II.3 Mobile Telephone Service (MTS)

This chapter contains the state of the MTS at the end of 2005 and the evolution of this service throughout the year.

II.3.1 Main items of the evolution in 2005

- There was a significant increase in the number of subscribers in 2005 – 10.5 per cent. Portugal is one of EU's seven countries with a MTS penetration rate above 100 per cent.

- There was also a significant increase in the MTS voice traffic – the amount of calls grew 6.8 per cent and the amount of minutes 8.9 per cent. This increase in traffic was due to the increase in the on-net traffic[31], which more than compensated the decrease in the amount of traffic to fixed networks.

- The year 2005 had a significant increase in the number of short messages (SMSs) that were sent – 83.3 per cent more than in the previous year. This was due to the promotional campaigns by mobile operators to intensify the use of this service.

- During the year 2005, TMN, Optimus and Vodafone launched low cost or discount offers in connection with new trade marks (TMN's UZO, Optimus's Rede 4 and Vodafone Directo). The main feature of these offers is that they do not have different tariffs for on-net and off-net calls. These offers are marketed on specific sites and some physical selling points.

- Mobile operators TMN, Vodafone and Optimus started to provide the UMTS service in the first half of 2004. Recently (in the third quarter of 2005), the three operators began to market the new 3G cards for laptops that give mobile access

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[31] Traffic within the operator's own network.

to the broadband Internet. The estimated number of 3G customers in Portugal, including migrations, was 400,000 in October 2005[32].

II.3.2 MTS's offer

MTS is a public switched electronic communications service that routes signals using the land electronic communications networks. The access network is made up of radio media and the terminals are mobile.

The service is provided by the dully licensed entities, since the use of the frequencies is subject to the granting of individual rights of use[33].

Below is a more detailed description of the provided services and of the entities providing these services in Portugal.

II.3.2.1 MTS

The first generation (1G) of the mobile service was exclusively designed for voice communications. It used analogue signals and a transmission technique based on FDMA (Frequency Division Multiple Access)[34]. This transmission technique grants a frequency band to each channel. Thus, 1G is identified with the analogue systems, which only provide the voice service. In Portugal, the service was provided by TMN since 1989 and was terminated on 30 October 1999.

The second generation (2G) uses ETSI's Global System for Mobile Communications/ Digital Communications System (GSM/DCS)[35]; and works on the 900 MHz (GSM) 1800 MHz (DCS) frequency bands. Its main feature is the use of digital technology and provides, besides the voice service, low throughput data services (e.g. fax and e-mail). This generation, which already has some data transmission capacity, uses a

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[32] Source: European Mobile Communications Report, Issue 197, November 2005.
[33] Cf. no. 3 of article 19 of Law no. 5/2004 of 10 February.
[34] Interference-free access system which main feature of the access discipline to the various users is the granting of different frequencies to each of them.
[35] ECSI – European Customer Satisfaction Index.

more efficient technique for the use of spectrum, based on TDMA (Time Division Multiple Access)[36].

GSM also makes international roaming possible. GSM networks had a very swift and broad geographical roll-out and are currently spread for 213 countries[37]. Currently, GSM technology is used by 1/4 of the world population[38].

The technical features of this (narrow band) platform and the limitations of its terminal equipment (small screen and keyboard, battery hold-up time and limited memory and processing capacity), although acted as facilitators of a large scale mobility, do not make it possible for an Internet access via a mobile telephone as good as that of a personal computer connected to a fixed telephone network. The GSM platform was nevertheless perfected and developed to offer a progressively broad range of voice and data services.

It was in this framework that several manufacturers joined efforts to define a protocol that could be used by all mobile communications systems, which they named WAP (Wireless Application Protocol)[39], and which made it possible for standard communication between a mobile phone and a server at the mobile operator's network to take place. Even though this protocol led to improvements regarding Internet access via a mobile telephone, it was not broadly accepted by the marked, when considered alone. Among its main limitations are the slow access to the required data and the need for a very specific and limited content offer.

The limitations of the above-mentioned standards led to the development of the mobile network's 2+ generation, based on GSM, with new or improved technologies

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[36] Interference-free access system which main feature is the simultaneous access of several users to a single radio band by slicing it by channels in time (*time slots*). Unlike FDMA, this system multiplies the capacity of the frequencies by breaking their use in time.

[37] http://www.gsmworld.com/about/membership/member_stats.shtml.

[38] According to data from the GSM Association/Wireless Intelligence, there were 1,561.7 million connections to GSM networks in the third quarter of 2005 (http://www.gsmworld.com/news/statistics/index.shtml).

[39] It's a wireless application protocol using a specific language and a specific technology and giving users of mobile telephones and other wireless digital devices the chance to access Internet contents, exchange e-mail messages or perform other data transmission operations. It is mainly used in mobile communications networks. It makes it possible to browse pages on a *micro-browser* if they are written in a special language known as WML (*Wireless Mark-up Language*), which is more suited to relay data to wireless devices than HTML (Hypertext Mark-up Language, the most common computer language available on the Internet).

to support data services, such as GPRS (General Packet Radio Service)[40] and EDGE (Enhanced Data for GSM Environment)[41], which make it possible to provide mobile data services of a higher quality, regarding capacities, processing speeds (they make it possible to substantially increase the 9,6 kbps throughput of GSM networks to speeds that can be as high as 115 kbps with error protection and 384 kbps) and some multimedia services.

GPRS networks' "always on" mode route data at very much higher throughputs than the traditional GSM, making it possible to access and to browse the Internet using terminals with coloured screens, visual-enhanced communications, multimedia messages and localization-based services.

Also because data communications are established with no need for a voice channel, it will make it possible to define tariffs oriented towards the data traffic volume and not the communication length.

The third generation (3G), also digital, was designed to implement the fixed-mobile and the multimedia-telecommunications convergence. It brings mobile networks closer to fixed networks, in terms of capacity and giving mobile user the chance to access up to 2Mbps multimedia services, for voice and data services.
UMTS (Universal Mobile Telecommunications System) stands out among the third generation mobile telecommunications systems. It operates in the 2 GHz frequency band and is known as the European standard of the global international mobile communications systems family (IMT2000).

UMTS uses WCDMA[42] (Wideband Code Division Multiple Access) for transmission, which is based on multiple accesses by code division. Although different from the technologies used on GSM/GPRS networks, this technology, which requires the roll-out of complex networks and systems, was designed to be fully inter-operational with GSM.

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[40] Evolution of the GSM system, based on packet switching and with throughputs up to 115 kbps.
[41] Evolution of the GSM system, with throughputs up to 384 kbps.
[42] Broadband access system which main feature of the access discipline to the various users is the sharing of the same frequency band, each user being given a different code.

UMTS makes it possible to provide advanced moving multimedia services, regardless of the location of the user, which makes ways for the development of new services and applications: Internet-based services, e-commerce, location-based services, photo uploads directly from cameras (using the *Bluetooth*[43] protocol), life video feeds, remote monitoring of people and vehicles and game and music downloads.

Current mobile telephones have countless features, beyond the simple ability to make and receive calls: they give access to various services increasing the flexibility of mobile communications, call waiting and call-holding, call re-routing, caller ID and data services standing out. Microelectronics used in connection with the development of software for those applications also makes possible to include in a mobile telephone a digital camera, an FM receiver, an MP3 music player, among other devices.

Beyond those services, mention should also be made to the SMS - Short Message Service[44], a service facility making it possible, to send and receive small alphanumeric character text messages, among mobile telephones. Each message is limited to a 160 character ceiling, when the Roman alphabet is used, and 70 characters, when other alphabets are used, such as the Chinese and the Arab ones.

More recently, since 2001 and 2002, still within the scope of the service facilities, mobile operators made available the EMS (Enhanced Messaging Service) and the MMS (Multimedia Messaging Service), respectively. The EMS is an enhanced SMS, very similar to it regarding use, and makes it possible to send and receive graphical or sound items, combining melodies, images, sounds, animations, altered text and regular text in an integrated mode. MMS, as the name suggests, is used to send and receive messages with text, sounds, image and video. It thus became possible to send moving images and videos.

Regulatory action also added some important functions to the MTS: direct access by

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[43] Short range radio technology in the 2.4 GHz band, providing connectivity among devices within the user's premises, with an approximate range of 10 meters and a maximum 1 Mbps throughput. It may evolve to between 6 and 11 Mbps and a 100 meter range.
[44] This service was created still on Phase 1 of the GSM standard.

call-by-call selection for international calls with origin in mobile telephones (available since 31 March 2000) and operator portability (since 1 January 2002).

During 2004, and further to the delays that occurred due to difficulties in stabilizing this technology, a set of new 3G mobile services based on the IMT-2000/UMTS (WCDMA) technology were launched.

Commercial services based on 3G – namely Internet access, video call, multimedia services, etc. – were introduced in January 2004, on an experimental basis, and were marketed by TMN, Vodafone and Optimus on 21 April 2004, 4 May 2004 and 4 June 2004, respectively. However, these services aren't yet available all over the country.

II.3.2.2 MTS providers

The MTS was first marketed in Portugal in 1989,by the CTT-TLP consortium. Only later in, on 22 March 1991, was the incorporation of the company TMN – Telecomunicações Moveis Nacionais, S.A. The services that were provided used the analogue C-450 technology.

An open competition for the granting of a license for the provision of the MTS using GSM technology took place in March 1991. This license was granted to Telecel – Comunicações Pessoais, S.A. on 18 October 1991. The service was commercially available as from 18 October 1992.

TMN's operation license was issued on 16 March 1992, in a process exempt of open competition, as per exceptional rule of article 19 of Decree-Law no. 346/90 of 3 November, altered by Decree-Law no. 147/91 of 12 April. Also TMN began operating its service in October 1992.

On 15 July 1997, Notice no. 3542-A/97 (II Series) was published. It opened a new competition for the granting of a license for the provision of the land mobile service in accordance with the GSM and DCS rules and using the 900 MHz and 1800 MHz frequency bands, respectively. Further to this tender, a license was granted to Optimus – Telecomunicações, S.A. Optimus began its commercial operation in August 1998.

UMTS licensing

In order to comply with the Decision no. 128/1999/EC of the European Parliament and of the Council, of 14 December 1998, on the coordinated introduction of a third generation mobile and wireless communication system (UMTS) in the Community, ICP's Board of Directors approved on 23 December 1999 the generic procedure for the licensing of the UMTS/IMT2000 services.

On 1 August 2000 a tender for the granting of four nation-wide licenses for the International Mobile Communications Systems (IMT 2000/UMTS) was opened by order of the Minister for Social Equipment of 1 August 2000, published on the Diário da República no. 17, II Series, on that date.

The competition was governed by the Competition Regulations approved by Administrative Rule no. 532-A /2000 of 31 July and the clauses of the Specifications approved by order of the Minister for Social Equipment of 1 August 2000.

On 19 December 2000, the Minister for Social Equipment announced the results of the competition for the granting of four nation-wide licences for the International Mobile Communications Systems (IMT 2000/UMTS).

The four licenses that were disputed were granted to the following entities:
- Telecel – Comunicações Pessoais, SA (currently Vodafone)
- TMN – Telecomunicações Móveis Nacionais, SA
- OnyWay – Infocomunicações, SA
- Optimus – Telecomunicações, SA

3G commercial services were launched in Portugal on 21 April 2004, 4 May 2004 and 4 June 2004, respectively by TMN, Vodafone and Optimus.
The forth operator that was licensed for this system, OniWay, did not begin its mobile operation and its license was formally revoked in January 2003, by Order of the Minister for the Economy (Order no. 1758/2003 of 29 January).

Current state

There were three legally entitled entities in Portugal for the provision of the mobile telephone service, in 2005: TMN, Vodafone and Optimus.

Table 30 – MTS providers

Optimus Telecomunicações, S.A.
TMN — Telecomunicações Móveis Nacionais, S.A..
Vodafone Portugal – Comunicações Pessoais, S.A.

Source: ICP-ANACOM

II.3.2.3 New commercial offers launched in 2005

Below are the new offers launched during the year 2005.

II.3.2.3.1 Uzo, Rede 4 and Vodafone Directo offers

During the year 2005, TMN, Optimus and Vodafone began marketing new brands/offers in connection with the so-called low cost or discount tariffs, namely:

- TMN's UZO – launched in mid-June 2005, its main features are the lack of mandatory consumptions, with a single 16-cent tariff for calls for all networks and 8-cent SMSs for the prefix 960.

  Although with no mandatory payments, UZO launched a promotional extraordinary package for those who make payments of 15 euros or above, giving them reduced tariffs: 12 cents for voice calls to any network and 6 cents for written messages.

  TMN has marketed these offers on the Internet and other channels – such as post offices and petrol stations – since their very beginning.

- Optimus's Rede 4 – also launched in June 2005, right after UZO, with lower tariffs (11.99 cents for voice calls to all mobile or fixed networks and 5.99 cents for each SMS), but with a minimum 15-euro monthly payment using the prefix 931.

- Vodafone Directo – this was Vodafone's response to the UZO (TMN) and Rede 4 (Optimus) offers. It was launched in the end of June 2005, with two tariff plans, one with no mandatory payments, with 15.99 cents for voice calls to all networks and 7.99 cents per SMS, and the other one with a minimum monthly 15-euro payment, with a 11.99 cents for voice calls to all mobile or fixed networks and 5.99 cents per SMS to any network.

  It began with sales only over the Internet but later on Vodafone began selling this offer over the telephone.

All three brands/offers have their own tariffs for services such as roaming, voice mail, MMS, WAP access and other services.

These products have lower and simpler tariffs (with one or two tariff plans) than those that are usually marketed by mobile operators. These offers are marketed in their own websites[45] and in some specific selling points, where several operations are possible: purchase of the service, payments, statements, etc.. For customer support, these brands/offers use call centres that are autonomous from TMN, Optimus and Vodafone.

SMS packages

Besides these new low cost tariffs, operators have also launched promotions based on written messages packages.

For the Vita 91 and Yorn Power tariff plans, Vodafone offered the chance of subscribing to a free package of 1,500 SMSs per week. This campaign, even though not generating any revenues, acts as stimulus to the use of the written messaging service. Optimus and TMN promote packages of messages that subscribers to any tariff plan can subscribe.

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[45] http://www.uzo.pt/, http://www.rede4.pt/minuto+barato e http://www.vodafonedirecto.com/

II.3.2.3.2 GPRS-based offers

Mobile operator's offers in connection with GSM/GPRS are generally similar to UMTS (3G) offers. They are marketed using the same support, as an option or in accordance with the coverage of the mobile network. Only throughput, which is higher in the case with UMTS, sets them apart.

The most important distinction, in connection with the highest throughput, is the offer of the video call service when UMTS is used, among other services that include videos.

Below is data on the GPRS base-tariffs for WAP access and Internet access, as released by the operators on their websites.

Table 31 – GPRS offers

	GPRS services	Price per Kb VAT included
Optimus	WAP access	€0.01
	Portal Zone WAP access	€0.002
	Internet access	€0.0025

Source: www.optimus.pt
Note: 10 Kb invoicing.

	GPRS services	Price per Kb VAT included
TMN	GPRS/3G WAP access	€0.0101
	GPRS/3G Internet access	€0.005

Source: www.tmn.pt
Note: The initial charging unit is 10 Kb and the following ones 1 Kb.

	GPRS services	Price per Kb VAT included
Vodafone	WAP access	
	Week days	€0.0102
	Weekends and holidays	€0.0024
	Internet access	€0.0024

Source: www.vodafone.pt
Note: For the WAP access the initial charging is 10 Kb and the remaining ones 1 Kb. For the Internet access the charging interval is 100 KBytes.

II.3.2.3.3 UMTS – offers since the service was first launched on the market

Mobile operators TMN, Optimus and Vodafone have offered similar 3G products and services to their customers, namely:

- Video call – telephone conversation with simultaneous voice and image (both users will need 3G coverage);

- Multimedia messages (photo and MMS video) – this service's users can send and receive messages with pictures, videos, small films, sound, texts, etc.;

- Access to mobile portals – Vodafone Live 3G, Optimus Zone 3G, i9 3G, respectively Vodafone's, Optimus's and TMN's, with information and entertainment services (music, videos, games, ring tones and images, etc.);

- Broadband access to the Internet, for access to the Internet, Intranet, e-mail, sending and receiving written messages, corporate applications, etc.. Internet access is made using the mobile telephone connection to a PC or by inserting a 3G plate in the PC.

Recently (3rd quarter of 2005), the three operators launched new offers: Kanguru by Optimus, GIGA by TMN and Mobile Connect Card by Vodafone (in the cases with TMN and Vodafone it was a re-launch of existing offers, with more appealing terms, as responses to Optimus's offer). These offers are a 3G plate for connection to a portable PC (these TMN and Vodafone plates can also be GPRS), a card and a CD with the connecting software and are sold with specific tariffs. These offers give mobile access to the broadband Internet, e-mail and the remaining computer applications.

Below are descriptions of the UMTS market offers per operator:

Table 32 – Optimus's 3G market offers – 3rd quarter of 2005

Name	Services	Residential tariffs	Corporate tariffs
Optimus Zone 3G	Video call	On-net - €0.39/min. Off-net - €0.79/min. International - €0.99/min.	On-net - €0.00/min. Off-net - €0.3277/min.
	MMS	€0.39 per MMS, to all networks	
	Zone 3G Portal Browsing	Free until 31.12.2005	

	E-mail module (Access to e-mail)	---	€12.50/month, Includes 30 MB €0.0021/Kb – Base-tariff, for traffic out of the package or for customers not using packages or modules
	Internet (using mobile telephone or 3G plate)	Base-tariff – €0.0025/Kb	Base-tariff – €0.0021/Kb E-mail module – €12.50/ month, includes 30 MB
		3 traffic packages available only for post-payment customers: E-mail10 MB – €15 – Includes 10 MB – Extra tariff per package €1.70 Internet 40 MB – €30 – Includes 40 MB – Extra tariff per package €1.10 Internet 250 MB – €75 – Includes 250 MB – Extra tariff per package €0.50	
Kanguru	Internet (for portable PC users)	End-price: €149.90 Tariff bonus: €50 evenly credited in the first 12 invoices. Monthly fee: €29.90 includes 1GB de Traffic (nat. and internat.) Additional traffic – €0.05/MB Happy-hour from 1 to 7 h E-mail box – 1GB Roaming – €12/MB Mandatory sojourn time – 12 months	End-price: €0 Monthly fee: €36.30 includes 10 GB of traffic (nat. and internat.) Additional traffic – €2.54/MB Happy-hour from 1 to 7 h E-mail box – 1GB Sojourn time – 24 months

Source: www.optimus.pt
Note: Does not include promotions – Prices include VAT.

Table 33 – TMN's 3G market offers – 3rd quarter of 2005

Name	Services	Tariffs
tmn i9	Video call	On-net - €0.399/min. Vodafone and Optimus - €0.799/min. Other national and international networks – €1.004
	Video mail service	Free until 31.12.05
	Vide sharing service	Free until 31.12.05
	12400 video	€0.20/min. €0.033 each 10 sec. After the 1st min.
	i9 3G Portal Browsing	Free access to the portal Browsing is measured by volume of downloaded data. The price per KB is €0.0101. TMN offers a set of services and contents at different tariffs.

	Internet (using mobile telephone or 3G plate)	Base access – €0.005 per KB Standard access – €0.102/min. Mega access (for post-payment customers only), divided into four tariffs: Mega 2 - €3.63/month, includes 2 MB, €1.815 per additional MB Mega 5 - €8.47/ month, includes 5 MB, €1.694 per additional MB Mega 10 - €12.10/ month, includes 10 MB, €1.694 per additional MB Mega 20 – €20.57/ month, includes 20 MB, €1.029 per additional MB Mega 50 – €24.20/ month, includes 50 MB, €0.484 per additional MB Mega 100 – €36.30/ month, includes 100 MB, €0.363 per additional MB Mega 300 – €79.86/ month, includes 300 MB, €0.266 per additional MB Mega 1000 – €102.85/ month, includes 1000 MB, €0.103 per additional MB
Acesso GIGA	Internet for portable PCs (3G/GPRS/WI-FI)	Pack and activation – €149.90 Monthly fee: €29.90 includes 10 GB of traffic Additional traffic – €0.05/MB Happy-hour from 1 to 7 h E-mail box – 1 GB Sojourn time – 12 months (for monthly fee customers)

Source: www.tmn.pt
Note: Does not include promotions – Prices include VAT.

Table 34 – Vodafone's 3G market offers – 3rd quarter of 2005

Name	Services	Tariffs
Vodafone Live 3G	Video call	On-net - €0.39/min. Other mobile networks - €0.79/min. International – €0.99/min.
	MMS	€0.397 for each MMS sent
	Vodafone Live Portal	Access to the portal – €0.25. Some of the contents of this portal are premium, namely music, news, soccer, ring tones and games. To the access to a Mobile Internet site out of this portal the WAP GPRS tariff is applied.
	Vodafone Mail	Free service with a 10 MB mail box
	Vodafone Mail Plus	Free service with a 50 MB box
	Voice Mail Standard	Postal box service accessed with a mobile telephone, free when access is made user the box owner's MSISDN. Reply call functions (the general tariffs apply). Box personalization and voice messaging (€0.109/message).
	Professional Voice Mail	To the above service the possibility to receive, hear and forward faxes is added (the general tariffs apply).

	Internet (using mobile telephone or 3G plate)	Base-pack – €2.42 month per additional user - 0.242 cents per additional national Kb - €0.10 per SMS Pack 3 MB – €6.05/month - includes 3 MB - 0.1815 cents per additional national MB Pack 10 MB – €12.10/ month - includes 10 MB, 0.121 cents per additional national MB Pack 20 MB – €20.57/ month - includes 10 MB, 0.103 cents per additional national MB Pack 50 MB – €24.20/ month - includes 50 MB, 0.048 cents per additional national MB Pack 100 MB – €36.30/ month - includes 100 MB, 0.036 cents per additional national MB Pack 300 MB – €79.86/ month - includes 300 MB, 0.027 cents per additional national MB Pack 1 GB – €102.85/ month - includes 1024 MB, 0.01 cent per additional national MB
Vodafone Mobile Connect Card	Internet for portable PCs (3G/GPRS version)	Pack and activation – €149.90 Monthly fee: €29.90 includes 10 GB traffic Additional traffic – according to hired pack (cf. above Packs). Happy-hour from 1 to 7 h Sojourn time – 18 months (for monthly fee customers)

Source: www.vodafone.pt
Note: Does not include promotions – Prices include VAT.

II.3.3 MTS user and usage profiles

The sections below contain the main features of the STM user and of the STM usage.

II.3.3.1 MTS user's main features

According to the data from the Electronic Communications Consumer Survey of February 2004[46], June 2005[47] and February 2006, variables age and education level are the main differences between MTS users and non-users.

There is indeed a negative correlation between age and MTS penetration. Among those over 65 years old, only 29 per cent had a mobile telephone in 2005 and 51 per cent in 2006. There was thus a considerable increase of penetration in this class vis-à-vis 2004.

Table 35 – MTS penetration by age class

Age class	Feb. 2004	Jun. 2005	Feb. 2006
15-24	90.1%	96.2%	98.4%
25-34	91.8%	92.4%	97.1%
35-44	79.6%	86.1%	92.9%
45-54	69.6%	75.0%	91.3%
55-64	42.3%	69.6%	79.8%
65-over	19.0%	29.0%	51.0%
Total	66.0%	74.1%	84.5%

Source: Electronic Communications Consumer Survey – February 2004, June 2005[47] and February 2006

On the other hand, it is among those with a lower education level that MTS penetration is lower.

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[46] The universe that was defined for this survey was individuals of both genders, aged 15 or older and residing in mainland Portugal and in the autonomous regions of Madeira and Azores. The sample was sized for a maximum error of 3 per cent regarding the main results (with a degree of significance of 95 per cent). The sample was stratified by regions (NUTS II – grade 2 of the nomenclature of statistical territorial units), habitat/household size (5 groups), gender, age (3 groups), education (3 groups) and occupation (2 groups), based on the last General Population Census: 2001 Census. 1,051 interviews took place. Data gathering was made by means of personal, direct interviews. Field work took place in January and February 2004 and was made by Intercampus.

[47] The universe that was defined for this survey was individuals of both genders, aged 15 or older and residing in mainland Portugal and in the autonomous regions of Madeira and Azores. The sample was sized for a maximum error of 2.5 per cent regarding the main results (with a degree of significance of 95 per cent). The sample was stratified by gender, age and region, based on the last General Population Census: 2001 Census. 2,184 interviews took place. Data gathering was made by means of personal, direct interviews. Field work took place between 9 June and 12 July 2005 and was made by Metris GFK.

Table 36 – MTS penetration by education class

Education	Feb. 2004	Jun. 2005	Feb. 2006
Bachelor (Hnrs)/Post-grad/Master/PhD	96.8%	95.1%	99.0%
Bachelor/Polytechnic	89.5%	100.0%	91.7%
12th grade/11th grade	96.4%	96.9%	96.7%
9th grade	86.5%	91.5%	91.0%
6th grade	81.4%	82.2%	89.9%
Full primary education	50.0%	55.5%	76.9%
Incomplete primary education/Illiterate	10.2%	20.5%	34.4%

Source: Electronic Communications Consumer Survey – February 2004, June 2005[47] and February 2006

People residing in the Azores and inland are the ones with less mobile telephones, but there was an increase in penetration in all regions, in 2005.

Table 37 – MTS penetration by region

Region	Feb. 2004	Jun. 2005	Feb. 2006
North Coast	65.8%	71.8%	82.6%
Porto	73.0%	78.8%	87.4%
Centre Coast	53.9%	67.9%	85.3%
Inland	60.4%	65.8%	81.5%
Lisbon	67.8%	79.0%	90.0%
Alentejo	69.0%	75.9%	81.2%
Algarve	78.0%	78.6%	81.2%
Autonomous Region of Madeira	n.a.	80.0%	85.4%
Autonomous Region of the Azores	n.a.	62.5%	78.9%

Source: Electronic Communications Consumer Survey – February 2004, June 2005 and February 2006

II.3.3.2 MTS usage's main features

Below are some of the items characterizing MTS usage, namely the used tariff plans and the type and characteristics of calls.

II.3.3.2.1 Tariff plans

Regarding the tariff plans used by the MTS subscribers, about 80 per cent of subscribers have pre-paid plans. This rate has been stable over the last few years.

Table 38 – Distribution of subscribers by type of tariff plan

Subscribers by type of subscription	2003	2004	2005
Post-paid	21%	21%	19%
Pre-paid	79%	79%	81%

Source: ICP-ANACOM

Portugal was pioneer in introducing the pre-paid system in the mobile telephone service. In 1995 TMN put the MIMO product on the market. These products have a bigger cost control and do not require the payment of a monthly fee, which are very adequate features to subscribers in the lowest income levels.

Graph 27 – Distribution of subscribers by type of tariff plan
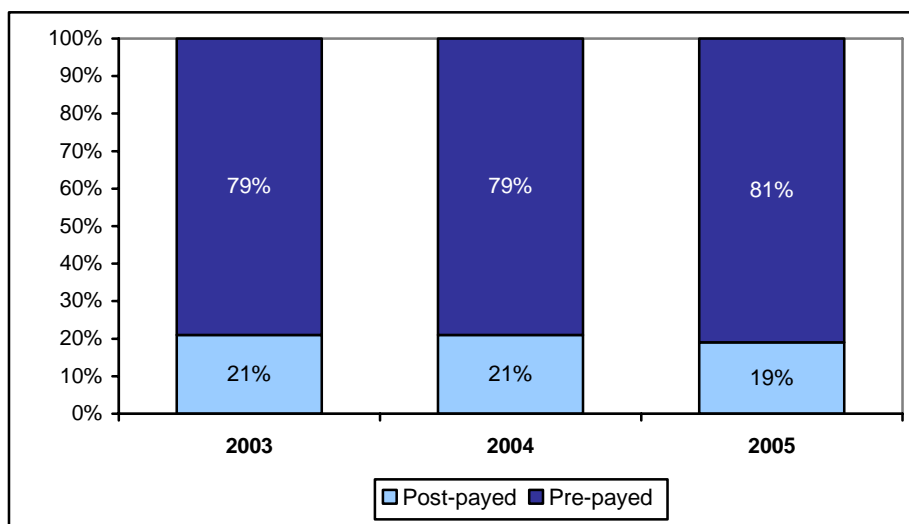
Source: ICP-ANACOM

The following graph shows that Portugal is among the countries with a larger rate of pre-paid plans, right after Malta and Italy. Finland and Denmark have the lowest rates.

Graph 28 – Rate of pre-paid cards in the total number of subscribers – Portugal vs. EU25
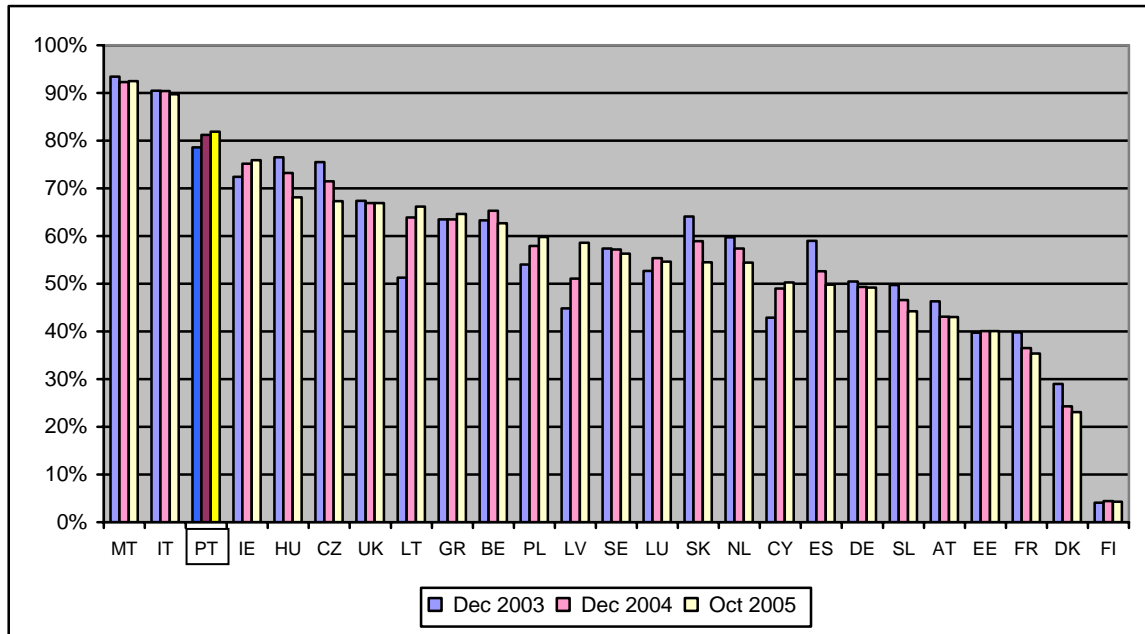
Source: European Mobile Communications Report (Issues 180, 191 e 197).

The importance that plans with no mandatory payments have should be stressed. This evolution can be also explained by the higher cost control, since they do not require periodic payments, which justifies the popularity of pre-paid plans. On the other hand, as penetration increases, operators are forced to find customers in strata of the population with lower income levels and age below average. This type of product is particularly designed to suit the needs of these strata.

Graph 29 – Distribution of subscribers by type of tariff plan
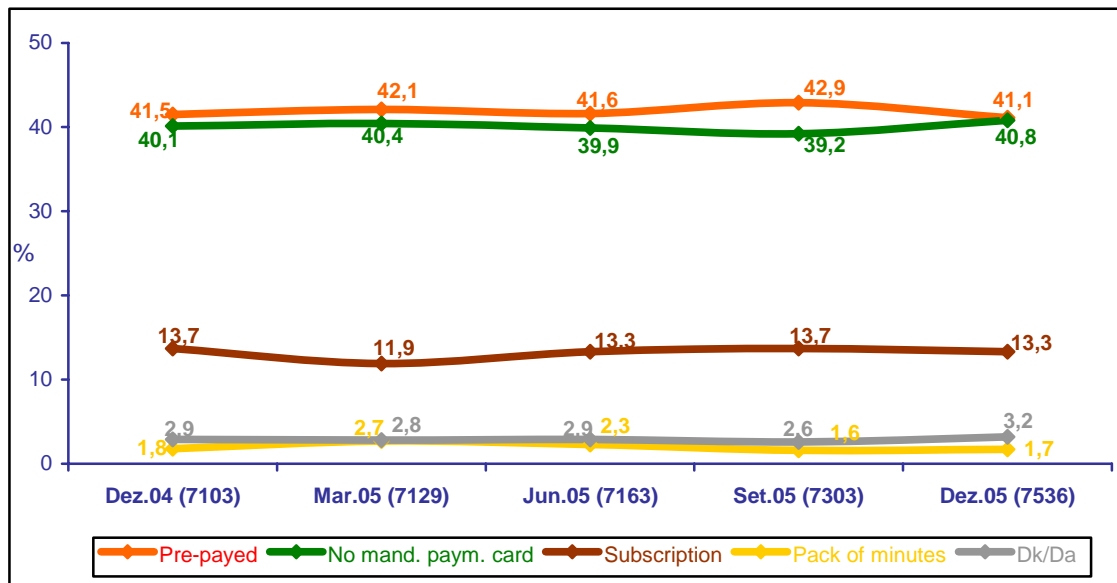
Source: Marktest[48]

II.3.3.2.2 Voice traffic: Usage level

As shown on the graphs below, MTS traffic tends to grow and changes seasonally.

This traffic's growing trend can be explained by the increasing number of subscribers, the generalization of the service and also the decline in the use of the FTS. There are seasonal increases in the third and forth quarters of each year, in connection with the summer and Christmas holidays.

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[48] Marktest's Oct/Nov/Dec 2005 Barometer: The universe was 9,278 thousand individuals of both genders, aged 10 and older, residing in mainland Portugal, the Azores and Madeira. A sample of 1,000 interviews is gathered on a monthly basis. The error for this sized sample is ±3 per cent. Selection of homes is random from telephone directories of fixed network operators in Portugal. The selection of people to interview in each home is made using the quota method, considering variables gender, age and district of residence of the interviewed person.

Graph 30 – Evolution of MTS outgoing traffic (minutes)
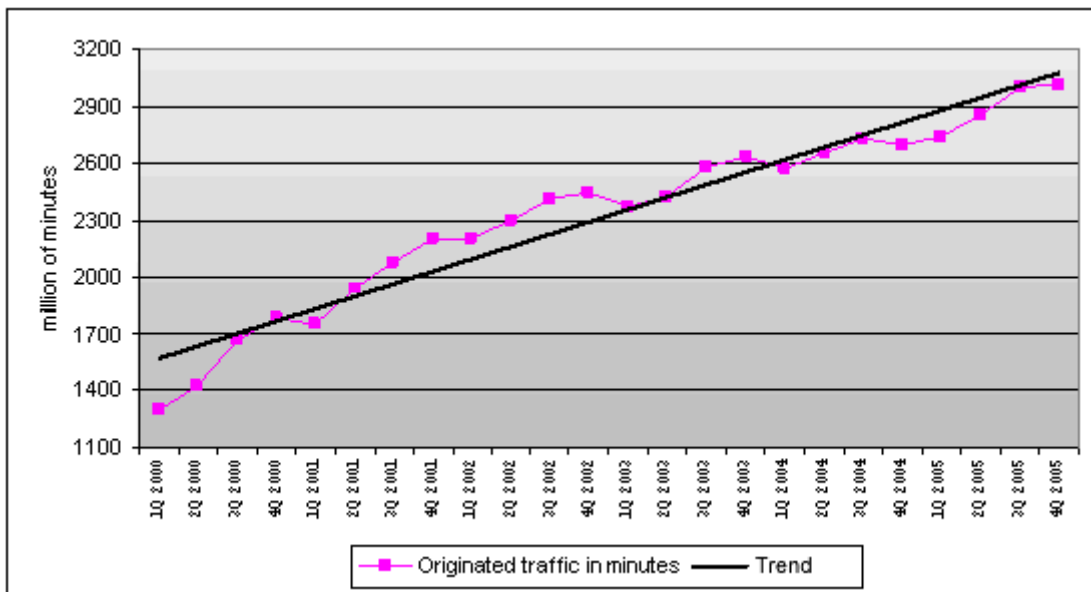
Graph 31 – Evolution of MTS outgoing traffic, trend and seasonal variations (calls)
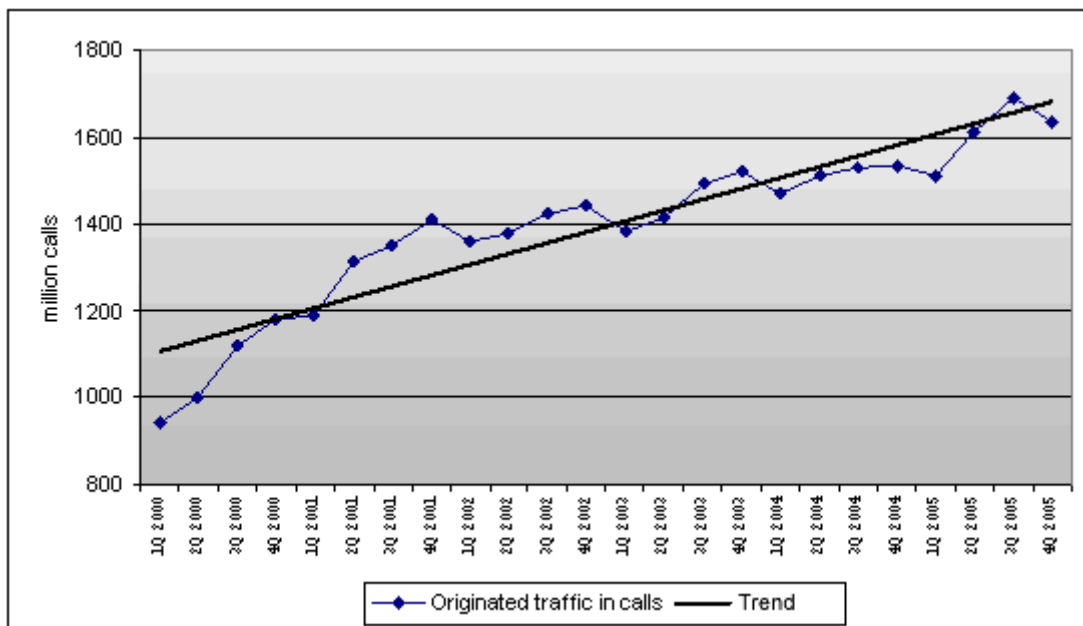
Monthly traffic per inhabitant reaches average figures close to 89 minutes and 49 calls, with seasonal variations: the amount of minutes reaches its peak during the third quarter, for the above-mentioned reasons. In the second quarter of 2004 there was also a peak in traffic, which was a result of the fact that "Euro 2004" took place in June that year.
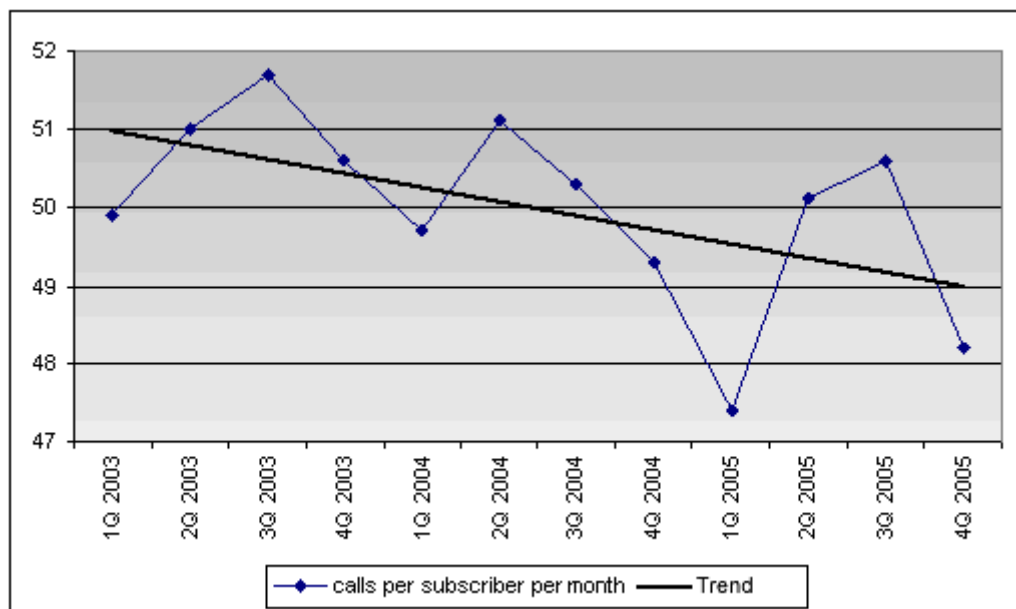
Graph 32 – Evolution of traffic per subscriber in minutes
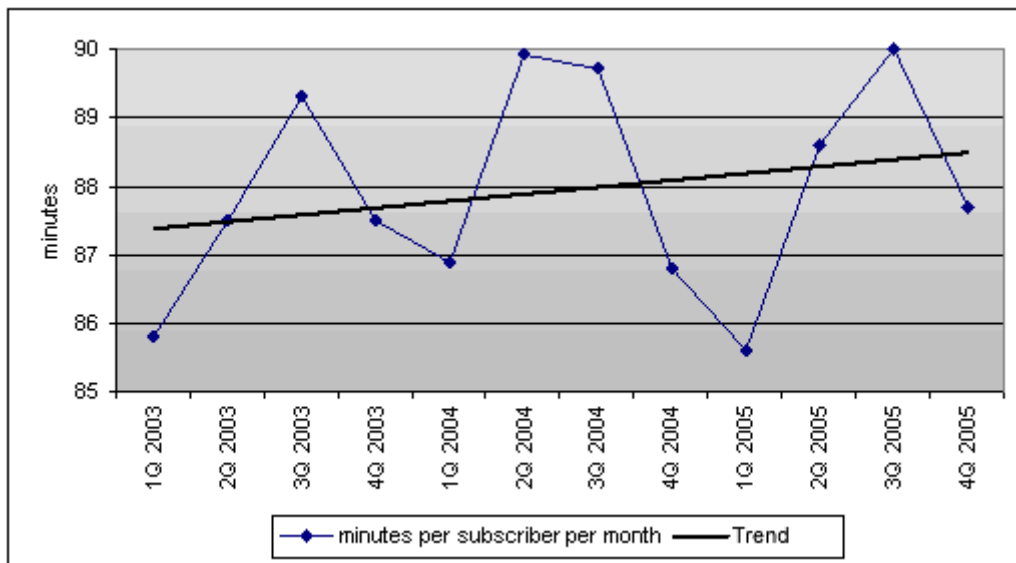
There is however a slight decreasing trend in the number of calls per subscriber. The average amount of calls per subscriber was close to 48 in the forth quarter of 2005, which is below that of the same month of the previous year.

Graph 33 – Evolution of traffic per subscriber in calls

This can be explained by the fact that new subscribers have an income level below

average or by macroeconomic factors of a cyclical nature affecting the consumption of this service.

II.3.3.2.3 Voice traffic: types of calls

Regarding the type of calls, 2/3 of them have the network of origin as their destination. Networks of other mobile operators are the destination of about 21 per cent of the originated traffic, and the FTS comes next. The relative weight of these types does not change significantly for the incoming traffic.

Table 39 – Distribution of voice traffic calls by type of call

	2000	2001	2002	2003	2004	2005
Outgoing traffic	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Own network – own network	63.0%	67.1%	66.2%	66.4%	66.4%	67.4%
Own network – national FTS	14.0%	11.4%	10.5%	9.3%	8.6%	7.9%
Own network – international networks	1.8%	2.1%	2.9%	3.0%	3.2%	3.2%
Own network – other national MTS	21.2%	19.4%	20.4%	21.3%	21.8%	21.5%
Incoming traffic	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Own network – own network	63.4%	64.5%	64.5%	65.0%	65.1%	66.3%
Other national MTS – own network	15.7%	18.4%	19.8%	20.9%	21.4%	21.2%
National FTS – own network	18.8%	14.9%	13.3%	11.6%	10.7%	9.6%
International networks – own network	2.1%	2.3%	2.4%	2.4%	2.8%	2.9%

Source: ICP-ANACOM

Table 40 – Distribution of voice traffic minutes by type of call

	2000	2001	2002	2003	2004	2005
Outgoing traffic	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Own network – own network	59.9%	65.8%	66.4%	66.6%	67.3%	68.4%
Own network – national FTS	13.9%	10.7%	9.5%	8.6%	7.7%	7.1%
Own network – international networks	3.6%	4.3%	5.0%	4.8%	4.8%	4.6%
Own network – other national MTS	22.5%	19.2%	19.1%	20.0%	20.2%	19.9%
Incoming traffic	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Own network – own network	58.7%	61.5%	63.6%	64.6%	65.2%	66.4%
Other national MTS – own network	16.2%	17.9%	18.3%	19.3%	19.5%	19.4%
National FTS – own network	20.7%	16.3%	13.8%	12.0%	10.7%	9.6%
International networks – own network	4.3%	4.3%	4.3%	4.1%	4.7%	4.6%

Source: ICP-ANACOM

There is thus a gradual decrease in the rate of calls with destination and origin in the fixed network, which can be related with the decreasing number of FTS users.

II.3.3.2.4 Voice traffic: average length of calls

The average length of calls is not considerably above 100 seconds. The average length of calls is below that of the fixed network. The average length of international calls stands out – above 150 seconds for the outgoing traffic and 173 seconds for the incoming traffic.

Table 41 – Average length of calls

	2000	2001	2002	2003	2004	2005
Total outgoing traffic	89	91	100	103	106	108
Own network – own network	83	89	100	104	107	109
Own network – national FTS	102	86	90	96	96	97
Own network – international networks	172	180	170	166	156	154
Own network – other national MTS	93	90	94	97	98	100
Total incoming traffic	90	93	102	104	107	109
Own network – own network	83	89	100	104	107	109
Other national MTS – own network	92	91	94	97	98	100
National FTS – own network	99	102	106	107	107	110
International networks – own network	185	178	182	176	175	173

Source: ICP-ANACOM   Unit: Seconds

II.3.3.2.5 Roaming traffic: voice and SMS

Roaming traffic is highly seasonal and mainly increases in the summer holidays.

The "Euro 2004" phenomenon also had an impact on the roaming in traffic, as shown on the following graph (2nd quarter of 2004).

Graph 34 – Evolution of roaming in traffic and trend
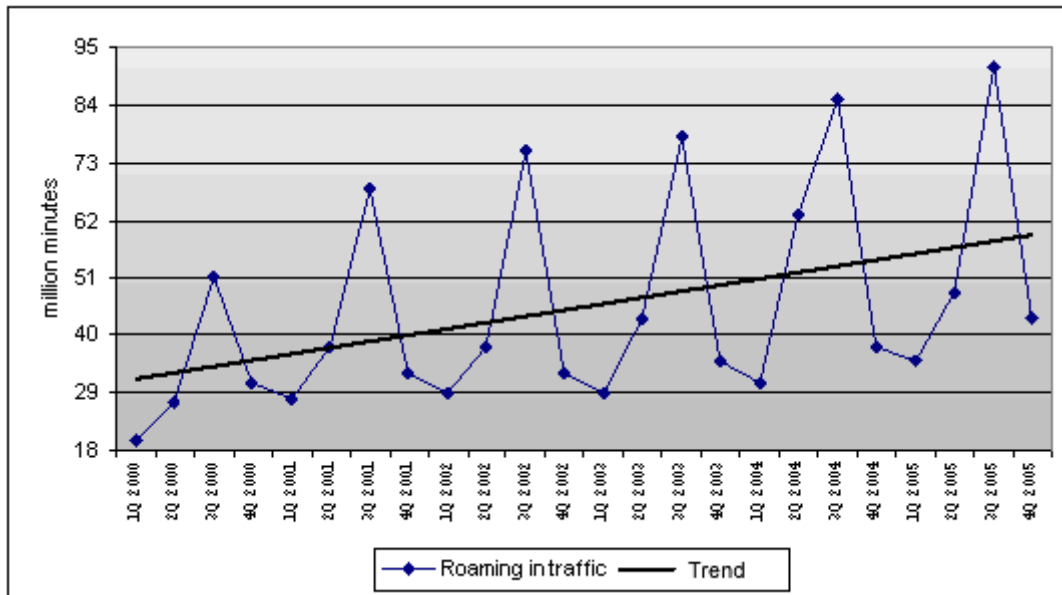
Source: ICP-ANACOM

Roaming out traffic is also highly seasonal, for the above-mentioned reasons.

Graph 35 – Evolution of roaming out traffic and trend
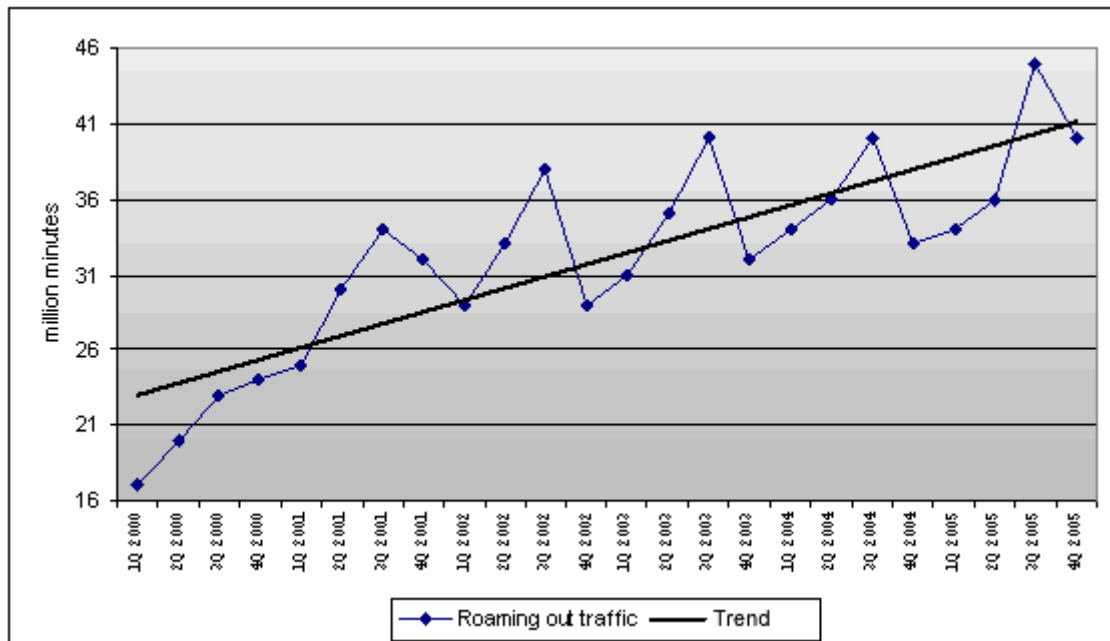
Source: ICP-ANACOM

Specifically in the case with roaming out, there is a growing trend in the use of SMS, which can be explained by the price level of this type of calls and the termination figures in these cases.

Graph 36 – Evolution of roaming out by type of traffic
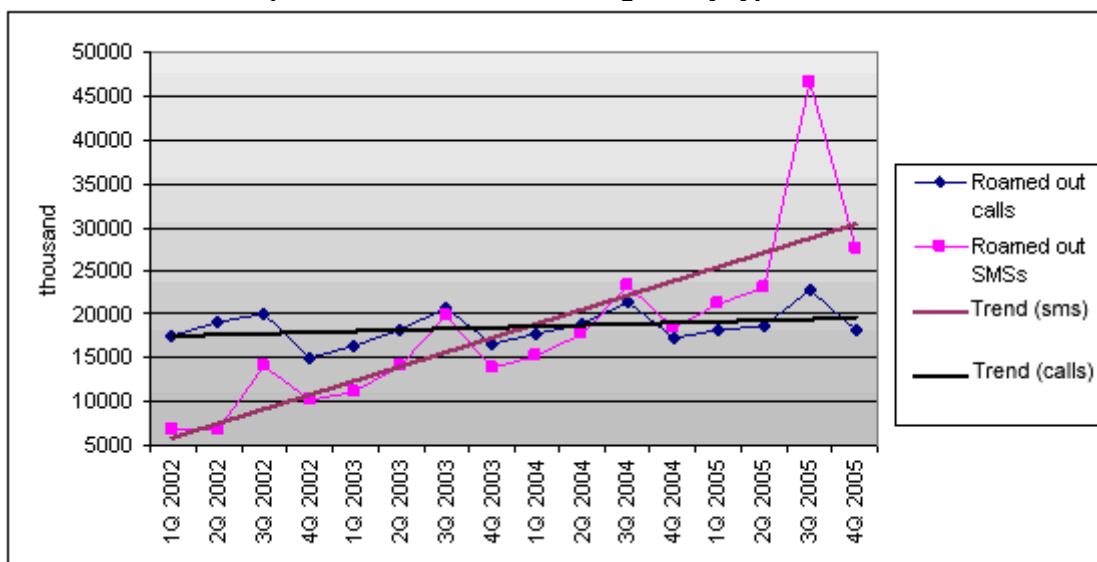
Source: ICP-ANACOM

On the other hand, the operators' promotional campaigns to intensify the use of SMS led to a considerable increase in the amount of received roamed messages. Received roamed messages is cost-free for the roamer, whereas receiving a voice call implies the payment of the parcel of the call that corresponds to the termination cost of the foreign operator in which the roamer is registered. This and the campaigns can justify the peak in the third quarter of 2005, during the holiday period.

On average, roamed calls are longer than those made in national networks.

II.3.3.2.6 SMS

Up to 2004, a subscriber sent a monthly average amount of 20 SMS, which has significantly changed in 2005, when this average rose to 35 SMSs per subscriber, although it reached 49 in the forth quarter of that same year.

Graph 37 – Evolution of the number of SMSs per subscriber per month, trend
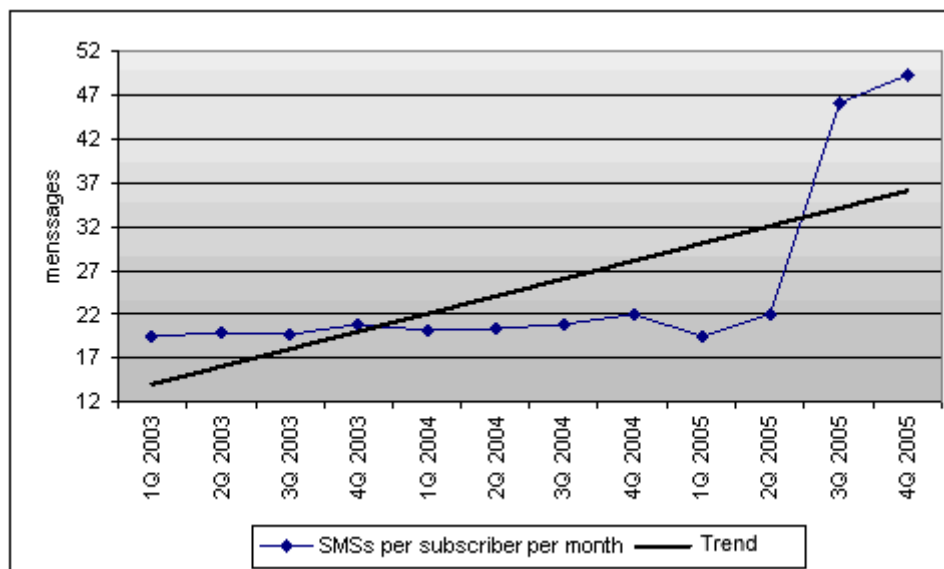
This evolution can be explained by the new tariffs and the operators' campaigns, for as, according to the results of the surveys that ICP-ANACOM promotes, the main reason for using SMSs is price. In 2005, the number of inquired people saying that the price of SMSs was the main reason for using them increased significantly – 11.7 per cent – and reached 68.8 per cent.

Table 42 – Advantages of SMS

	Feb. 2004	Jun. 2005	Feb. 2006
It's cheaper than calling	57.1%	68.8%	52.0%
It's more practical	19.7%	12.9%	17.8%
One can send the same SMS to many people simultaneously	5.8%	4.3%	4.6%
Other replies	--	0.8%	20.1%
Nr/Na	17.5%	12.5%	52.0%

Source: Electronic Communications Consumer Survey - February 2004 , June 2005 and February 2006.

II.3.3.2.7 Data services

MMS, GPRS and UMTS, in spite of being services and technologies with some degree of awareness, are used on a relatively small scale.

Table 43 – Awareness and use of services and technologies

	MMS	GPRS	UMTS
Is aware of	73.5%	53.3%	79.1%
Uses or has used	17.7%	12.7%	5.1%

Source: Electronic Communications Consumer Survey - June 2005

There are also only a small number of data service users, which includes access to portals using the WAP protocol and the GPRS technology.

Table 44 – Number of data service users

	Dec. 2004	Dec. 2005
With access to WAP services (GSM)	1,064	1,208
With GPRS technology access	1,403	1,976

Source: ICP-ANACOM   Unit: thousand users

Also noteworthy is the fact that the number of customers that has already subscribed to the mobile third generation services (3G/UMTS) is very small.

Table 45 – 3G/UMTS service customers

	Jun. 2005	Feb. 2006
Does not have	93.5%	83.7%
Does have	5.1%	16.0%
Nr/Na	1.4%	0.3%

Source: Electronic Communications Consumer Survey – June 2005 and February 2006

II.3.3.3 Barriers to subscribing the service

According to the results of the Electronic Communications Consumer Survey, among those that do not have a mobile telephone, the main reason for not having one is "not needing" it (36.4 per cent). On the other hand, about 21.6 per cent consider that "the fixed network is good enough".

However, the second reason for not joining this service is of a tariff nature. About 23.3 per cent of those who do not have the service consider it "too expensive".

Table 46 – Reasons for not owning a mobile telephone

	Jan. 2006
Does not need one	36.4%
It is too expensive	23.3%
The fixed network is good enough	21.6%
Other answers	9.4%
Mobile telephones are hard to use	7.2%
Nr/Na	2.2%
Total	100.0%

Source: Electronic Communications Consumer Survey - February 2006

II.3.4 MTS's evolution in 2005

Below is a set of elements on the MTS's performance in 2005: availability, penetration, service's usage, prices, quality of the service.

II.3.4.1 The service's geographic availability

MTS is available on the huge majority of the Portuguese territory and reaches almost 100 per cent of the population.

II.3.4.2 The service's Penetration

MTS penetration in Portugal has reached very high figures during this year, and went above 100 per cent. At the end of 2005, the service's penetration rate reached 108.7 per cent, still above the EU average of 97.2 per cent.

Table 47 – Penetration in Portugal

	2003	2004	2005
Service's penetration in Portugal	95.8%	98.4%	108.7%

Source: ICP-ANACOM

Graph 38 – MTS penetration in the EU
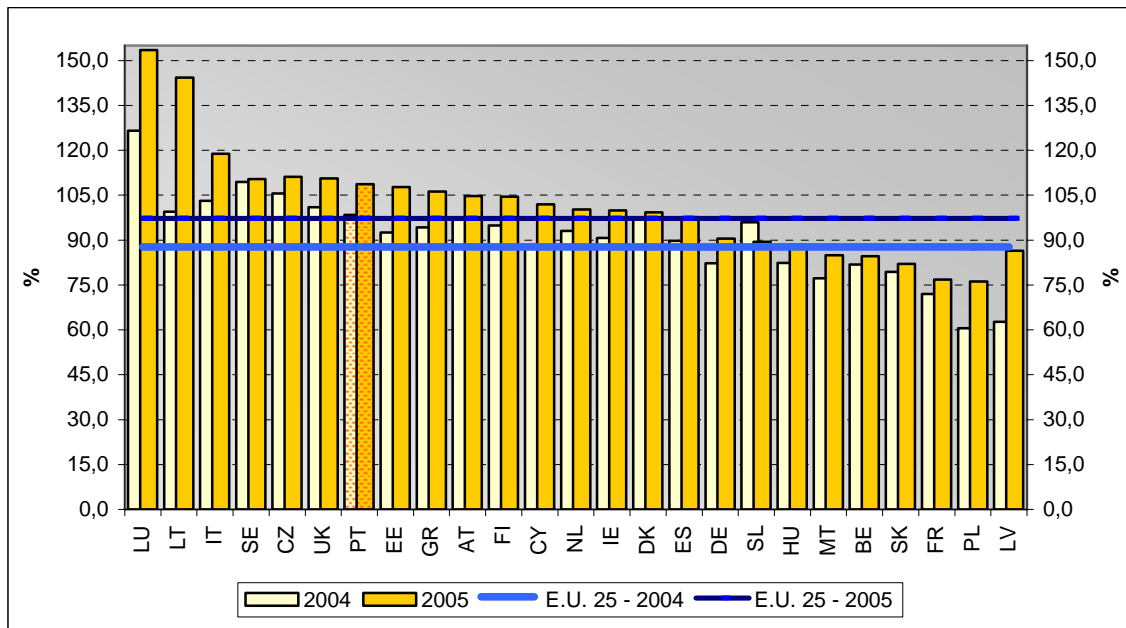
Sources: population: INE and Eurostat; subscribers: Mobile Communications, from Informa telecoms & media.

MTS penetration in Portugal has consistently kept above the EU average, as shown on the next graph.

Graph 39 – Evolution of the MTS in Portugal and in the EU
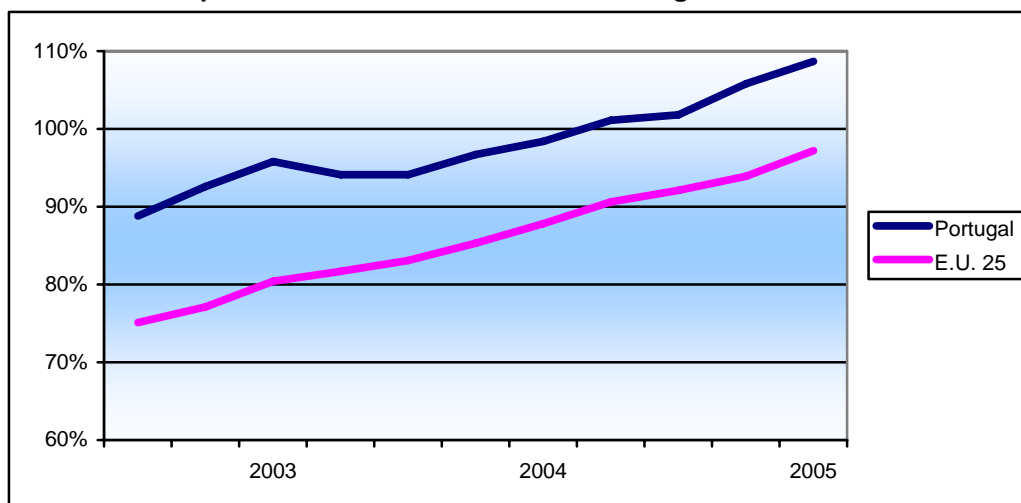
Sources: ICP-ANACOM, INE, Eurostat and Mobile Communications, from Informa telecoms & media.

The growth of the MTS penetration and its evolution vis-à-vis the European average have been influenced, namely, by the swift introduction of GSM services in Portugal, the small penetration of the FTS, the investment in marketing and the innovations that the operators brought to the market (namely, tariff innovations).

It is noteworthy that, according to the Electronic Communications Consumer Survey of February 2006, about 84.3 per cent of those residing in Portugal were MTS customers (provisional data).

The difference between the above mentioned penetration, on one hand, and the answers to the above mentioned survey, on the other, are due to several factors, e.g.:

- There are users with more than one active card;
- Activation of new SIM cards for exclusive use of data and Internet access services;
- There are active cards for use in machines, equipment and vehicles only (automatic payment terminals using the mobile network, alarm equipment, security, telemetry and telematics, etc.);
- There are cards for corporate use.

II.3.4.3 Number of subscribers to the service

At the end of 2005 there were 11.4 million subscribers to the MTS, an increase of 10.5% vis-à-vis the total number of subscribers of the previous year.

Table 48 – Number of subscribers

	2003	**2004**	**2005**
Total number of subscribers	10,030,472	10,362,120	11,447,670
Post-paid	2,062,943	2,141,166	2,157,121
Pre-paid	7,967,529	8,220,954	9,290,549

Source: ICP-ANACOM   Unit: 1 subscriber

Graph 40 – Evolution of the number of subscribers and growth rates
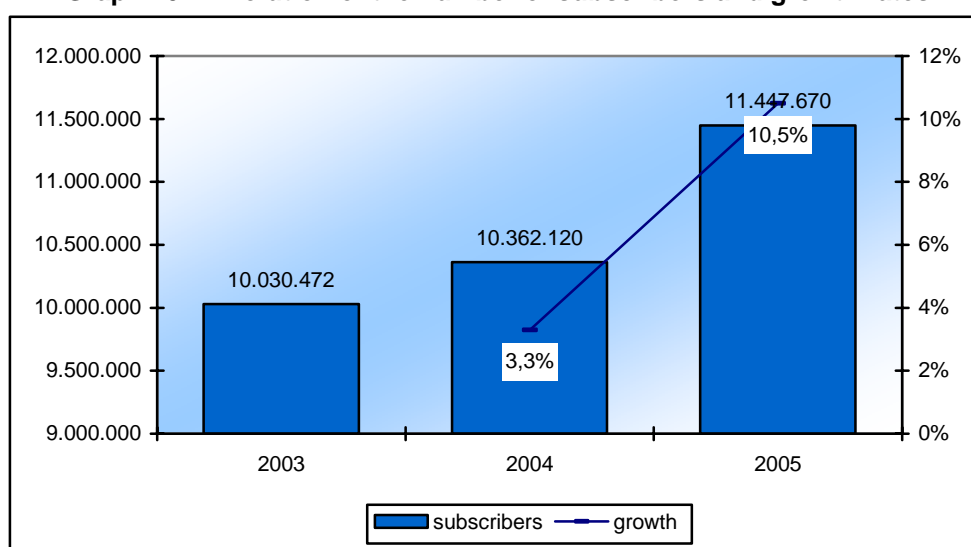
Source: ICP-ANACOM

The recent evolution in the number of subscribers was partly influenced by the following factors:

- Development of 3G services. It is estimated that the number of 3G customers in Portugal, including migrations, has reached about 400,000 in October 2005[49].

- The coming into the market of the above-mentioned new discount offers (Uzo,

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[49] Source: European Mobile Communications Report, Issue 197, November 2005.

Rede 4, Vodafone Directo).

- The development of new applications, such as those for use in machines, for instance.

These factors contributed to sustain the growing trend of the number of MTS subscribers in Portugal.

Graph 41 – Evolution of the number of subscribers and growth trend
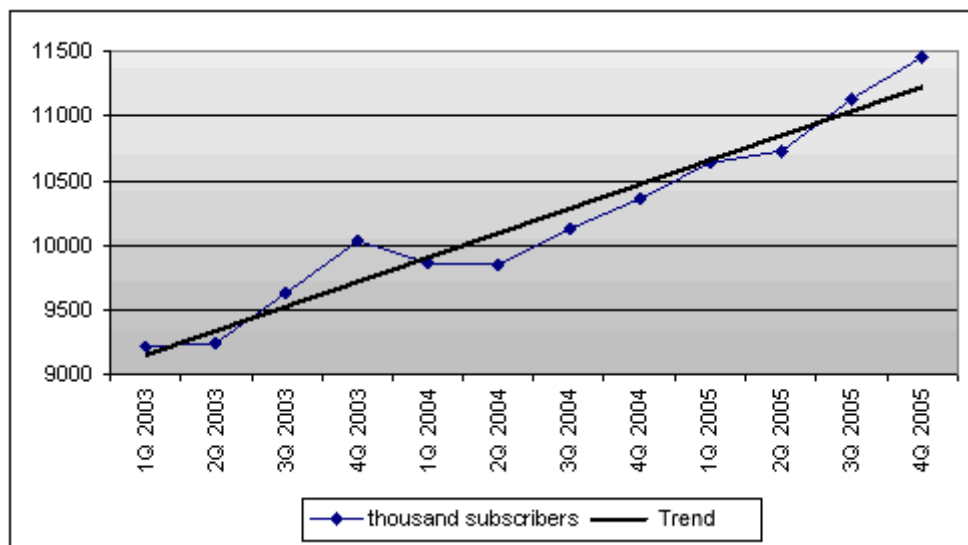
Source: ICP-ANACOM

It should be mentioned that, despite the high MTS penetration in Portugal and Portugal's position in the EU ranking regarding this variable, the service's growth in 2005 was one of the fastest in the EU.

Graph 42 – Subscriber growth trends in the EU25 countries
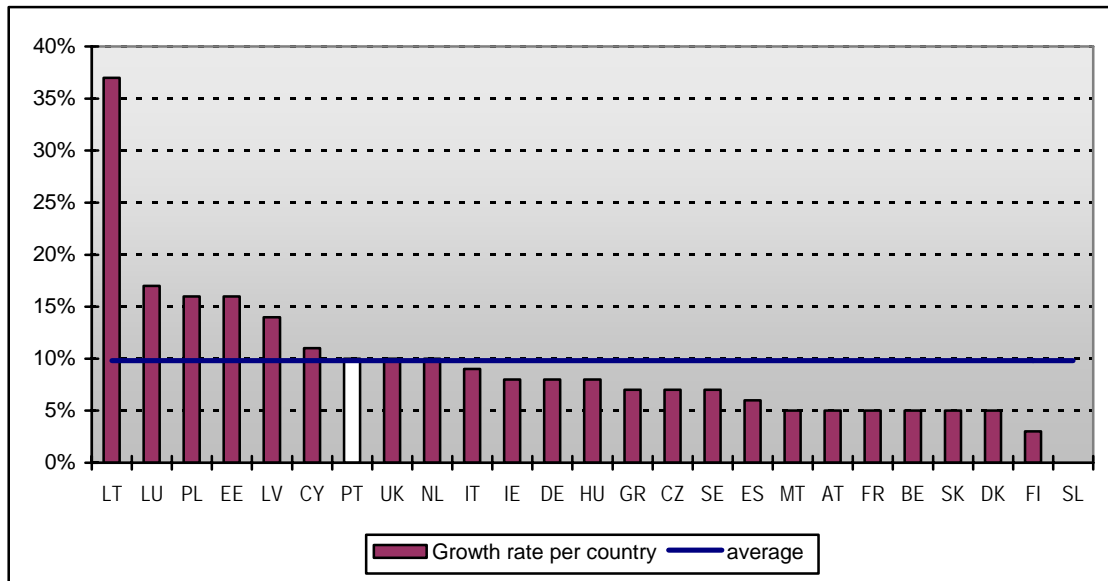
Source: European Commission, 11th Implementation Report.
Notes: countries BE, CZ, DK, GR, ES, NL, UK with growth rates in the July 2004/July 2005 period. Remaining countries October 2004/ October 2005. No data on Slovenia.

II.3.4.4 Service's usage level

Below is the evolution of the service's usage level, measured in voice traffic, SMS, data services and roaming.

II.3.4.4.1 Voice traffic

In year 2005, MTS subscribers made about 6.45 billion calls, 6.8 per cent more than in the previous year.

In the same period, MTS subscribers received over 6.5 billion calls, a growth of 6.3 per cent regarding the previous year.

Table 49 – Voice traffic in number of calls

	2000	2001	2002	2003	2004	2005
Outgoing traffic	4,244	5,264	5,608	5,812	6,040	6,450
Own network – own network	2,674	3,532	3,711	3,860	4,011	4,348
Own network – national FTS	594	599	588	542	517	510
Own network – international networks	78	113	165	173	196	209
Own network – other national MTS	898	1,020	1,143	1,238	1,316	1,387
Incoming traffic	4,219	5,478	5,751	5,935	6,163	6,549
Own network – own network	2,674	3,532	3,711	3,860	4,011	4,345
Other national MTS – own network	662	1,007	1,139	1,240	1,318	1,390
National FTS – own network	794	815	762	691	659	626
International networks – own network	89	124	138	145	175	189

Source: ICP-ANACOM   Unit: thousand calls

Between 2000 and 2005, the outgoing traffic grew about 52 per cent and the incoming one about 55.2 per cent. But this growth was not constant along this period. There was a significant decrease in the growth rates as from 2002. This slowing-down trend was reversed in 2005. The factors that can explain the recent evolution of the penetration rate can also justify this evolution in traffic.

Graph 43 – Growth in the amount of calls 2000/2005
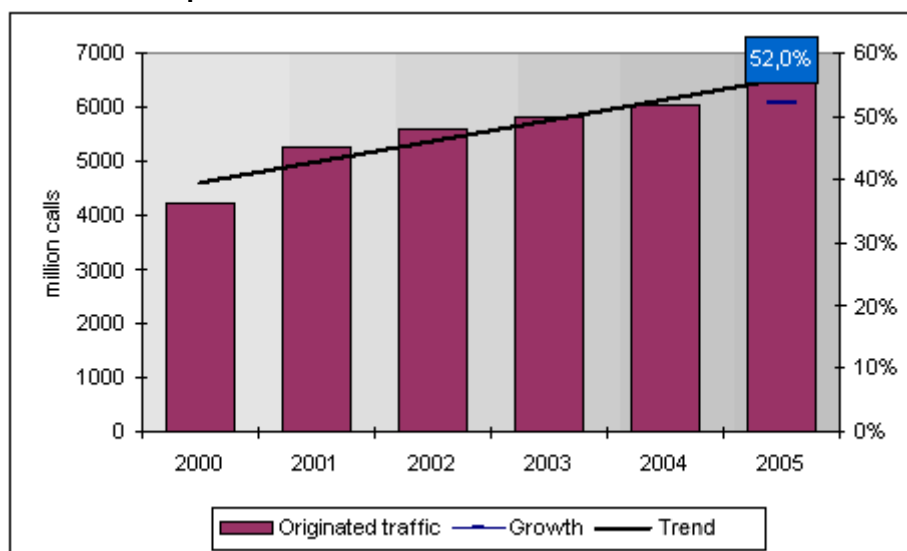
Source: ICP-ANACOM

Fixed-to-mobile calls keep their downward trend, with a negative evolution (-5 per cent on the previous year). This type of calls already stands for only 10 per cent of calls.

Graph 44 – Rate of fixed-to-mobile traffic in the overall incoming traffic (calls)
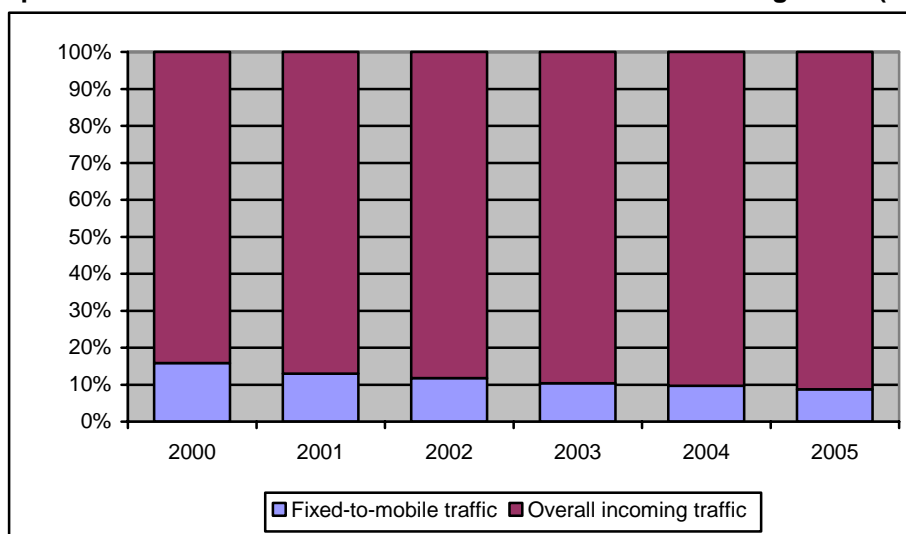
Source: ICP-ANACOM

It should be mentioned that, since the beginning of the period now being considered, the mobile voice traffic stands for most of the overall voice traffic.

Graph 45 – Distribution of voice traffic with origin in fixed and mobile networks[50]
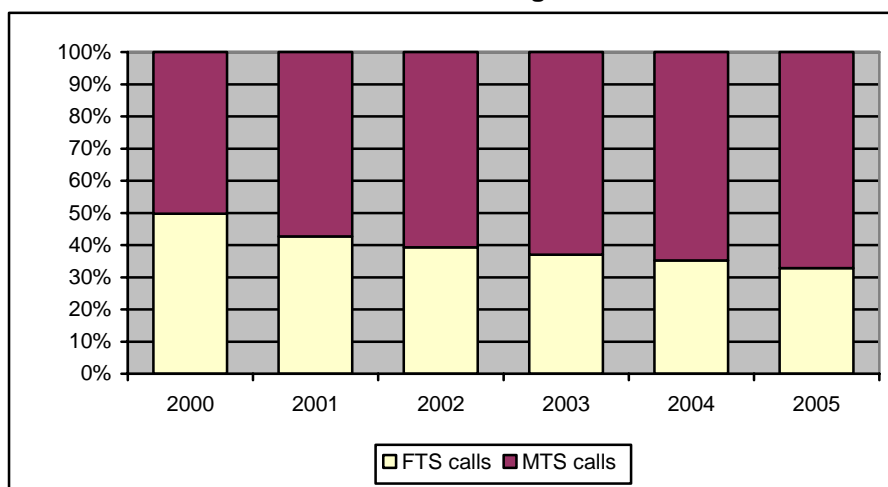
Source: ICP-ANACOM

Regarding the evolution of voice traffic in minutes, the number of minutes of conversation with origin in mobile networks grew about 8.9 per cent vis-à-vis the previous year, reaching about 11.6 billion minutes.

The number of minutes destined to mobile networks reached 11.9 billion minutes, a

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[50] The year 2005 only includes traffic figures of the first three quarters.

growth of 8.4 per cent versus the previous year.

Table 50 – Voice traffic in minutes

	2000	2001	2002	2003	2004	2005
Outgoing traffic	6,176	7,963	9,358	10,014	10,653	11,598
Own network – own network	3,699	5,240	6,213	6,674	7,172	7,929
Own network – national FTS	861	856	886	864	823	819
Own network – international networks	224	339	468	479	510	537
Own network – other national MTS	1,392	1,528	1,792	1,998	2,147	2,313
Incoming traffic	6,299	8,517	9,770	10,333	11,008	11,935
Own network – own network	3,699	5,240	6,213	6,674	7,172	7,929
Other national MTS – own network	1,020	1,522	1,792	1,999	2,148	2,314
National FTS – own network	1,306	1,389	1,348	1,235	1,176	1,146
International networks – own network	274	366	418	425	512	546

Source: ICP-ANACOM   Unit: million minutes

Between 2000 and 2005, the outgoing traffic grew about 87.8 per cent and the incoming traffic about 89.5 per cent. But this growth was not constant along this period. There was a significant decrease in the growth rates as from 2002. This slowing-down trend was inverted in 2005. The factors that can explain the recent evolution of the penetration rate can also justify this evolution in the number of subscribers.

Graph 46 – Growth in the amount of minutes 2000/2005
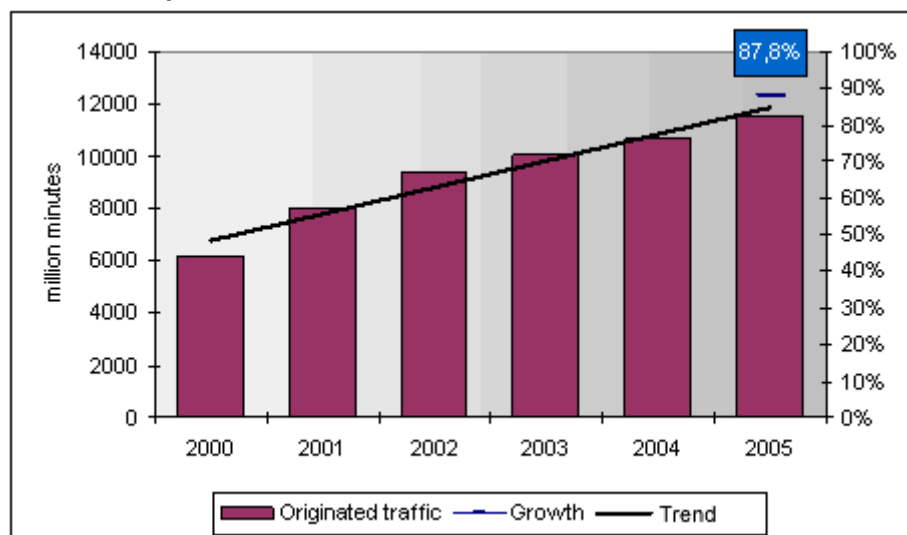
Source: ICP-ANACOM

Just as mentioned in the case with calls, the number of minutes with origin in fixed networks and destination in mobile networks has been losing importance in the

overall mobile networks' incoming traffic. The fixed-to-mobile call's conversation time has again decreased vis-à-vis the previous year (-2.6 per cent).
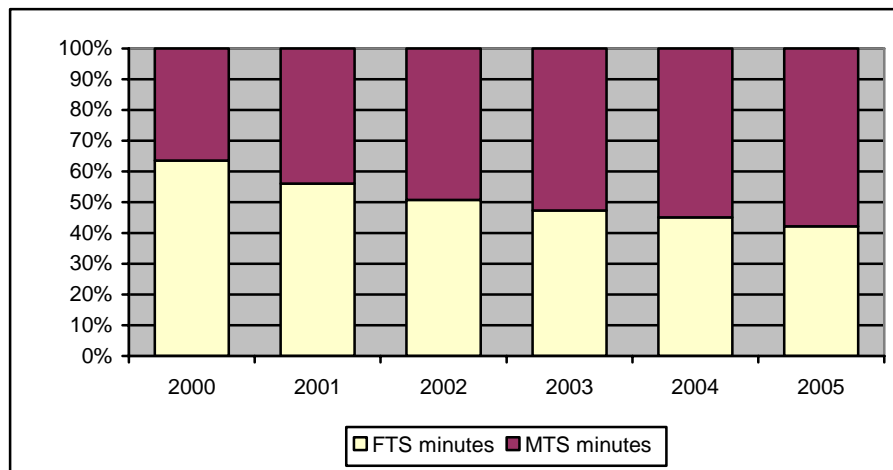
Graph 47 – Rate of fixed-to-mobile traffic in the overall incoming traffic (minutes)
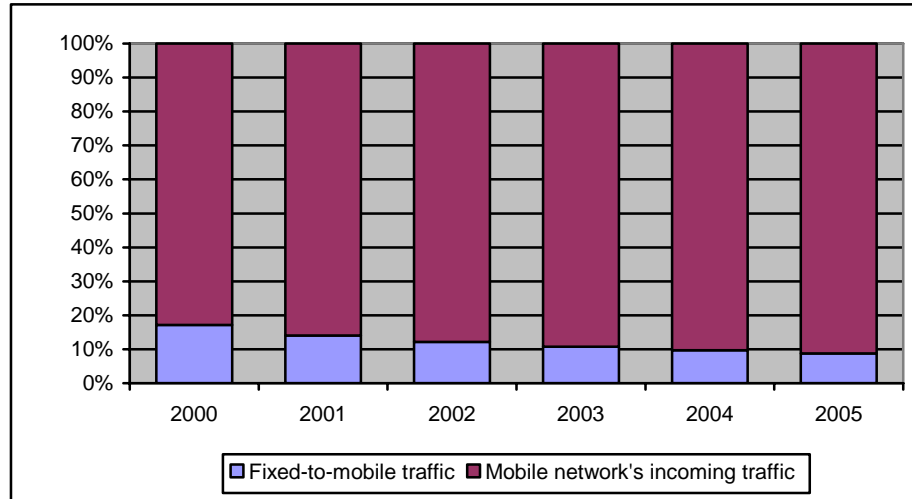
Source: ICP-ANACOM

Indeed, this effect led to a growing intensity of voice traffic in mobile networks – and less in fixed ones. This traffic already stands for about 60 per cent of the overall voice traffic.
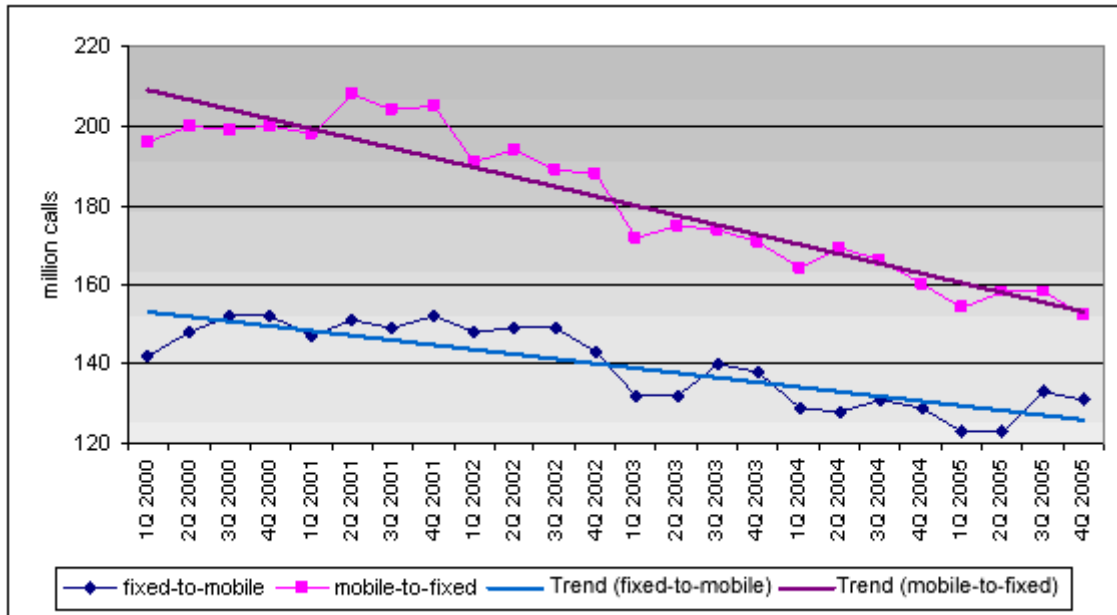
Graph 48 – Distribution of traffic with origin in fixed and mobile networks

Source: ICP-ANACOM

The decreasing trend of mobile-to-fixed and of fixed-to-mobile traffic has been going on for some years and is related with the phenomenon of the decreasing number of FTS customers.

Graph 49 – Evolution of the amount of mobile-to-fixed and fixed-to-mobile calls and trend

Source: ICP-ANACOM

Graph 50 – Evolution of the amount of mobile-to-fixed and fixed-to-mobile minutes and trend
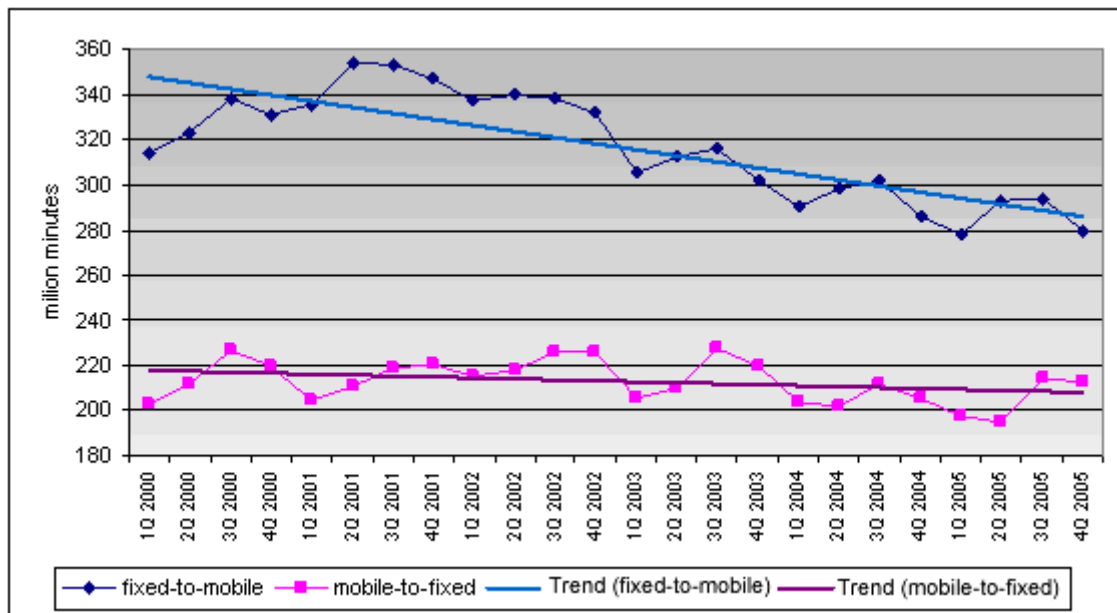
Source: ICP-ANACOM

Mobile voice traffic already stands for most of the voice traffic, even though if the data traffic is taken into account the number of fixed minutes is higher than that of mobile ones.

The graph below shows an international comparison of traffic per subscriber. As can be seen, and according to the available data, the intensity of the service's usage is close to the average of the considered countries.

Graph 51 – Minutes per month per subscriber – international comparisons
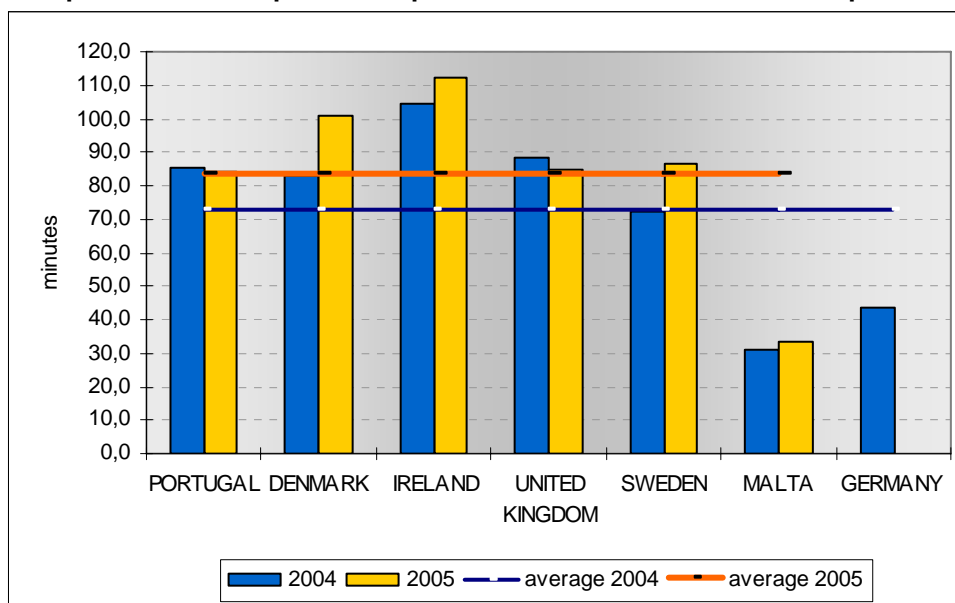
Source: ICP-ANACOM and remaining NRAs
Note: In the cases with Denmark and Sweden only 6-month traffic was considered and with the United Kingdom only 9.

Data service traffic

Regarding data services, there is an apparent decrease in traffic to services using the WAP protocol, which could have a connection with the development of 3G services. There is no reliable data on the remaining data services.

Table 51 – Access to WAP mobile portal

Data services traffic	2003	2004	2005
Access to WAP services (via GSM)			
Calls	31,970	26,271	13,474
Minutes	32,368	26,725	13,904
Access to WAP services (via GPRS)			
Sessions	n.a.	102,111	83,310
Mbytes	n.a.	2,214	5,424

Source: ICP-ANACOM   Unit: thousands

II.3.4.4.2 Roaming

In year 2005, roaming in traffic didn't vary significantly, if written messages aren't considered (10.7 per cent).

The average length of roaming in calls was 118 seconds, a similar figure to that of the previous year.

Table 52 – Roaming in traffic

	2000	**2001**	**2002**	**2003**	**2004**	**2005**
Roaming voice calls			108,838	119,983	110,929	110,441
Amount of roaming minutes	128,679	166,948	175,292	185,162	216,701	216,706
Roaming written messages				73,465	139,014	153,732
Average length of calls (sec)					117	118

Source: ICP-ANACOM   Unit: thousands / seconds

Note: Only from 2004 one of the subscribers stopped including SMSs in roaming in calls and thus the series aren't comparable between 2003 and 2004.

Graph 52 – Growth in the amount of roaming in traffic 2000/2005
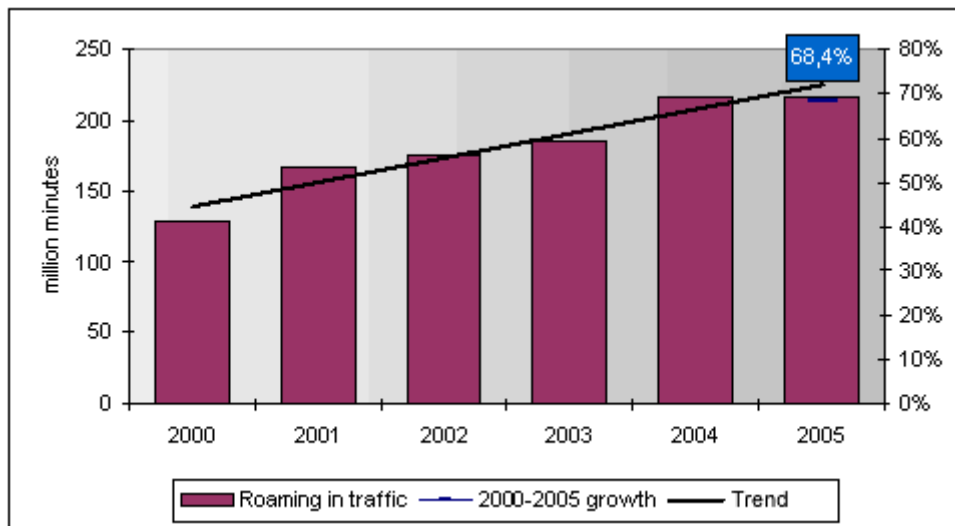
Source: ICP-ANACOM

Roaming out traffic has a positive evolution: about 3.6 per cent in calls and 8.5 per cent in minutes.

Table 53 – Roaming out traffic

	2000	**2001**	**2002**	**2003**	**2004**	**2005**
Roaming voice calls	47,884	46,989	71,800	72,329	75,105	77,814
Amount of roaming minutes	84,310	120,581	128,519	137,623	142,599	154,728
Roamed written messages	n.a.	n.a.	38,026	58,962	74,645	118,424
Average length of calls (sec)	106	108	107	114	114	119

Source: ICP-ANACOM   Unit: thousands / seconds

The most significant variation was in the amount of messages, which had an increase of over 58 per cent. There is a growing trend for the use of SMSs, given the price of this type of calls and the value of terminations in these cases. Noteworthy is once again the fact that receiving roamed messages is cost-free for the roamer, whereas receiving a voice call implies paying a share of the call, which is the termination cost of the operator to which the roamer registered. This and the above mentioned campaigns justify the preferred use of SMSs instead of voice calls.

Graph 53 – Growth in the amount of roaming out traffic 2000/2005
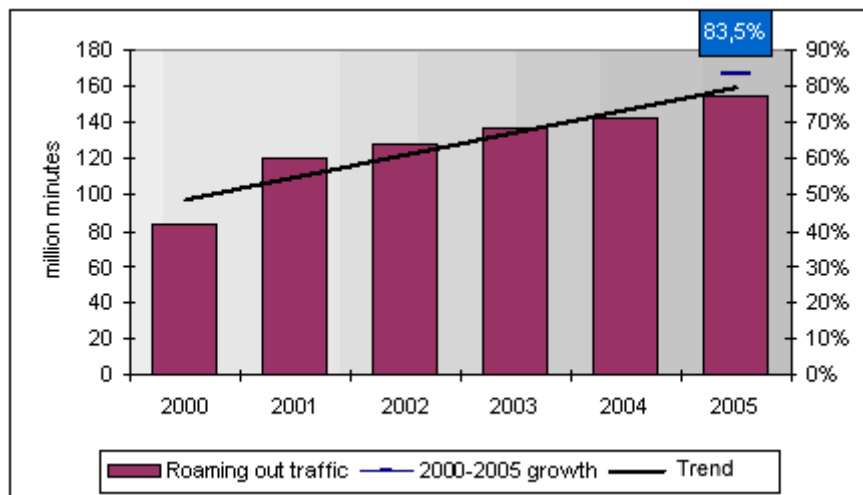
Source: ICP-ANACOM

The length of roaming out calls increased in 2005, reaching a peak of 119 seconds per call.

II.3.4.4.3 SMSs

The year 2005 had a very significant increase in the amount of sent written messages, reaching about 4.6 billion messages, an 83.3 per cent increase over the previous year.

This was due to the operators' promotional campaigns to incentive the use of this service.

Graph 54 – Evolution of the amount of SMSs and trend
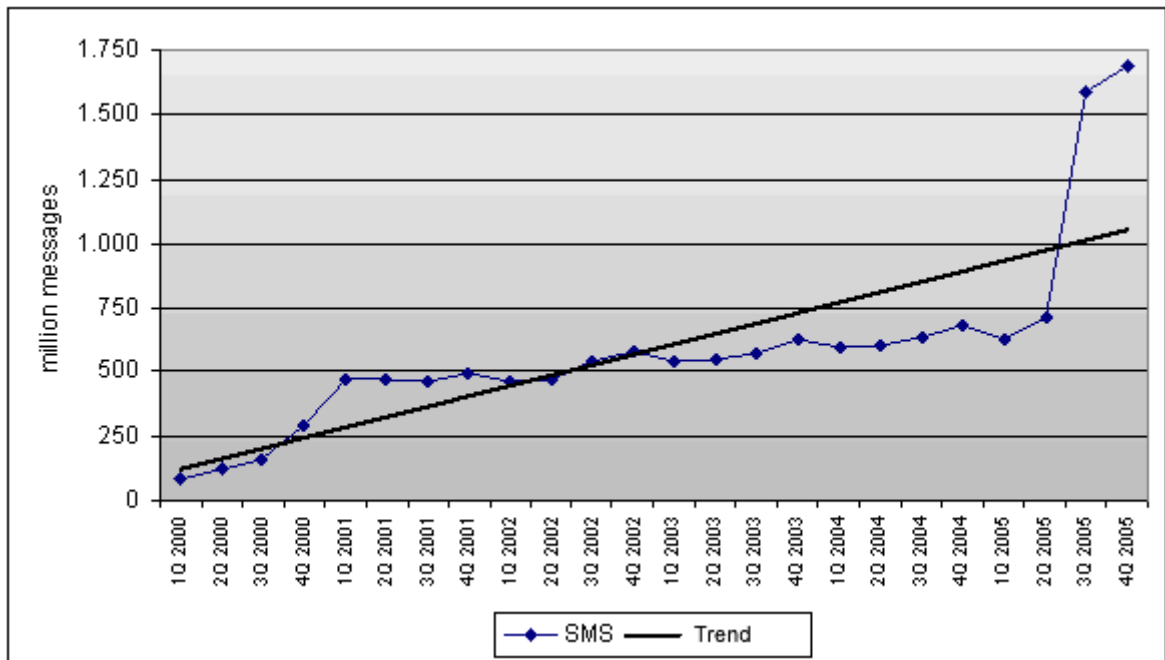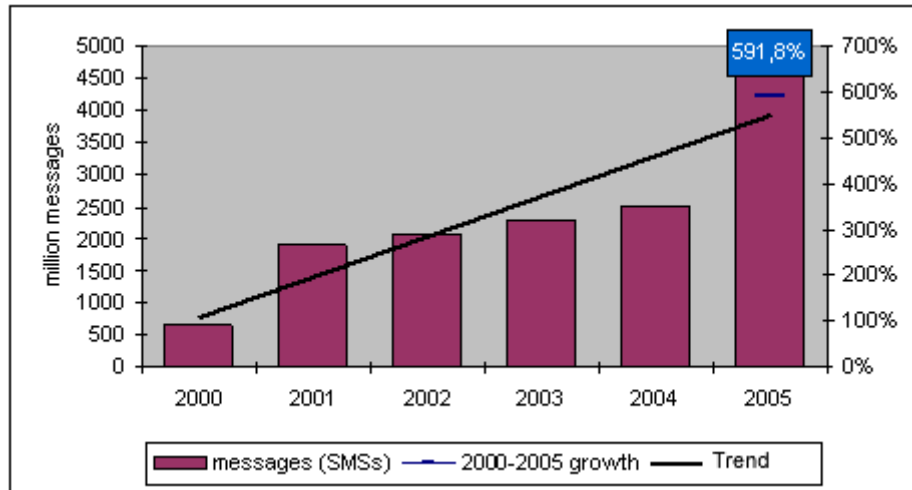

Source: ICP-ANACOM

Table 54 – SMSs with origin in own network

2000	2001	2002	2003	2004	2005
550	1,529	2,053	2.296	2,518	4,615
Growth	178.1%	34.3%	11.9%	9.7%	83.3%

Source: ICP-ANACOM   Unit: millions of messages, %

Graph 55 – Growth in sent SMSs – 2000/2005

Source: ICP-ANACOM

According to the available data, the use of SMSs in Portugal is less intensive than in other countries.

Graph 56 – Amount of SMSs per subscriber per month – international comparisons
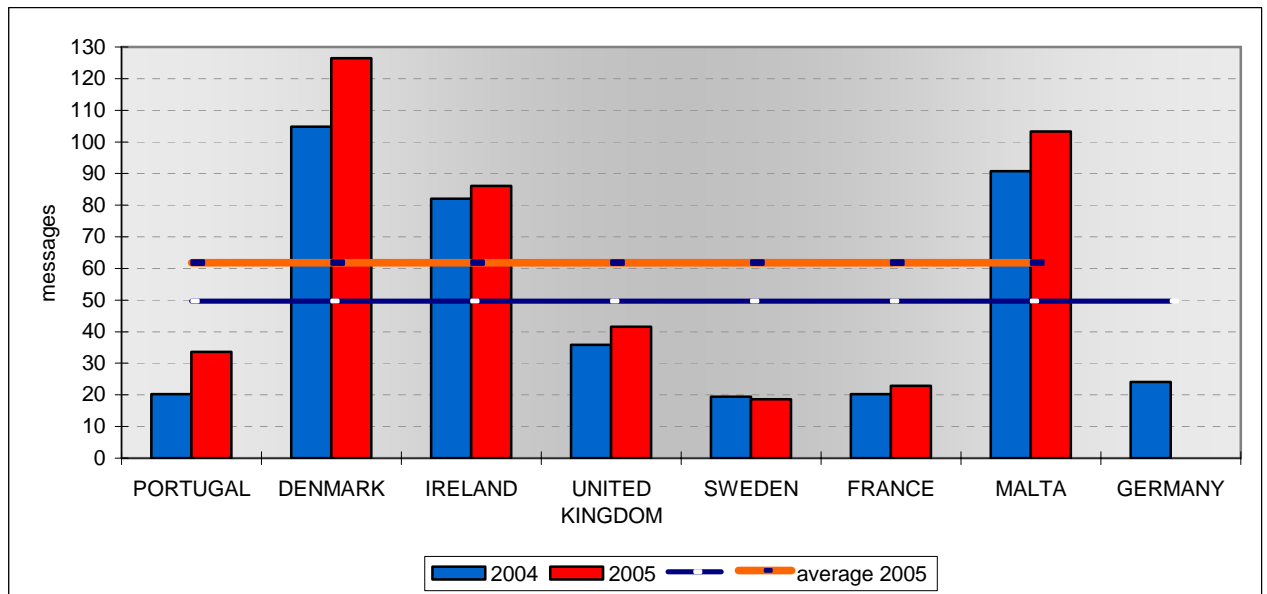
Source: ICP-ANACOM and remaining NRAs
Note: In the cases with Denmark and Sweden only 6-month traffic was considered for 2005 and with Malta and the United Kingdom only 9.

II.3.4.4.4 ARPU

The estimated average revenue per user should decrease about 9.6 per cent in 2005,

further to an increase in 2004.

Table 55 – Average revenue per user (ARPU[51])

	2000	**2001**	**2002**	**2003**	**2004**	**2005**[52]
Average revenue per user (ARPU)	31.41	29.53	26.42	25.24	25.59	23.12
Yearly variation	2.9%	-6.0%	-10.5%	-4.5%	1.4%	-9.6%

Source: ICP-ANACOM, providers' reports and accounts.   Unit: Euros, %.

Table 56 – Average monthly cash cost per user (CCPU[53])

	2000	**2001**	**2002**	**2003**	**2004**	**2005**
Average monthly cash cost per user (CCPU)	21.29	19.48	16.07	14.94	15.22	n.a.
Yearly variation	-5.1%	-8.5%	-17.5%	-7.0%	1.9%	n.a.

Source: ICP-ANACOM, providers' reports and accounts.   Unit: Euros, %.

The difference between ARPU and CCPU has been around 10 euros. However, taking into account the foreseeable drop in the ARPU, the estimated difference in 2005 should be below 10 euros.

Graph 57 – ARPU and CCPU
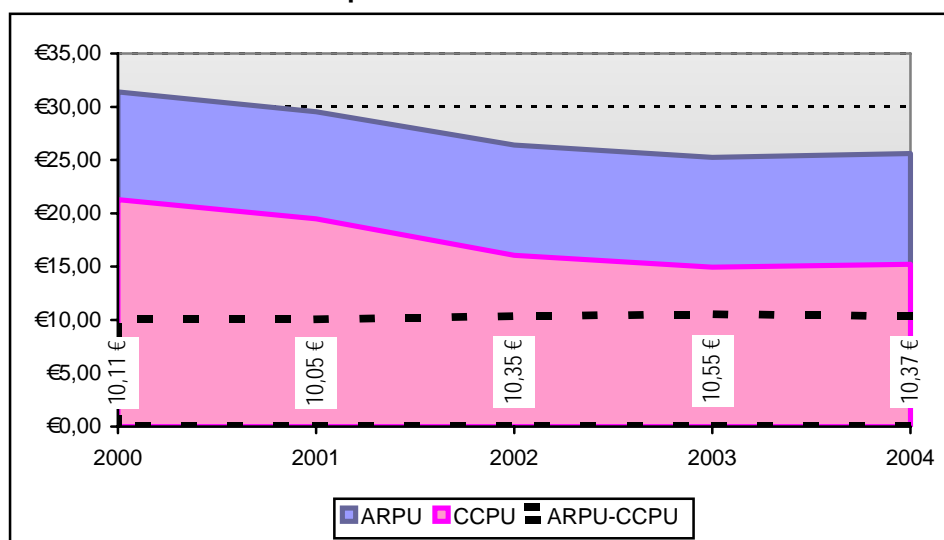
Source: ICP-ANACOM, operators' financial data from press releases.

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[51] ARPU - Average Revenue Per User.

[52] Estimated figure. Reckoning was made based on the following publications: Optimus, Market Report of 1-12-2005; TMN Grupo PT's website

http://www.telecom.pt/InternetResource/PT*Site*/PT/Canais/investidores/InformacaoFinanceira/IndicadoresChave/TMN.htm;
Vodafone Vodafone Plc's website

http://www.vodafone.com/article_wide/0,3041,CATEGORY_ID%253D403%2526LANGUAGE_ID%253D0%2526CONTENT_ID%253D230852,00.html

[53] CCPU – *Cash Cost Per User* – Operational costs minus provisions, amortizations and terminal sales.

II.3.4.5 Service price levels

Below is an international price comparison regarding this service and the evolution of its prices between 2002 and 2005.

Part II – State of communications

II.3.4.5.1 International comparison of STM[54] prices

According to the available data, the price plans existing in Portugal are below the average in the case with the pre-paid plans. However, this situation changes greatly regarding the post-paid plans. In these cases, the price level of the plans existing in Portugal is above the average for the high consumption levels.

Table 57 – International price comparisons (November 2005) – deviations to average

Profile Package	Low consumption	Medium consumption	High consumption
Post-paid	-15.9 %	- 34.3%	12.4%
Pre-paid	-21.1%	-23.1%	-25.5%

Source: Teligen/OCDE/ICP-ANACOM.

For the low consumption usage profile, the pre-paid packages offered in Portugal are 20 per cent above the average of the considered countries.

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[54] Methodological note:
The results of the packages herein were collected from the OECD/Teligen database in November 2005 and are in euros, without VAT and not considering PPP (purchase power parity). Of the countries belonging to the OECD, those belonging to the EU were chosen. Considering that the OECD/Teligen, by default, always gives two results per country (regarding the incumbent operator and the second most representative one), the operator with the lowest tariff plan in terms of annual billing for each package and usage profile, for each country, was selected. Deviations are in connection with the average of the selected countries, Portugal excluded.

Graph 58 – Low consumption profile – pre-paid packages (November 2005)
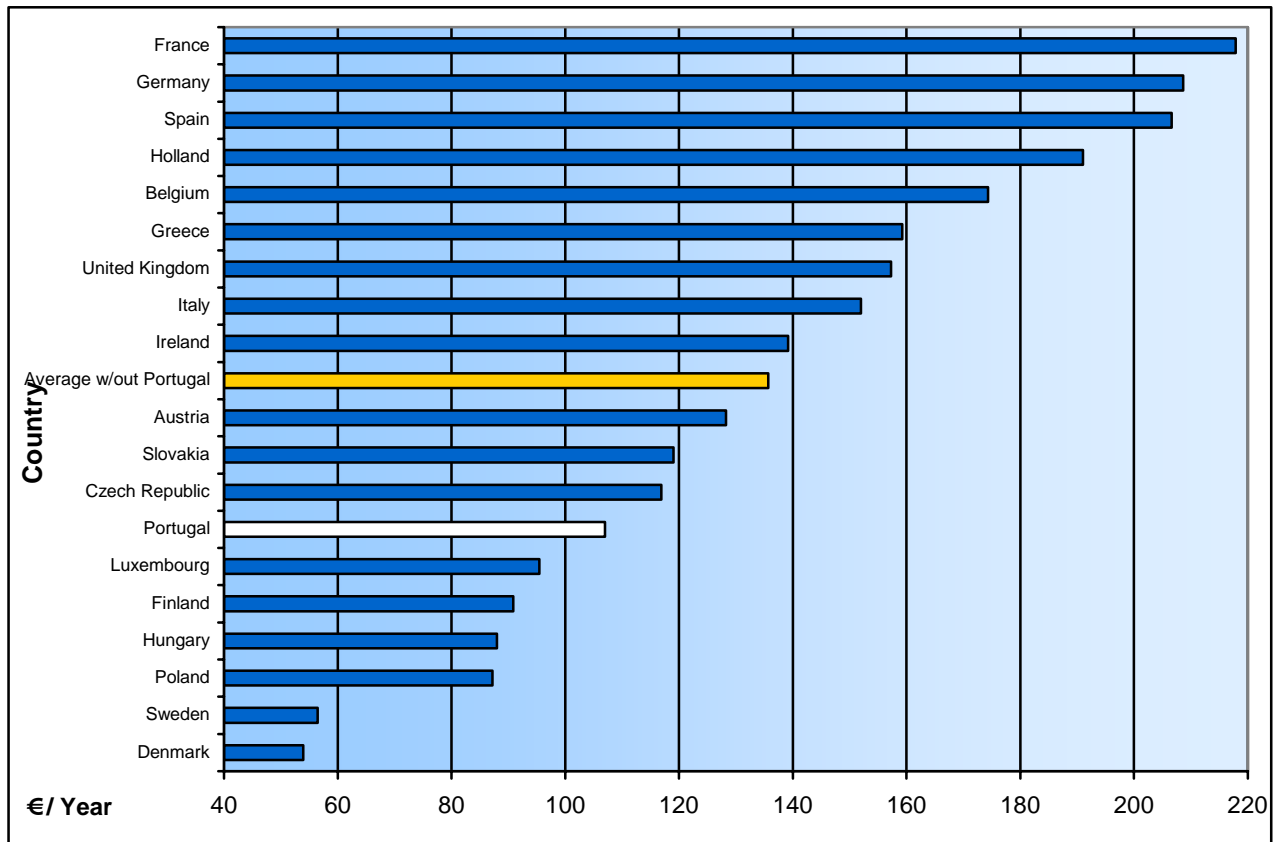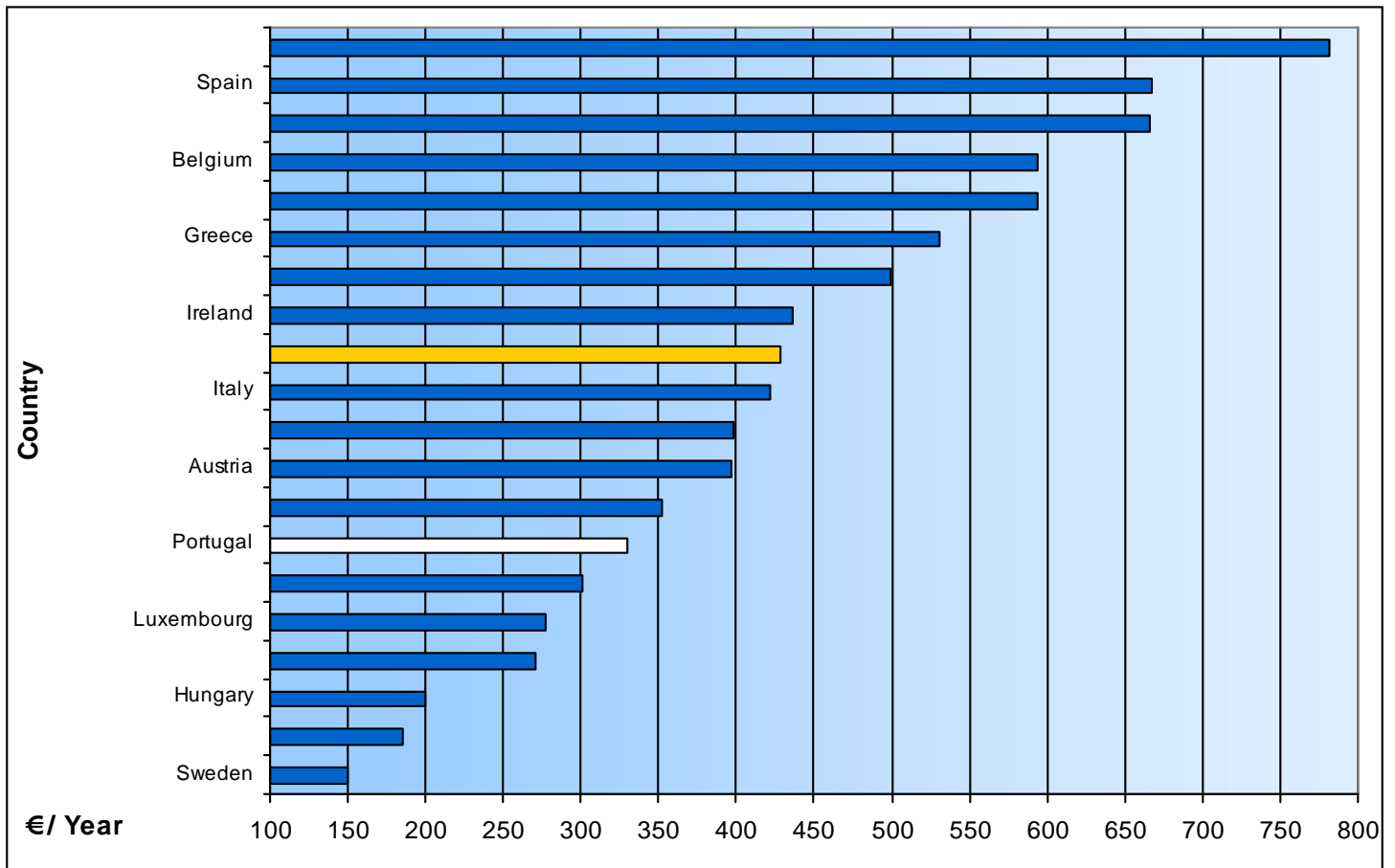

Source: Teligen/OCDE/ICP-ANACOM

In the case with the average consumption profile, the prices in Portugal are around 23 per cent below the average of the selected countries, for the pre-paid packages.
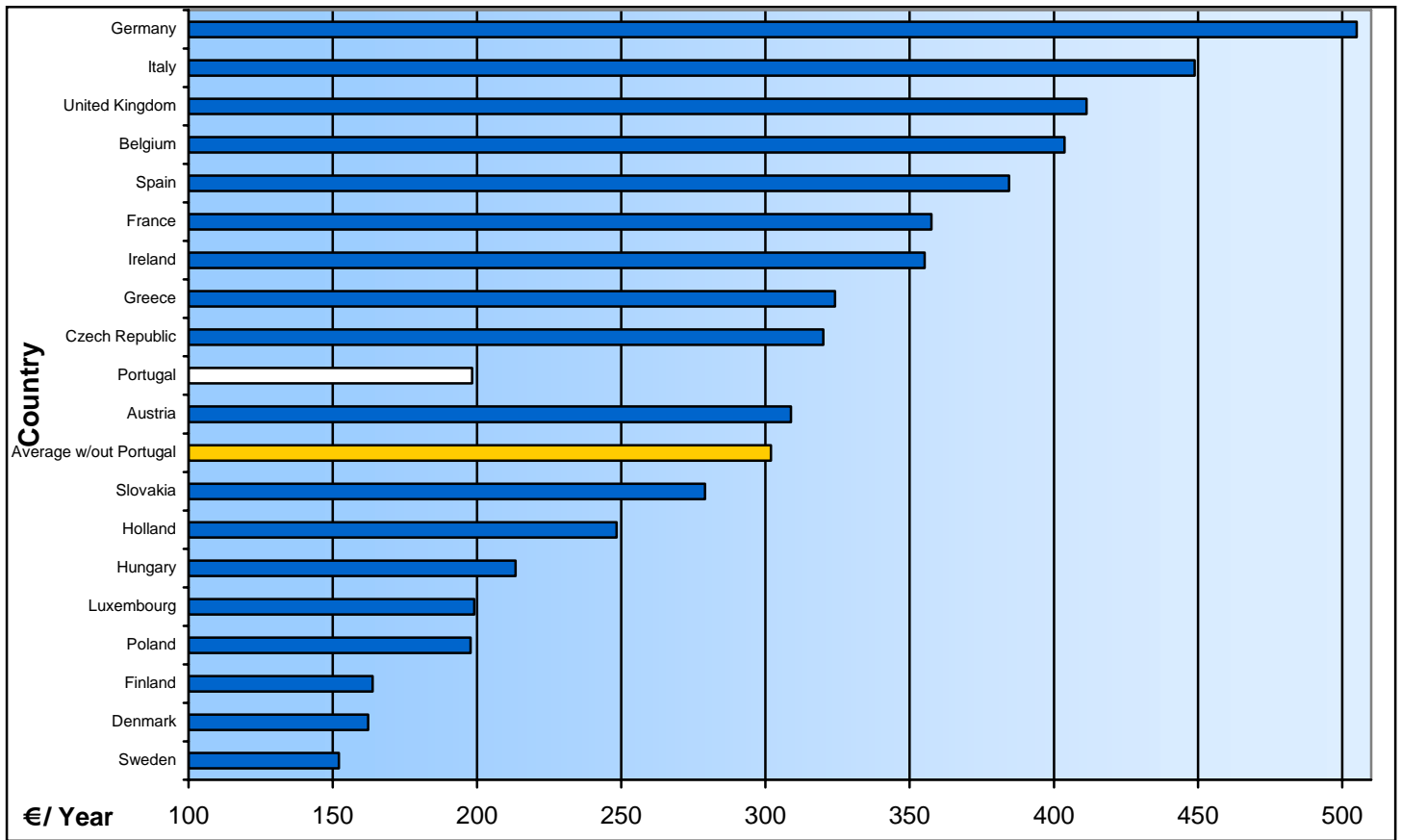
Graph 59 – Average consumption profile – pre-paid packages (November 2005)

Source: Teligen/OCDE/ICP-ANACOM

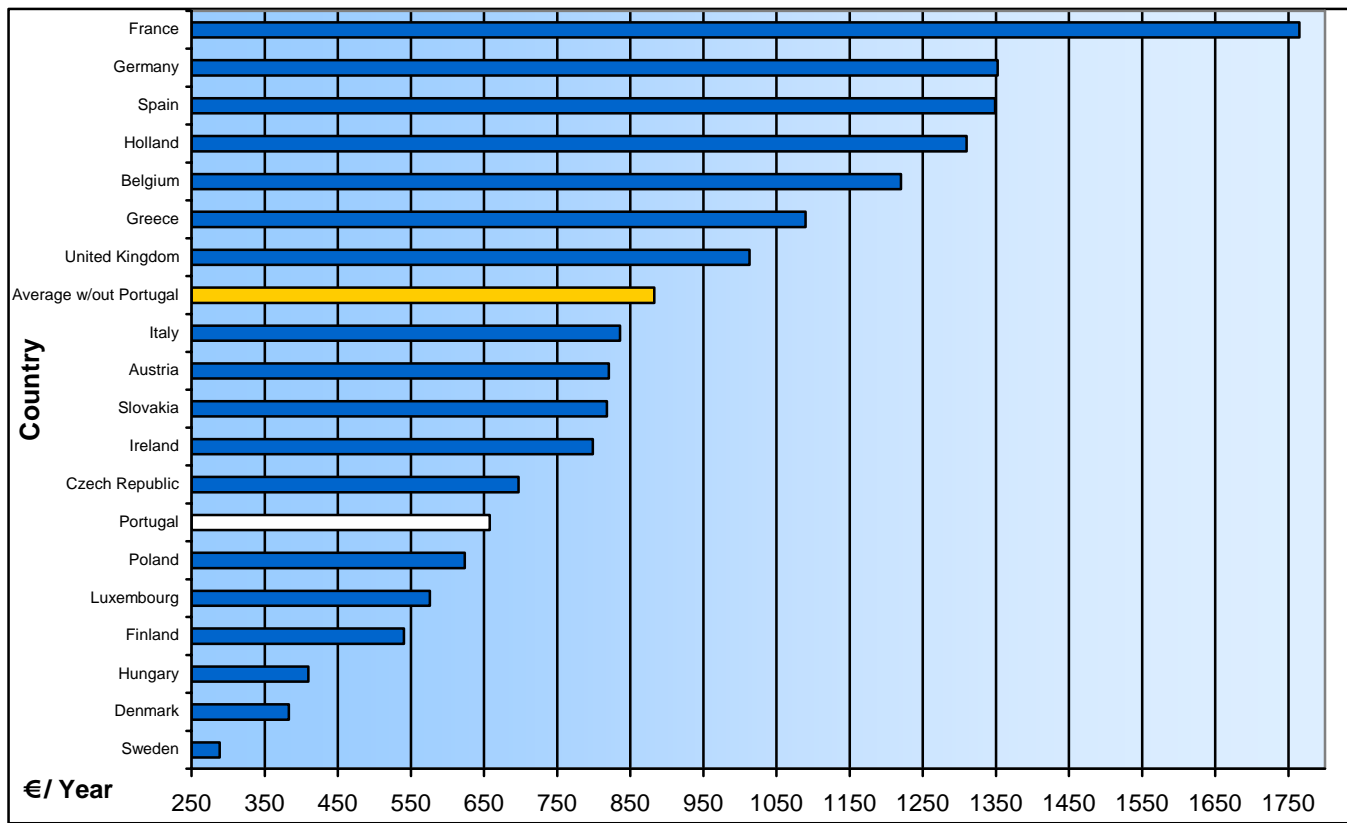Regarding the post-paid packages, the prices practiced in Portugal are about 34.4 per cent below the average.

Graph 60 – Average consumption profile – post-paid packages (November 2005)

Source: Teligen/OCDE/ICP-ANACOM

For the high consumption profile, the pre-paid offers existing in Portugal had a price about 25.5 per cent below the average.

Graph 61– High consumption profile – pre-paid packages (November 2005)

Source: Teligen/OCDE/ICP-ANACOM

In the case with the post-paid packages, the deviation to the average is of about 12.4 per cent[55].

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[55] The comment in section 7 of ICP-ANACOM's Advisory Council's Opinion regards these international comparisons, but refers to data from November 2005, in which Teligem/OECD used, for the reckoning of the packages, outdated offers from the national operators, which hindered Portugal's relative standing in the comparisons. Figures herein are the corrected ones, further to the detection of that inaccuracy.

Graph 62 – High consumption profile – post-paid packages (November 2005)
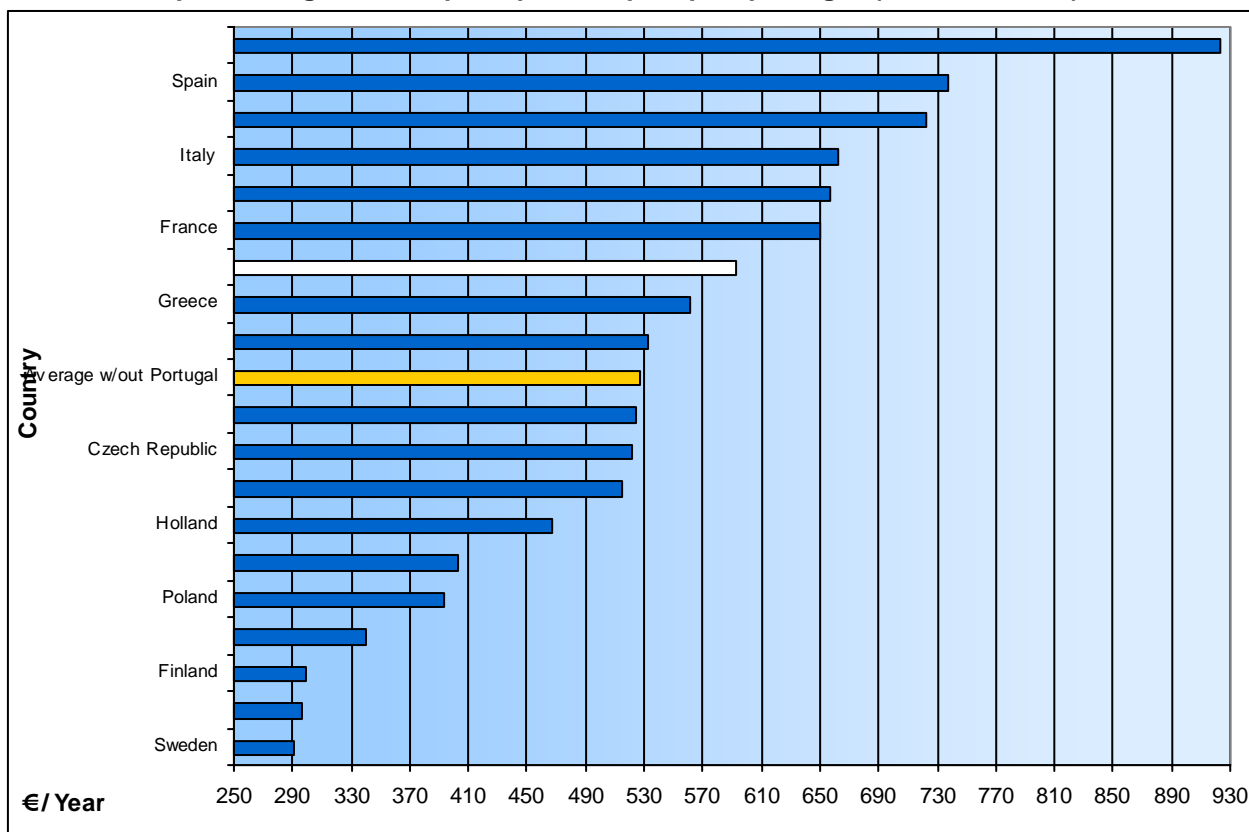
Source: Teligen/OCDE/ICP-ANACOM

Evolution of national prices and comparison with the EU (2002/2005)

The following graphs show the evolution trends of the service prices in Portugal.

In the case with the low consumption usage profile, the pre-paid plans tend to be below the average, with an important decrease in 2005.
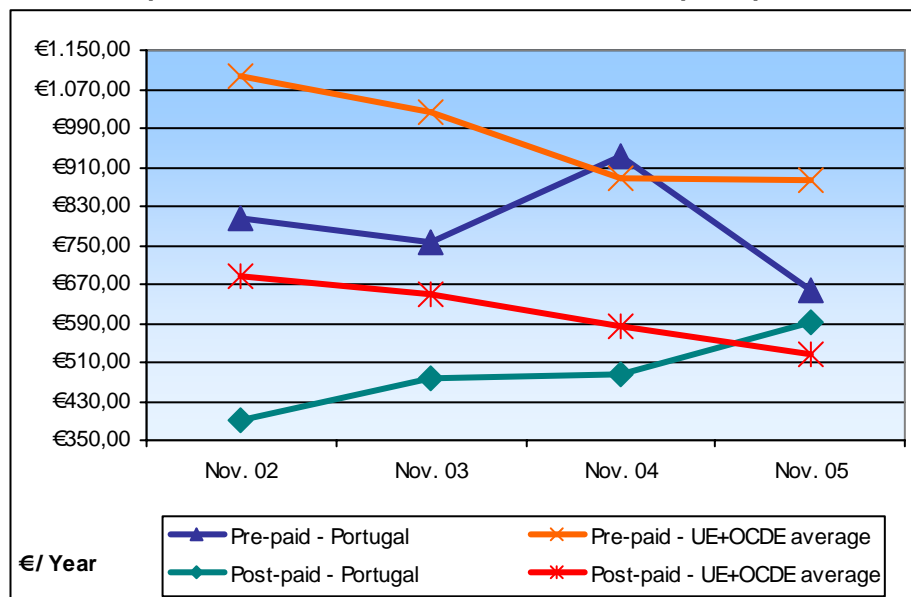
Graph 63 – Price evolution – low consumption basket
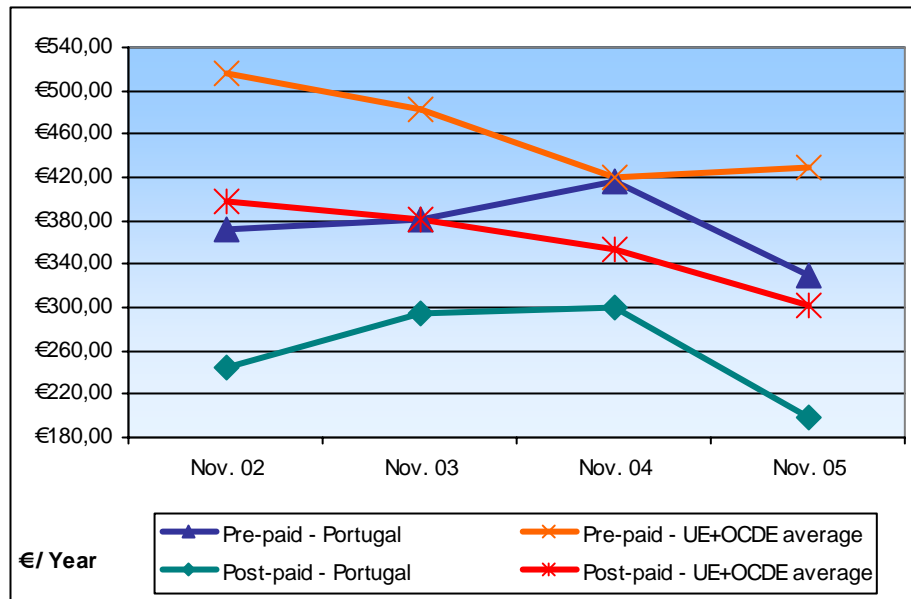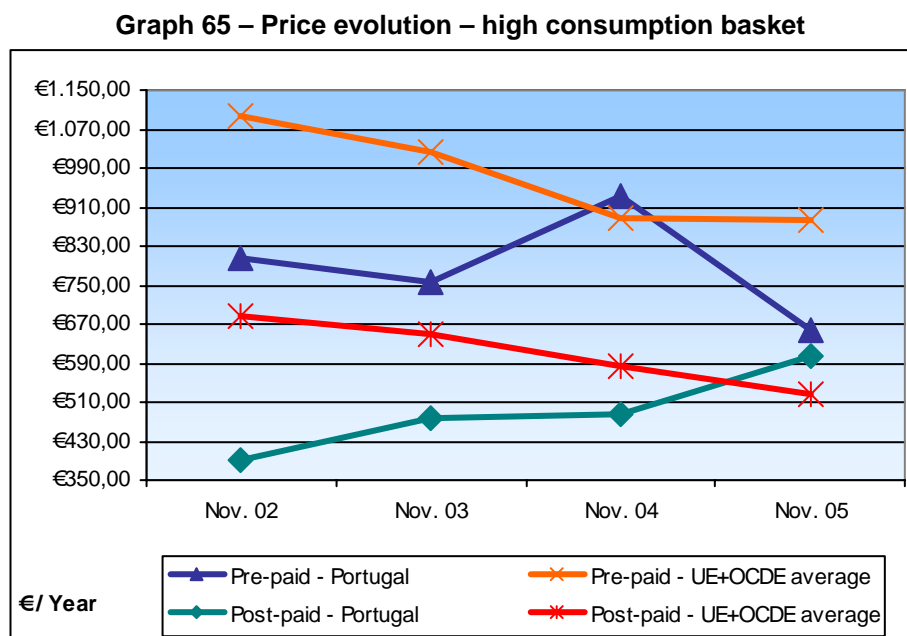

Source: Teligen/OCDE/ICP-ANACOM

In the medium consumption usage profile, all the plans are below the corresponding average.

Graph 64 – Price evolution – medium consumption profile

Source: Teligen/OCDE/ICP-ANACOM

In the case with the high consumption usage profile, there is an approximation between the pre-paid plan, which fell considerably, and the price of the post-paid plan, which suffered an increase. This plan's price is now above the average.

Graph 65 – Price evolution – high consumption basket

Source: Teligen/OCDE/ICP-ANACOM

II.3.4.6 GSM networks' quality of service

ICP-ANACOM has been making surveys to assess the quality of the mobile networks in Portugal. In 2005, the three usual indicators were analysed – coverage, accessibility and audio quality[56].

The survey shows that the GSM mobile networks have good coverage and performance levels.

The Accessibility indicator has high levels, maintaining the trend registered in the last years. Of the test calls made in the urban agglomerates and road axels of mainland Portugal, 97 per cent were established with success, with the conversational phase

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[56] Survey on the Quality of Service of Mobile Networks - QoS-GSM 2005, available at
http://www.anacom.pt/template12.jsp?categoryId=186283 (global study) and
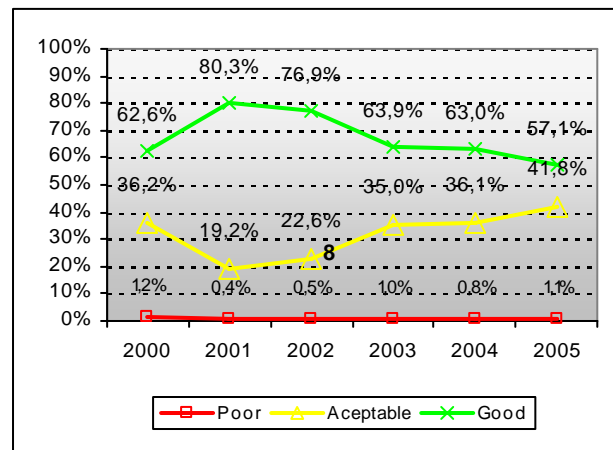http://www.anacom.pt/template12.jsp?categoryId=187984 (rail axels).

adequately kept, and ended in a normal way (by disconnection) at the end of the pre-defined time period.

Graph 66 – Global accessibility (Mainland)
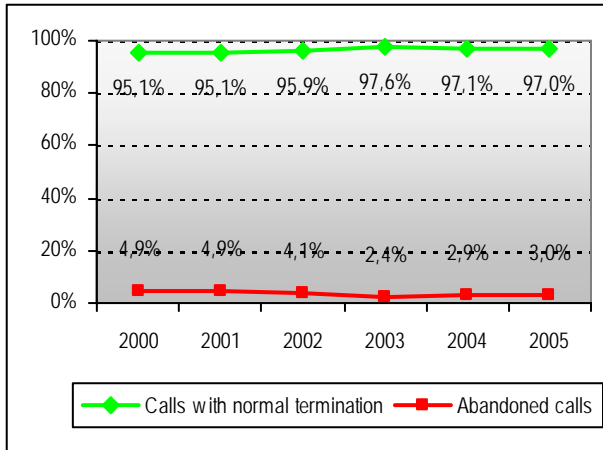
Source: ICP-ANACOM

Graph 67 – Global audio quality (Mainland)
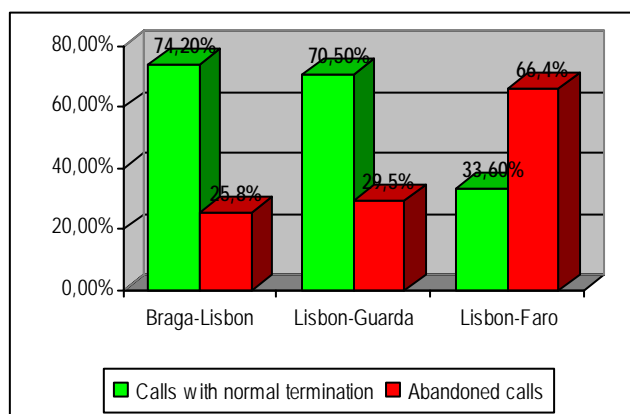

Source: ICP-ANACOM

Regarding the Audio Quality indicator, around 99 per cent of test calls presented positive audio quality values. Only about 1 per cent presented 'poor' or 'bad' levels. However, this indicator kept the downward trend that has been registered since 2002.

The performance of mobile networks does not show considerable differences between urban agglomerations and road axels regarding the Accessibility indicator.

In the latest years, the Audio Quality indicator decayed more strongly in urban agglomeration than on road axels. As a consequence, on the last studies performed, this indicator presents worse levels in urban agglomerations.

Rail axels were again included in the 2005 study and the results show that GSM networks have a poor performance. Only 61.8 per cent of test calls were established successfully and adequately kept during the conversational phase, and ended normally (by disconnection) at the end of the pre-determined time (110 seconds).

Graph 68 – Accessibility in rail axels

Source: ICP-ANACOM

Graph 69 – Audio quality in rail axels
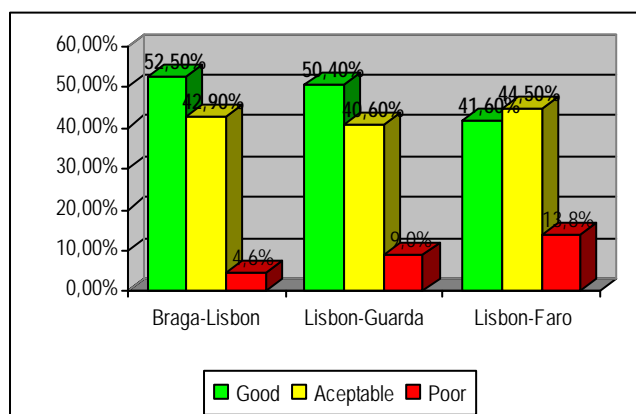
Source: ICP-ANACOM

The poor results obtained on rail axels ate mainly due to serious coverage deficiencies, sometimes with the total absence of radio signal, especially in the Lisbon-Faro route. On this rail axel, only 57.6 per cent of the attempted test calls were established successfully and only 33.6 per cent of calls were adequately kept and ended normally at the end of the predetermined conversation time (110 seconds).
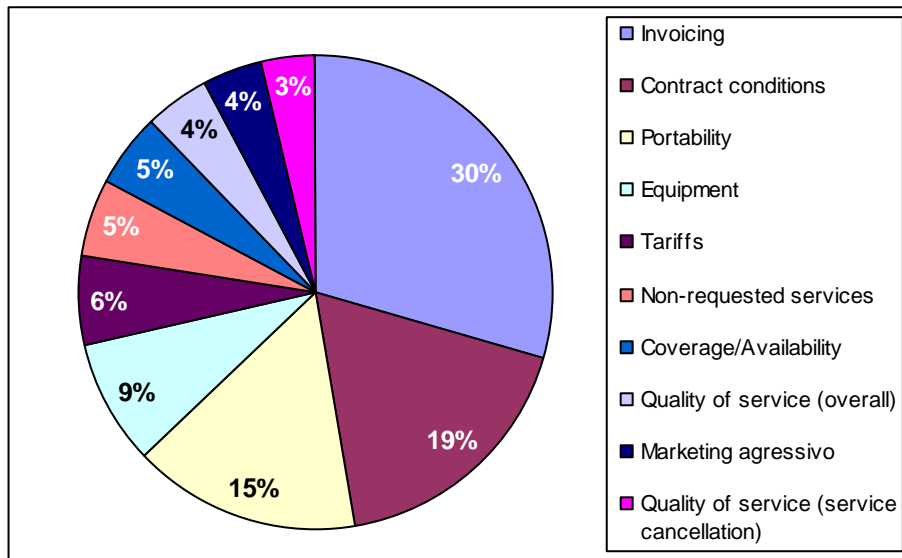
II.3.4.7 Consumers' evaluation

ICP-ANACOM's Mission Unit for the Handling of Market Requests (UM-TSM - *Unidade de Missão de Tratamento de Solicitações de Mercado*) received during 2005 about 400 complaints concerning the mobile telephone service and corresponding operators.

The following graph shows that about half of those requests were due to invoicing and contractual conditions issues. Portability issues also have a high figure.

Graph 70 – Complaints concerning the MTS – 2005

Legend:
- Invoicing
- Contract conditions
- Portability
- Equipment
- Tariffs
- Non-requested services
- Coverage/Availability
- Quality of service (overall)
- Marketing agressivo
- Quality of service (service cancellation)

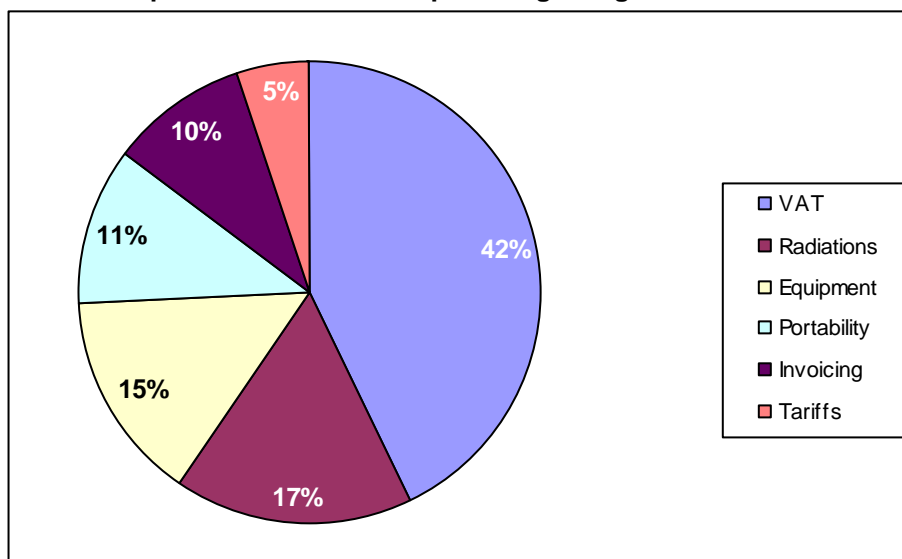Pie chart values: 30%, 19%, 15%, 9%, 6%, 5%, 5%, 4%, 4%, 3%

Source: ICP-ANACOM

It should be noted that the MTS only stands for 10 per cent of all complaints received at ICP-ANACOM regarding electronic communications services.

VAT was the main subject of the information requests in connection with the MTS, standing for about 42 per cent of all requests, which amounted to 239 in the year 2005.

Graph 71 – Information requests regarding the MTS – 2005

Legend:
- VAT
- Radiations
- Equipment
- Portability
- Invoicing
- Tariffs

Pie chart values: 42%, 17%, 15%, 11%, 10%, 5%

Source: ICP-ANACOM