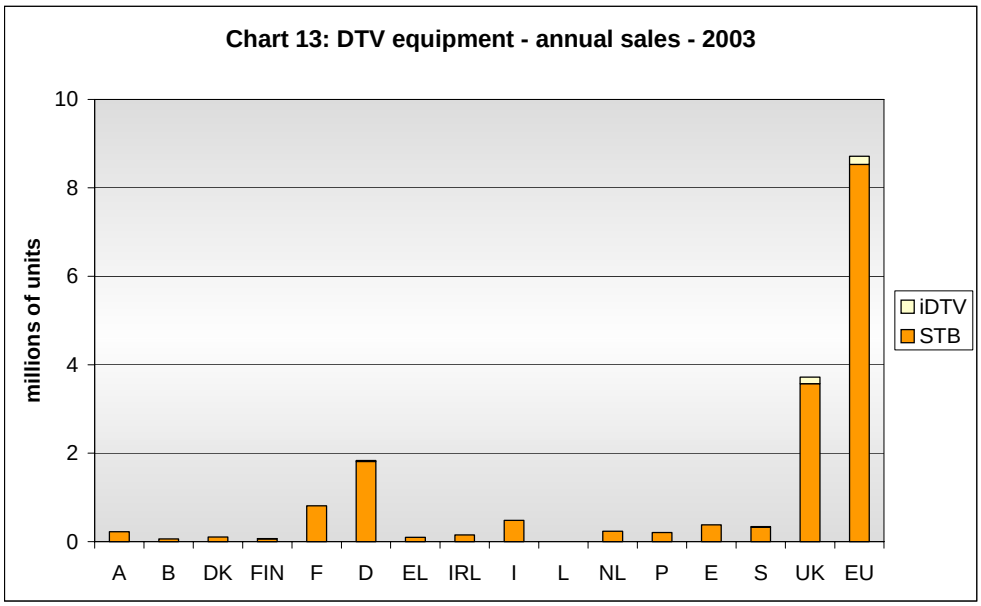


Figure 133

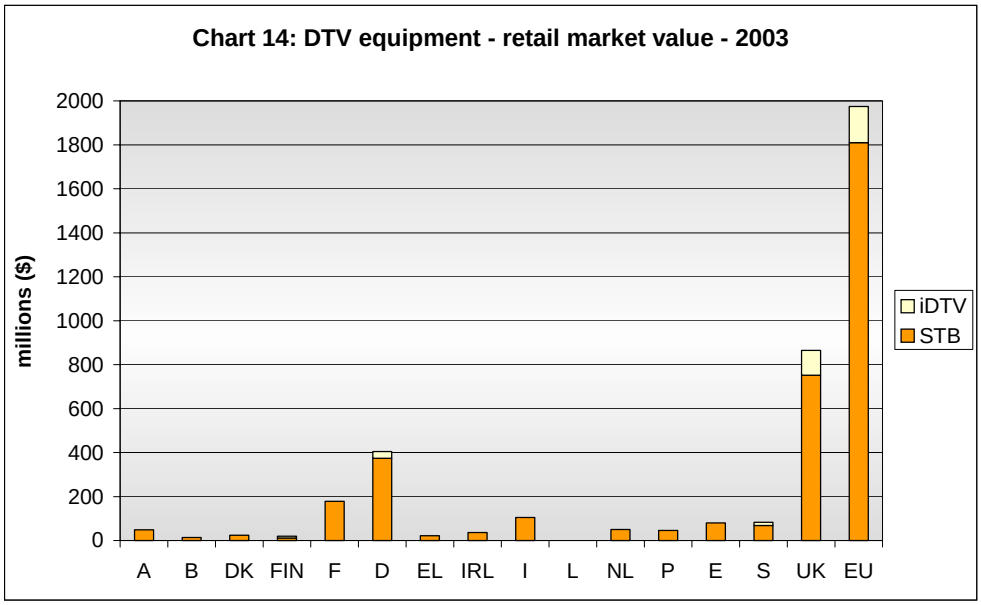


Table: DTV equipment (STB + iDTV)- evolution 2001/2003

Table 7: DTV equipment (STB + iDTV) – evolution 2001-2003 (in millions of units and millions of dollars)						
	2001					
	Installed base		Annual sales (M)		Retail market value ($M)	
	STB	iDVT	STB	iDVT	STB	iDVT
	24,2	0,2	6,6	0,1	2137,3	108,0
Total	**24.47**		**6.67**		**2245.25**	
	2002					
	Installed base		Annual sales (M)		Retail market value ($M)	
	STB	iDVT	STB	iDVT	STB	iDVT
	27.6	0.3	4.6	0.1	1218.4	114.0
Total	27.93		4.76		1332.40	
	2003					
	Installed base		Annual sales (M)		Retail market value ($M)	
	STB	iDVT	STB	iDVT	STB	iDVT
	34.0	0.5	8.5	0.2	1809.7	165.0
Total	34.49		8.71		1974.66	

All figures in this table come from *Strategy Analytics.* [47]

[47] *"Digital TV Devices: European Market Forecast, July 2003"*, and *"iDTV (Integrated DTV Receivers): European Market Forecast, July 2003"*. No data are available on Luxembourg.

Figure 134

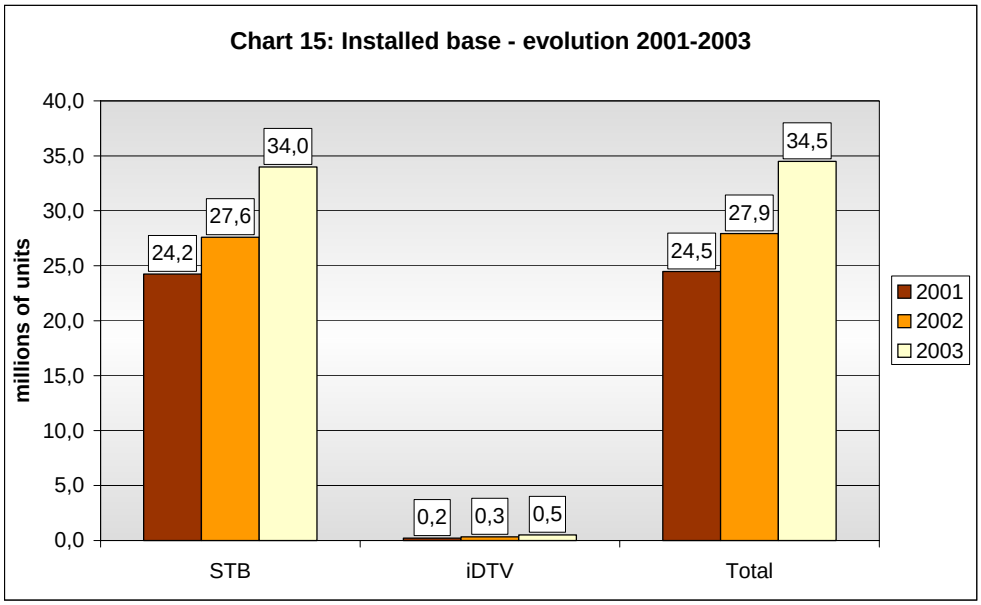


Figure 135

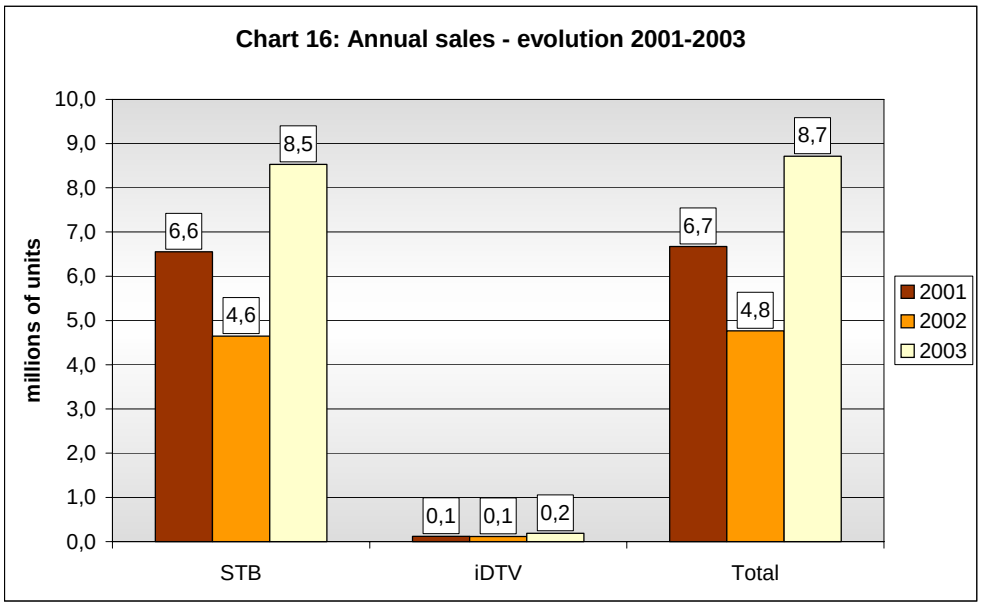
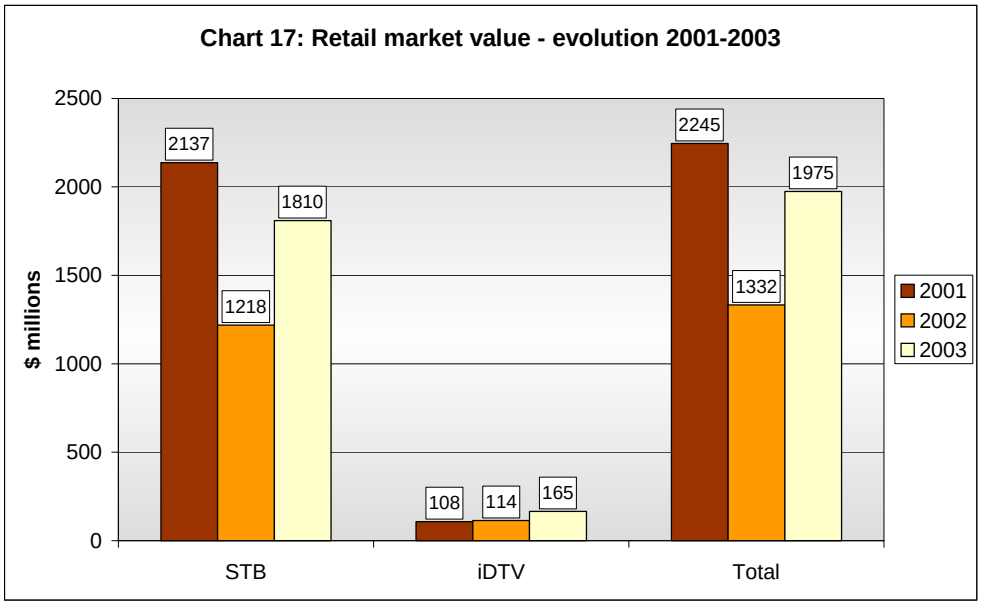


Figure 136



The STB retail market value in year 2003 is smaller than in 2001, although the annual sales in the same period have increased. This indicates the decrease in prices for set-top-boxes in EU.

9 EXCHANGE RATES

This section explains the exchange rates used in Annex I.

9.1. EXCHANGE RATE USED IN SECTION 6 ON PUBLIC VOICE TELEPHONY TARIFFS AND SECTION 7 ON LEASED LINE TARIFFS.

Exchange rates, national currency to Euro

	Exchange rate to euro <= 2001	Exchange rate to euro => 2002
	EURO	EURO
Austria	0.07267	1
Belgium	0.02479	1
Denmark	0.13458	0.13458
Finland	0.16819	1
France	0.15245	1
Germany	0.51129	1
Greece	0.00293	1
Ireland	1.26974	1
Italy	0.00052	1
Japan	0.00737	0.00737
Luxembourg	0.02479	1
Netherlands	0.45378	1
Portugal	0.00499	1
Spain	0.00601	1.00000
Sweden	0.10818	0.10818
UK	1.42816	1.42816
USA	0.88845	0.88845

9.2. EXCHANGE RATE USED IN SECTION 3 ON INTERCONNECTION AND SECTION 5.2 ON PRICES FOR LOCAL LOOP

The exchange rate to Euro used in section 3 on interconnection and section 5.2 on price for local loop are the same in table 5, except for the following:

	EURO
Denmark	0.13457
Sweden	0.108838
UK	1.457433

10 OECD TELECOMMUNICATIONS BASKET DEFINITIONS

10.1. NATIONAL PSTN BASKET

Business basket results exclude VAT. Residential basket results include VAT.

The nonrecurring charge is calculated as an average between the charge for a new line installation, and the charge for "same day takeover", i.e. when there is a direct transfer from the previous to the new customer. Valid for both Business and Residential baskets.

Nonrecurring charge calculation	Weight
New line connection charge	50%
Same day takeover connection charge	50%

The nonrecurring charge is depreciated over 5 years. An exception is made for countries where the connection charge has a lifetime value (e.g. Japan, where the connection is a tradable asset). Valid for both Business and Residential baskets.

Nonrecurring charge depreciation	Weight
With normal one-off charge	5
Where connection is a tradable asset	20

Annual rental for the service is included in the basket. Any additional recurring charges (per year) shall also be included (e.g. charges related to the use of specific calling plans).

Where the service (or tariff plan) includes a number of "free" calls or minutes, or any other call-related allowance, the value of this allowance is deducted from the usage. The value of the deducted allowance cannot be higher than the usage. Where the tariff clearly specifies that the allowance is related to specific types of calls (e.g. local, international), the usage in question shall only cover the defined type(s) of calls.

The number of calls to fixed line phones (i.e. excluding calls to mobile phones) is defined as:

Number of national fixed line calls	Calls per year
Business basket	3600
Residential basket	1200

The national usage will have a weighted distribution over 14 distances. Call charges relevant at each of these distances shall be used.

Km	**3**	**7**	**12**	**17**	**22**	**27**	**40**	**75**	**110**	**135**	**175**	**250**	**350**	**490**
Bus	53	11	7	4	2.5	3	3.5	3.5	2.5	2	1.5	1.5	1	4
Res	60	14	5	3	1.5	2.5	2.5	2.5	1.5	1.25	1	1	0.75	3.5

Bus = Business basket, Res = Residential basket. All weights in percent of total number of fixed line calls.

The national usage will have a weighted distribution over six time and day points. Call charges relevant at each of these time and day points shall be used.

Day/Time	We 11:00	We 15:00	We 20:00	We 03:00	Sa 11:00	Su 15:00
Bus	45.4	40.6	7	0.8	5.7	0.5
Res	14.3	22.1	31.6	3	13	16

Bus = Business basket, Res = Residential basket. All weights in percent of total number of fixed line calls.
We = Weekdays, Sa = Saturdays, Su = Sundays.

National call duration will vary with distance and time of day. The charge for each call shall reflect the actual charge for the duration in question, as defined by the tariff. Call setup and minimum charges shall be included.

Day/Time	**Weekday daytime**			**Weekday evenings, nights and weekends**		
Distance	3-12 Km	17-40 Km	75-490 km	3-12 km	17-40 Km	75-490 Km
Bus	3.5	3.5	3.5	3.5	3.5	3.5
Res	2.5	3.5	3.5	3.5	6	7

Bus = Business basket, Res = Residential basket. Duration in minutes per call.

Calls to mobile phones may be added to the basket. This is optional, and the presentation of the results must clearly state whether such calls are included or not. The number of calls shall be 10% of the number of national fixed line calls, in addition to the fixed line calls.

Calls to mobile phones	**Calls per year**	**Call duration**
Business basket	360	2
Residential basket	120	2

Call duration in minutes per call.

10.2. INTERNATIONAL PSTN BASKET

The international PSTN basket, when used separately, shall reflect the cost of a single call, calculated according to the weighting method described below. No fixed charges are included.

Business basket results exclude VAT. Residential basket results include VAT.

Call charges for calls to all other OECD Member States shall be used. Peak and off-peak time call charges are used, defined as the highest (most expensive) charge and the lowest (least expensive) charge.

Call cost is based on average per minute charge. Call setup charges and/or different charges for first and additional minutes are included.

The charges to different destinations are weighted according to the ITU call volume statistics. An average over the latest 5 years of available traffic statistics is used. As there may be gaps in the ITU statistics for certain destinations from some countries, calls on such routes are excluded from the calculation.

Call charges are weighted between peak and off-peak:

	Peak time weight	**Off-peak time weight**
Business basket	75.0 %	25.0 %
Residential Basket	25.0 %	75.0 %

Call duration differ between peak and off-peak time:

	Peak time	Off-peak time
Business basket	3 minutes	5 minutes
Residential Basket	3 minutes	5 minutes

10.3. COMPOSITE NATIONAL – INTERNATIONAL BASKET

This basket is based on a combination of the national and international baskets, as described above. The national basket remains unchanged, and the international basket is scaled using a fixed number of international calls.

Business basket results exclude VAT. Residential basket results include VAT.

The international portion of the basket shall have a number of calls equal to 6% of the national fixed line calls, in addition to the calls defined in the national portion of the basket.

	International calls per year
Business basket	216
Residential basket	72

10.4. NEW OECD MOBILE BASKETS

All baskets will include:

- Registration or installation charges with 1/3 of the charges, *i.e.* distributed over 3 years.
- Monthly rental charges, and any option charges that may apply to the package, or package combination.

The three new baskets are:

- Low user basket. The usage level of this basket is low, with a call volume less than half of that in the Medium user basket.
- Medium user basket. This basket will have 75 outgoing calls per month.
- High user basket. The usage level is about twice the Medium user basket.

The usage profiles will also include a number of SMS messages per month.

Call and message volumes for each basket are:

	Outgoing calls /month	SMS per month
Low user	25	30
Medium user	75	35
High user	150	42

The information received showed that there is little difference between the average pre-paid usage and the low user post-paid usage. The low user basket can therefore be used for both pre- and post-paid tariffs, allowing a simple comparison also between the two types.

Only national calls are included in the profiles, with 4 different destinations:

- Local area fixed line calls. This is used to accommodate the tariffs that have separate charges for the local area. When such charges are not available, this proportion of calls is included in the National.

- National fixed line calls. This covers all fixed line calls outside the local area, except in cases as noted above.
- Same network mobile calls (On-net). This includes all calls made to mobiles in the same mobile network as the caller.
- Other network mobile calls (Off-net). This includes calls to all other mobile networks in the caller's country. When the charges are different depending on destination network, the market shares based on subscriber numbers are used for weighting the charges. Up to 3 other networks will be considered in each country.

Distributions per destination for each basket are:

% of total number of calls	Fixed Local area	Fixed National area	On-net mobile	Off-net mobile
Low user	28.0%	14.0%	40.0%	18.0%
Medium user	24.0%	12.0%	43.0%	21.0%
High user	26.0%	14.0%	42.0%	18.0%

As the information received produced little evidence on the split between local and national fixed line calls, the assumption has been used that the ratio would be 2:1 for local:national, i.e. 67% local and 33% national. This assumption is taken from the averages in fixed baskets, and the scarce information received.

Instead of splitting time and day into distinct times and days the following approach will be used:

- Peak time calls at weekdays, most expensive time during daytime.
- Off-peak time calls at weekdays, cheapest time before midnight.
- Weekend time calls, at daytime Sundays.

Distributions over time and day for each basket are:

% of total number of calls	ToD Peak	ToD Off-peak	ToD Weekend
Low user	38.0%	35.0%	27.0%
Medium user	47.0%	30.0%	23.0%
High user	63.0%	22.0%	15.0%

There will be 3 separate call durations:

- Local and national fixed line calls
- Same network mobile calls (On-net)
- Other network mobile calls (Off-net)

Call durations for each basket are:

Minutes per call	Dur Fixed National	Dur Mobile On-net	Dur Mobile Off-net
Low user	1.6	1.4	1.4

Medium user	2.1	1.9	1.9
High user	2.2	2.0	2.1

Any call allowance value included in the monthly rental will be deducted from the usage value once the basket is calculated. The deduction cannot be larger than the actual usage value, i.e. negative usage is not allowed. No transfer of unused value to next month is taken into account.

Any inclusive minutes will be deducted from the basket usage before starting the calculation of usage cost. The inclusive minutes are assumed to be used up with the same calling pattern that is described in the basket, i.e. the same peak/off-peak ratio and the same distribution across destinations. Where the inclusive minutes are clearly limited to specific destinations or times of day this will be taken into account. No transfer of unused minutes is taken into account.

Any inclusive SMS-messages will be deducted from the basket before starting the calculation of the SMS message cost, up to the number of messages in the basket.

For each of the operators covered a set of packages shall be included so that the cheapest package offered by that operator can be calculated for each of the 3 baskets.

Multiple operators in each country shall be included, with at least the two operators with highest number of subscribers in each country. The operators included shall have a total market share of at least 50% based on subscriber numbers.

Basket results are calculated for a period of one year.