

● ● 3. Mobile telephone service (MTS)

This chapter describes the situation in respect of the MTS at the end of 2009 and its evolution over recent years, describing, in particular, the offer of this service and the profile of its usage and its users.

A summary of the main aspects of the evolution of the service during the year is presented below.

3.1. Main aspects of the evolution of the service in 2009

- At the end of 2009, MTS penetration reached 149.9 per 100 inhabitants, one of the highest among EU countries. MTS penetration recorded in 2009 continued to be above the EU average.
- A very significant growth in UMTS users was recorded in 2009. At the end of the year, these users represented 37 % of the total subscribers of the service. Considering the ratio between the number of users of 3G services and the population, Portugal ranked 9th among the EU27 countries.
- The level of usage of voice services also recorded a higher rate of growth than in the previous year (8.5 % in terms of calls and 16.3 % in terms of minutes). This growth exceeds the growth reported in the number of subscribers in Portugal.
- In 2009, an increase was once again reported in the number of text messages sent, although less significant than in previous years. The volume of the short message service (SMS) increased 9.3 % in relation to the previous year. This upward trend in SMS, which began in mid 2005, was driven by promotional campaigns run by the mobile operators.
- The relatively new services, such as multimedia messages (MMS), video telephony and Mobile TV services have seen high growth rates, although their rate of penetration remains low. Note is made of the fact that Mobile TV was

reported as having a total of 500 thousand users at the end of the year, corresponding to around 19 % of active users of 3G services.

- Revenues from the service to customers totalled 2.72 billion euros, this figure being slightly higher than that recorded in the previous year, with growth mostly occurring in data transmission services, in particular internet access. Revenues from the service may also have been affected by the decrease in the prices of international roaming, following the entry into force of the EU Regulation on this matter.

3.2. MTS offer

MTS is a public electronic communications service which enables the transmission of signals via terrestrial electronic communications networks. The access network consists of wireless resources and terminal equipment is mobile.

The service is provided by entities with licensing for the purpose, since the use of frequencies is dependent on the allocation of individual rights of use⁴², or by providers who use the networks of licensed operators to provide the services.

A more detailed description of the services and the entities providing these services in Portugal is provided below.

3.2.1. MTS

1st generation (1G) mobile service was exclusively designed for voice communications. It used analogue signals and a transmission technique based on frequency division multiple access (FDMA)⁴³. This transmission technique allocates a frequency band to each channel. 1G is identified with analogue systems. In Portugal this service was provided by TMN from 1989 and terminated on 30 October 1999.

2nd Generation (2G) uses the European Telecommunications Standards Institute's (ETSI) GSM/Digital cellular system

⁴² See paragraph 3 of article 19 of Law No. 5/2004 of 10 February.

⁴³ Interference-free access system that grants different frequencies to each user.

1800 MHz (DCS 1800) standards. It operates in the 900 MHz (GSM) and 1800 MHz (DCS) bands. It is characterised by the use of digital technology, with provision, in addition to voice services, of low-speed data transmission services (e.g. fax and e-mail). 2G uses a more efficient technique regarding spectrum use, based on time division multiple access (TDMA)⁴⁴.

GSM has been hugely successful as a wireless technology and has had an unprecedented history of international acceptance. GSM networks saw very fast and widespread geographical deployment and currently exist in around 219⁴⁵ countries and territories. Today, GSM technology is used by around a quarter of the world's population⁴⁶.

Besides voice services, GSM is noteworthy as having enabled the development of the SMS text messages service, a feature which makes it possible to send and receive short text messages, with alphanumeric characters, between mobile phones.

The GSM platform has been developed and advanced in order to enable a growing range of voice and data services.

Several manufacturers joined forces with the aim of defining a protocol which could be used by all the mobile communications systems. This protocol, known as wireless application protocol (WAP)⁴⁷, made it possible for there to be standardized communication between a mobile phone and a server installed on the mobile operator's network. However, even though it brought about some improvements to internet access via mobile phone, this protocol was not widely accepted. It suffers from a number of limitations, in particular slow access to required information and the fact that the content on offer is very specific and not particularly diversified.

The technical specifications of this platform (narrowband) and the limitations of the terminal equipment (small screen, keypad, battery time and limited memory and information processing capacity), while enabling mobility on a large

scale, did not allow Internet access from a mobile phone as from a personal computer linked to a fixed telephone network.

The limitations of the standards mentioned above led to the development of the 2+ generation of mobile networks. As such, technologies were introduced and developed, based on GSM, aimed at supporting data services, such as GPRS⁴⁸ and enhanced data rates for GSM/DCS evolution (EDGE)⁴⁹, which enabled the provision of mobile data services of greater quality, in terms of capacity and processing speeds (increasing transmission speeds from 9.6 kbps, available on GSM networks, to rates as high as 115 kbps, with error protection, and 384 kbps).

Since 2001 and 2002, within the scope of the service's features, mobile operators have made available, respectively, the enhanced messaging service (EMS) and MMS. EMS is an enhancement of SMS, and is very similar to the latter in terms of use. It allows graphics and logos and sounds and ringtones to be sent and received, combining melodies, images, sounds, animations, altered text and normal text in an integrated manner. MMS, as the name suggests, is a feature for sending and receiving messages that include text, sounds, image and videos. It therefore became possible to send moving messages and video.

GPRS networks, in an "always on" mode, also enable the transmission of data at much higher rates than those of traditional GSM, allowing access to the Internet, mobile email, multimedia messages and location-based services.

On the other hand, by enabling data communication without requiring the establishment of voice channel, it became possible to define tariffs guided by the volume of traffic and not by the duration of the communication.

It should also be mentioned that some important functions were introduced into the MTS by means of regulation: indirect access (available from 31 March 2000) and operator portability (from 1 January 2002).

44 Interference-free access system in which several users simultaneously access a single radio frequency by parting it into channels (time slots).

45 <http://www.gsmworld.com/technology/index.htm>

46 According to information from GSM Association/Wireless Intelligence in the 2nd quarter of 2009 there were 3,450,4 million connections to GSM networks (http://www.gsmworld.com/newsroom/market-data/market_data_summary.htm)

47 A wireless application protocol that uses a specific language and technology, giving mobile telephone users and those of other wireless digital devices the possibility to access internet contents, exchange e-mail or perform other data transmission operations. It is particularly used in mobile communications networks. Thus, with a micro-browser, it is possible to view pages on the mobile telephone screen that are written in a special language, named WML (Wireless Mark-up Language), more adequate than HTML (Hypertext Mark-up Language, the most common place computer language on the internet) to send data to wireless devices.

48 Evolution of the GSM system, based on packet-switching, which enables transmission at speeds up to 115 kbps.

49 Evolution of the GSM system which enables transmission at speeds up to 384 kbps.

Third Generation (3G), also digital, was designed to achieve convergence between fixed and mobile communications and multimedia, by making mobile networks closer to fixed networks in terms of capacity, and giving mobile users access to multimedia services at speeds in excess of 384 kbps.

Among the 3rd generation systems of mobile communications, UMTS is of particular note. Functioning in the 2GHz band, UMTS is identified as the European standard within the global family of standards of mobile international telecommunications systems (IMT2000/UMTS).

UMTS technology uses WCDMA⁵⁰ transmission, which is based on multiple access by code division. Although it is different from those used on GSM/GPRS networks, this technology - which requires the development of complex networks and systems - was designed to be fully GSM compliant. At the end of 2009, there were estimated to be around 453 million WCDMA subscribers (including HSPA) worldwide million, corresponding to an annual growth rate of 50 %⁵¹.

UMTS makes it possible to offer advanced mobile multimedia services, regardless of the location of the user, enabling the development of new services and applications: internet-based services, e-commerce, location-dependent services, transmission of photographs directly from cameras (via the Bluetooth⁵² protocol), transmission of live video, remote monitoring of persons and vehicles and games and music downloads.

Today's mobile phones have countless functions: in addition to enabling phone calls, they allow access to a variety of services that increase the flexibility of mobile communications, in particular call-waiting and call-on-hold, call forwarding, caller ID, and data services. The microelectronics associated with the development of the software for these applications also allows for the inclusion within the mobile phone of a digital camera, an frequency

modulation (FM) receiver, and an MPEG-1/2 Audio Layer 3 (MP3) music player, amongst others.

During 2004, and following the delays associated with the difficulties in stabilizing the technology, a range of new 3G mobile services was launched in Portugal based on the IMT2000/UMTS (WCDMA) technology.

3G-based commercial services - namely, access to broadband internet, video call, multimedia services, etc. - were introduced in January 2004, on an experimental basis, and were launched commercially by TMN, Vodafone and Optimus, respectively, on 21 April 2004, 4 May 2004 and 4 June 2004.

Services based on the High Speed Packet Access⁵³ (HSPA) standard, often referred to as 3.5G, began to be introduced after 2006. This is an extension of WCDMA which permits significantly higher speeds. It includes improved modulation schemes enabling better use of the UMTS bandwidth.

With regard to HSDPA (downlink), the services using this standard may theoretically reach maximum speeds of 14.4 Mbits/s. However, for operational reasons, certain operators have introduced products with maximum theoretical speeds that are lower (between 0.5 and 7.2 Mbits). Currently over 364 networks in 144 countries across the world support HSDPA⁵⁴. It is estimated that by the end of 2009, the number of subscriptions worldwide will total 217 million.

Concerning HSUPA (uplink), this standard can support up to 5.76 Mbits/s and the first commercial networks appeared in 2007. On 30 August 2007, the Finnish operator Elisa announced the launch of an offer of 1.4 Mbits/s in major cities with plans to extend the service to the whole of its 3G network within a few months. The first developments support up to 1.5 Mbits/s. The investment needed to develop the HSPA networks is mainly made up of reduced-cost software upgrades which could lead to a decrease in the average cost per bit transported on the mobile networks.

⁵⁰ Broadband access system in which several users share the same frequency band through different codes assigned to each of them.

⁵¹ <http://www.gsacom.com/news/statistics.php4>.

⁵² Short range radio technology in the 2.4 GHz frequency band, used to ensure connectivity among devices at the user's premises, within approximately 10 metres, with a maximum throughput of 1 Mbps. It may evolve, in the future, to 6 to 11 Mbps maximum throughput and a 100-metre range.

⁵³ HSPA combines two mobile telephony protocols, High Speed Downlink Packet Access (HSDPA) and High Speed Uplink Packet Access (HSUPA), which amplify and enhance the performance of the existing WCDMA protocols.

⁵⁴ <http://www.gsacom.com/news/statistics.php4>, http://www.gsacom.com/downloads/pdf/GSA_GSM_3G_Network_Update_Feb2009.php4

In Portugal, offers based on HSDPA appeared in March 2006 with a speed of 1.8 Mbps. In September of the same year rates evolved to 3.6 Mbps using Universal Serial Bus (USB) connection modems, in addition to Personal Computer Memory Card International Association (PCMCIA) cards. In November 2006 there was an evolution to speeds of 7.2 Mbps. Services based on High-speed Uplink Packet Access (HSUPA) appeared in September 2007, with the offer of cards which enable upload speeds up to 1.4 Mbps.

In 2008, the characteristics of the offers were changed. The operators increased the download speeds and altered the tariff conditions.

In 2009, the EC revised the GSM Directive, paving the way for a new generation of services and technologies by enabling mobile operators to use new technologies in the GSM bands - in the 900 MHz band - and to offer fourth generation high-speed broadband mobile services. As such, consumers can continue to use their devices without problems, but can also use new technologies to access high-speed broadband services. (In 2007 and 2008, the three Portuguese mobile operators, following authorisation by ICP-ANACOM, conducted technical trials with UMTS technology in the 900 MHz band, allocated for GSM technology).

In the context of mobile broadband, 2009 saw the announcement and launch of trials and offers supported on HSPA+, which uses the latest modulation techniques of (Quadrature Amplitude Modulation - 64QAM) and MIMO⁵⁵ technology (Multiple Input Multiple Output). The theoretical maximum speeds of HSPA+ is 56 Mbps on the downlink and 22 Mbps on the uplink. The trials and offers allow navigation of the Internet while mobile with a theoretical speed of up to 21.6 Mbps / 28.8 Mbps.

In 2009, mobile broadband products were launched in Portugal which had download speeds of up to 21.6 Mbps, based on HSPA+ technology.

Tests with Femtocells were also announced, which will permit the amplification of communications signals in indoor environments via equipment installed on the customer's premises.

Products based on Femtocell technology were launched in Portugal in 2009.

The next step in mobile networks based on 3rd generation technologies is Long Term Evolution (LTE). This new radio access technology will optimize the speed of data transmission, allowing up to 100 Mbps in downlink and 50 Mbps on the uplink⁵⁶.

In 2009, Grupo PT announced its commitment to investment in 3G LTE.⁵⁷

In 2010, in addition to TMN, Vodafone⁵⁸ and Optimus⁵⁹ also begun testing LTE technology, including demonstrations with equipment suppliers.

In terms of evolution of terminal equipment, in addition to improved cameras and video, there were improvements in information storage, with the possibility of inserting memory cards.

Most new equipment, commonly known as smart phones or PDA have characteristics which are similar to personal computers. Thus, in addition to voice communications functionality, these devices enable access to e-mail, Internet browsing, wireless connectivity via Infrared Data Association⁶⁰ (IrDA), Bluetooth or Wireless Fidelity (Wi-Fi).

55 "MIMO (multiple input, multiple output) is an antenna technology for wireless communications in which multiple antennas are used at both the source (transmitter) and the destination (receiver)."

56 The LTE standard was developed by "The 3rd Generation Partnership Project" (3GPP) and can be consulted on <http://www.3gpp.org/LTE>.

57 On the website of PT Home > Media > Destaques > Destaques 2009 > 8 de Outubro 2009 or http://www.telecom.pt/InternetResource/PTSite/PT/Canais/Media/DestaquesHP/destaques_2009/LTEForum2009.htm

58 On the website of Vodafone www.vodafone.pt, follow A Empresa > Press Releases > 2010 2ºtrimestre 9 de Abril de 2010 or <http://www.vodafone.pt/main/A+Vodafone/PT/Press+Releases/pressReleases.htm?id=2308&year=2010&quarter=2>

59 On the website of Optimus at www.optimus.pt follow Sobre a Optimus > Media Center PressReleases > 2010-03-15 or <http://www.optimus.pt/Main/SobreaOptimus/PressReleases/2010/03/15/276358F8-ACF2-47B1-B795-E4F5224C99E2>

60 "IrDA (Infrared Data Association) is an industry-sponsored organization set up in 1993 to create international standards for the hardware and software used in infrared communication links. In this special form of radio transmission, a focused ray of light in the infrared frequency spectrum, measured in terahertz, or trillions of hertz (<http://search-mobilecomputing.techtarget.com/sDefinition/0,,sid40_gci212244,00.html> cycles per second), is modulated with information and sent from a transmitter to a receiver over a relatively short distance. Infrared radiation (IR) is the same technology used to control a TV set with a remote control."

In terms of software, there are various operating systems and specific platforms available for mobile phones: Microsoft® Windows Mobile, RIM Blackberry®, Symbian OS, Nokia Linux-based Maemo, Palm® webOS™, iPhone, Apple OS, Google™ Android. These operating systems and platforms support applications that allow e-mail accounts and social networks to remain constantly updated, particularly Google™, Microsoft® Exchange, YouTube and Facebook®, among others. In addition, some equipment may also support VoIP services and instant messaging via Skype, Google Talk, MSN Messenger, SIP and Twitter.

On many of these devices, keyboards have been miniaturized, replaced by touch screen, so there is more usable space on the screen for viewing Internet pages. Many of these devices also have global position system (GPS), allowing use of location-based and geo-referencing solutions.

3.2.2. Geographic availability of the service

MTS is available throughout the vast majority of the Portuguese territory, reaching almost 100 % of the population.

Regarding the different MTS access technologies, there is currently widespread 3G (WCDMA) coverage in most of the cities. Meanwhile, along main roads, there is less coverage, according to evaluation studies conducted by ICP-ANACOM on quality of service⁶¹. According to the most recent study, it was also found that WCDMA coverage in the Azores is inferior to GSM coverage on the islands where the operators are present. It was also found that there was a lack of WCDMA coverage on the islands of Flores and Corvo, while one operator had no coverage on the archipelago.

3.2.3. MTS providers

MTS was first offered in Portugal in 1989 by a consortium made up of CTT - Correios de Portugal S.A. (CTT) and Telefones de Lisboa e Porto (TLP). It was only later, on 22 March 1991, that the company TMN - Telecomunicações Moveis Nacionais, S.A. was set up. The services provided used C-450 analogue technology.

In March 1991, a public tender was held to grant a license for the provision of MTS via GSM technology. This license was granted to Telecel - Comunicações Pessoais, S.A. (Telecel) on 18 October 1991. The commercial offer of the service began on 18 October 1992. On 20 July 2006, this license was renewed for a period of 15 years, until 19 October 2021⁶².

TMN's operation license was issued on 16 March 1992, and the company began offering its service in October 1992. 15 years later the right of use of frequencies assigned to TMN for the provision of the MTS was also renewed in accordance with the GSM 900/1800 system, for a further 15 years, terminating on 16 March de 2022⁶³.

The general conditions associated with provision of the service and the conditions associated with the right of use of frequencies were likewise established.

On 15 July 1997, Notice no. 3542-A/97 (2nd Series) was published, opening a new tender for the granting of a license for the provision of the terrestrial mobile service in accordance with the GSM and DCS standards, using the 900 MHz and 1800 MHz frequency bands, respectively. Following that tender, a license was awarded to Optimus - Telecomunicações, S.A. which began its commercial offer in August 1998. It should be mentioned that by determination of 24 October 2007 approval was given to the final decision regarding the request for authorization to transmit rights of use of frequencies and numbers assigned to Optimus to the ownership of Novis Telecom, S. A. (Novis)⁶⁴.

61 ICP-ANACOM website at www.anacom.pt, follow the links to Home Page > Publications > Quality Reports

62 At www.anacom.pt Home page > The sector > Titles conferred by Anacom > Rights of frequencies use > Mobile telephone service

63 At www.anacom.pt Home page > The sector > Titles conferred by Anacom > Rights of frequencies use > Mobile telephone service

64 At www.anacom.pt Home Page > Mobile Networks and Services > Determinations > Rights of frequency use > Transmission of frequencies and numbers usage rights from OPTIMUS to NOVIS TELECOM - determination of 24.10.2007

UMTS Licensing

In August 2000 a tender was opened to grant four national licenses for the International Mobile Telecommunications systems (IMT2000/UMTS). The results were announced in December of that year. The four licenses were awarded to Telecel (now Vodafone), TMN, OniWay - Infocomunicações, S.A. (OniWay) and Optimus.

Commercial 3G services were launched in Portugal on 21 April 2004, 4 May 2004 and 4 June 2004 by TMN, Vodafone and Optimus, respectively.

The fourth operator licensed for this system, OniWay, did not begin its activity in mobile telecommunications, and its license was formally revoked in January 2003 by Order of the Minister of Economy (Order no. 1758/2003, of 29 January).

After the licence was revoked, TMN, Vodafone and Optimus sought allocation of additional frequencies for the operation of mobile international telecommunications systems (IMT2000/UMTS). The Minister of Economy, pursuant to paragraph three of article 24 of Decree Law no. 381-A/97 of 30 December, ordered the allocation to TMN, Vodafone Telecel and Optimus of 2x5 MHz of additional paired spectrum comprising the 1920 MHz-1980 MHz/2110 MHz-2170 MHz bands for the operation of Mobile International Telecommunications Systems (IMT2000/UMTS).

Licensing in the 450-470 MHz band

On 4 October 2007 a public consultation was launched regarding the rights of use of frequencies in the 450-470 MHz band to offer the publicly available land mobile service (LMS). This decision resulted from spectrum availability and sought to promote competition.

In May 2009, the Management Board of ICP-ANACOM decided to revoke the act of allocation to RNT - Rede Nacional de Telecomunicações of the right of use of frequencies after the company requested an extension of the deadline for the fulfilment of its obligations to raise the provision of guarantee bonds.

Mobile virtual network operators (MVNO)

On 9 February 2007, ICP-ANACOM defined the regulatory framework governing MVNO.

The activity of the MVNO, can be framed within the offer of electronic communications networks and services and is subject to the general authorization regime and to the conditions resulting from the granting of rights of use of numbers. MVNOs do not use rights of use of frequencies or their own infrastructure associated with the radio access network. They use wireless resources supplied by the network operator(s) that possess their own rights of use. MVNOs have a direct contractual relationship with the end customer, associated with the provision of the service, and, therefore, are not mere distributors of the service, in which the contractual relationship is between the end customer and the mobile network operator.

MVNOs therefore have direct customers, i.e. they are solely responsible for their relationship with the end customer, and they design and market their own retail products, with freedom to distinguish their offer from that of the operator they use, defining their own commercial strategy.

It should be noted that on 30 November 2007, CTT., began its commercial activity as the first mobile telephone service provider using the network of a third party operator.

In October 2008, ZON TV Cabo Portugal advertised provision of the mobile telephone service using the Vodafone network, for an experimental period of one month. In November 2008 it advanced with a commercial offer to the general public.

In addition to the entities mentioned above, authorization declarations have also been issued to Companhia Portuguesa de Hipermercados, S.A. (Auchan) and ACP - Comunicações Electrónicas, Unipessoal, Lda. These undertakings failed to commence services over the course of 2008, and, as such, have forfeited the rights of use of numbering ranges previously reserved.

Current situation

As previously mentioned, there are five undertakings which provide these services, as shown in the following table.

MTS Providers | Table 70

		Numbering ranges
Optimus Telecomunicações, S. A.	Network operator	93
TMN – Telecomunicações Móveis Nacionais, S. A.	Network operator	96, 9240 to 9244, 925, 926 and 927
Vodafone Portugal – Comunicações Pessoais, S. A.	Network operator	91 and 921
CTT – Correios de Portugal, S. A.	Provider of service supported on TMN network	9220 to 9222
ZON – TV Cabo Portugal, S. A.	Provider of service supported on Vodafone network	9290 to 9294

Source: ICP-ANACOM

In 2009, ZON launched a mobile broadband product. CTT began selling the TMN mobile broadband product under its own brand.

Meanwhile, in 2006, new offers emerged, commercially distributed by entities other than operators and supported over the Optimus network, namely:

- “Talk Talk Mobile” sold by The Phone House with preferential tariffs for its brand’s numbers;
- Rede Bónus sold by Worten Mobile, also with preferential tariffs between numbers of this network.

In 2007 and 2008, other products emerged of the same type, supported over the TMN network and associated with sporting clubs and associations, for example:

- *Benfica Telecom*. This tariff was created for Benfica members who use mobile phones; there is a single national tariff, which is the same for all the networks, at any time of the day and on any day of the week, with no mandatory pre-payments;
- *Dragão Mobile*, aimed at Futebol Clube do Porto (FCP) members and fans. Dragão Mobile offers the essential services of a mobile phone, in a single tariff, with no

mandatory pre-payments. In addition, for every pre-payment made, 5 % of the value of the pre-payment is deducted from the FC Porto membership fees;

- *Federação Portuguesa de Airsoft/Clube Airsoft da Maia*. The 50Call tariff contains a card that is automatically charged with 50 free minutes every month to be used with other 50Call cards;
- *Sporting Clube de Portugal*. An offer was launched in 2008 specifically for members of this club with a single national tariff, which is the same for all the networks, at any time of the day and on any day of the week, with no mandatory pre-payments. In order to maintain the card active it is sufficient to consume (by call or paid message) every 120 days. This offer allows subscribers to speak to each other for 0 euros, provided that the phone is charged with a pre-defined amount;
- The “KAZOO” offer was also launched in 2008 – offer made in conjunction with charity organisations (Liga Portuguesa contra a SIDA, APCH, Fundação GIL, CASBI, Fundação “O Século”, Ajuda de Berço, Ajuda de Mãe, Aldeia SOS, AMI, APPC, Amnesty International, etc), The user may donate to any of these associations, without any cost to himself and without altering any of his consumption habits. After acquiring the “Kazoo” card, the user chooses the cause

he wishes to support, and 5 % of each pre-payment will revert to that cause, without any sum being deducted from his balance.

In 2009, Grupo Sonae added a specific product with the *Continente* brand - the *Continente Mobile* tariff - to its mobile communications product range.

These activities are not MVNO activities, and, therefore, the entities in question are not MTS providers.

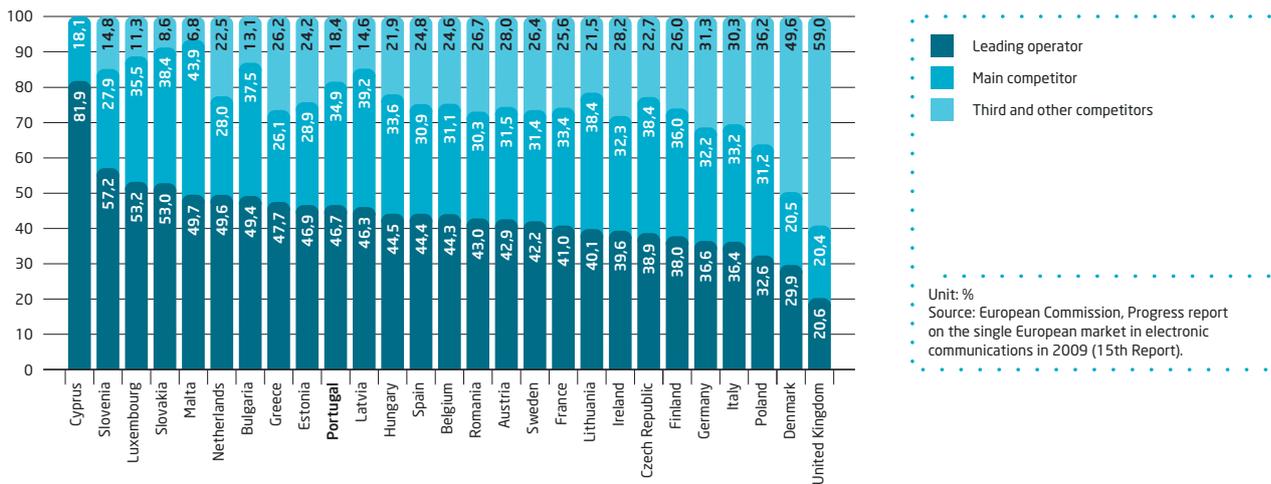
Structure of the offer

As stated above, there are three network operators and two service providers in Portugal.

Most EU countries have more than three mobile telephone service operators, with the exception of Cyprus and Malta, which each have two operators.

Concentration in Portugal is relatively high. Although the leader has the 8th lowest market share in the EU, the combined share of the two main operators is the 8th highest. Only the countries which have recently joined the EU and Luxembourg have higher figures.

Offer structure of mobile services in EU | Graph 51



The level of concentration in Portugal may be connected with the existence of possible barriers to operator switching. In fact, according to the *Inquérito ao Consumo dos Serviços de Comunicações Eletrónicas* (Electronic Communications Services Consumer Survey) of December 2009⁶⁵, 93.5 % of users, 15 years of age or older, stated that they have not actually switched operator in the last year.

In overall terms, and according to the studies conducted in previous years around one in five subscribers have switched operator since signing up to the service.

⁶⁵ The universe is composed of individuals of 15 years or more who reside in private housing units located in Mainland Portugal or in the Autonomous Regions (Azores and Madeira). The sample is representative at the level of NUTS II (with sampling errors not exceeding 5.5 % points for the smaller regions - Alentejo, Algarve, A.R. Azores and A.R. Madeira and not exceeding 4.5 for the others) having been composed of 3,106 interviews. Households were selected by means of proportional stratified random sampling according to the crossing of the NUTS II Region variables and the size of the household. Within each household one individual was selected by means of sampling by quotas guaranteeing the marginal totals of the sex, age class, level of education and employment status variables, according to the General Population Census (2001) of INE - Instituto Nacional de Estatística (Statistics Portugal). Information compilation was performed using CAPI - Computer Assisted Personal Interviewing between 6 November and 20 December 2009. The results regarding the Mobile Telephone Service are based on the universe of the individuals and present a maximum margin of error of less than 2 p.p. (with a degree of reliability of 95 %). The results regarding the Fixed Telephone Service, internet Service and paid Television Service are based on the universe of the households and present a maximum margin of error of less than 2.6 p.p. (with a level of reliability of 95 %). Fieldwork and data processing was performed by the company GFK Metris.

Mobile network operator switching in the last 12 months | Table 71

	Dec. 2008	Dec. 2009
Operator replaced	1.1 #	1.8 #
Switched from/to low cost network within the same operator	1.5 #	1.2 #
Did not switch but considered/tried to switch	5.0 *	3.5 *
Did not switch and did not consider the matter	92.4	93.5
Total	100	100

Unit: %

Source: ICP-ANACOM, *Inquérito ao Consumo das Comunicações Eletrónicas* (Electronic communications consumer Survey), December 2009.
Base: Individuals, 15 years of age or older, with access to the mobile telephone service (non-respondents not included).

Note: The coefficient of variation is considered as sampling error indicator, based on the variance of the "proportion" estimator of a simple random sample and assuming a significance level of 95 %. The following key is used:

(#) Coefficient of variation greater than or equal to 25 % (unreliable estimate)

(*) Coefficient of variation greater than or equal to 10 % and less than 25 % (acceptable estimate)

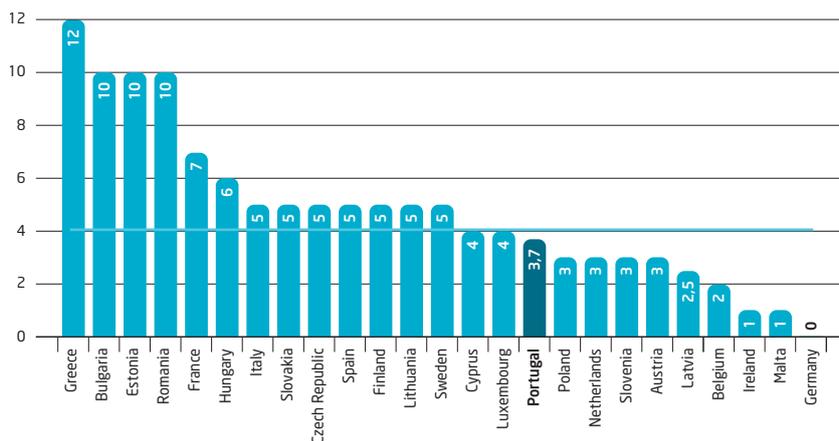
(no symbol) Coefficient of variation less than 10 % (reliable estimate)

One of the regulatory mechanisms introduced to minimize barriers to operator switching is number portability. Portability allows consumers to switch operator without changing their contact number. However, this feature has not been widely used in Portugal.

The time delay until actual number porting occurs varies between one day in Malta and Ireland and 12 days in Greece, while in Germany the request can be done within the hour. In Portugal, the average is 3.7 days, which is below the average of the countries considered - 4.1.

As at the end of 2009, there were 298,045 ported numbers, representing around 1.9 % of all subscribers to the service.

Days to provide portability | Graph 52



Unit: days

Source: European Commission, Progress report on the single European market in electronic communications in 2009 (15th Report).

Note: This information is unavailable for the United Kingdom.

3.2.4. MTS commercial offers and associated services

The products of the MTS, data service and Mobile TV are presented below.

It should be noted that the analysis does reflect the signup by consumers to the different types of tariffs mentioned, but only to their availability in the market.

MTS offers

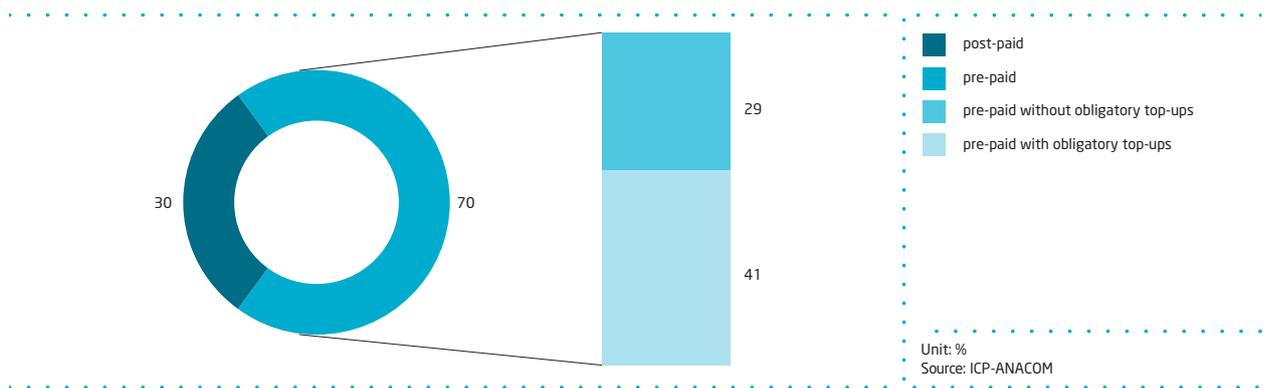
The offers which exist in the market are very diversified, and they seek to adapt to the varied consumption profiles of the users of the mobile telephone service.

In 2009, there were around 90 different MTS tariffs⁶⁶, 15 more than in the previous year. The growth in the number of tariffs is due, among other factors, to technological evolution, both in terms of infrastructure and network services, and in terms of terminal equipment.

It is recalled that, besides the offers made available directly by the service providers licensed and authorized by ICP-ANACOM, there are other offers which are associated with other entities, as previously mentioned.

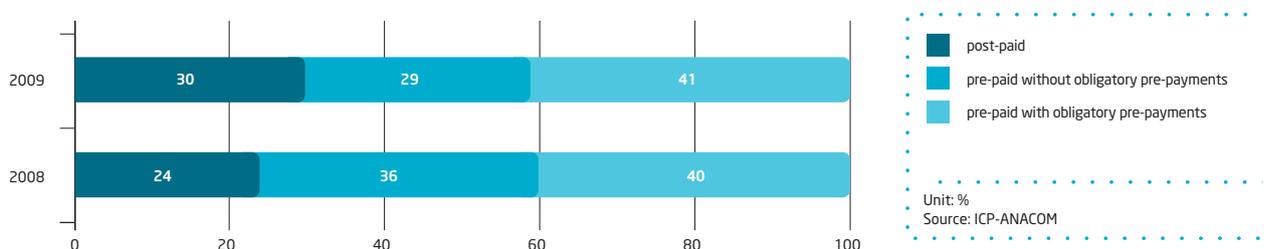
Of the total of around 90 tariffs in existence, around three quarters are pre-paid tariffs, and the rest are post-paid.

Distribution of tariff schemes by type | Graph 53



The weight of post-paid tariffs increased by 6 p.p in the last year.

Evolution of distribution of tariff schemes by type | Graph 54



⁶⁶ In addition to the offers examined, and which are publicised by the different providers, there are tariff offers which can only be subscribed to through the operators' websites. These are pre-paid offers where the choice of call pricing by destination and the price of messages determined the value of the pre-payments required.

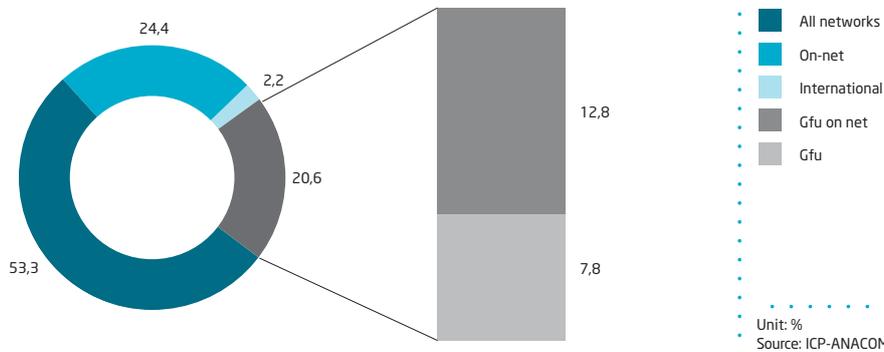
Each tariff is distinguished according to the different options available in terms of payment/charging and the type of user targeted. According to the profile of call consumption, there are tariffs aimed at users who:

- preferentially make calls to specific destinations (i.e. with indifference to numbers of any network, to numbers of their network - on-net, to numbers of other networks - off-net, to the fixed network, to international networks of groups of specific users selected and modifiable by the user);

- make calls according to duration. According to whether calls made are longer or shorter in duration, whereby the user will select a tariff with billing per second or with a price per subsequent minutes which differs from the price of the first minute.

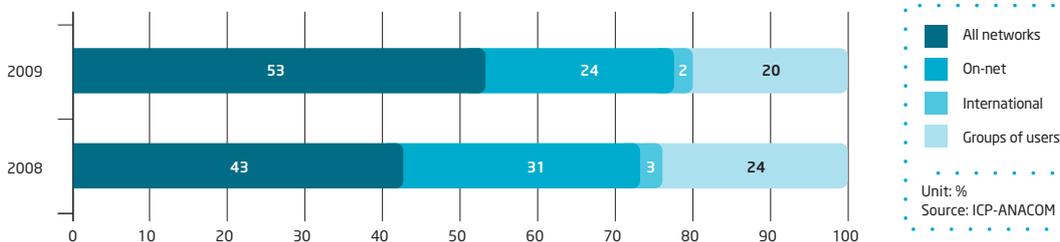
According to the usage profile, a determined user will sign up to the tariffs with prices which are the same for all networks or with a price which is more favourable for determined destinations.

Distribution of tariff offers according to calls destination | Graph 55



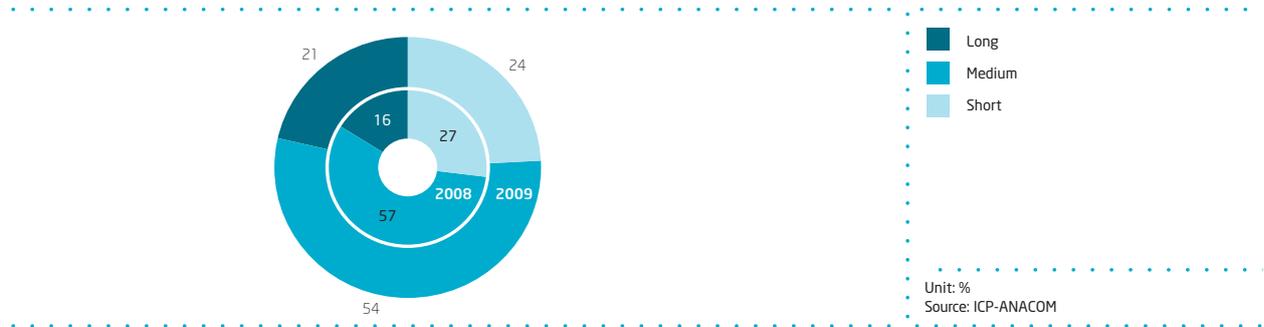
In 2009, there was an increase in the number of tariffs where prices are the same for all call destinations, representing over half the total.

Evolution of distribution of tariff offers according to calls destination | Graph 56



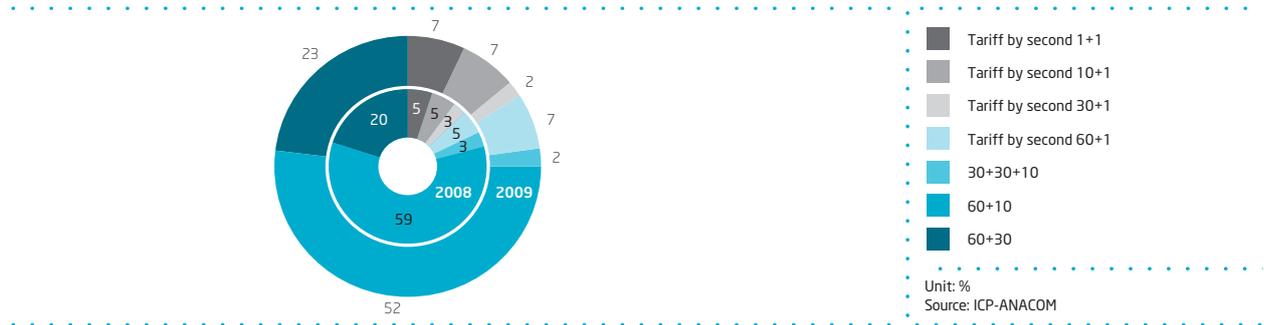
In 2009, an increase was reported in the weight of offers of short and medium duration calls⁶⁷.

Distribution of tariff offers according to time of use/call duration | Graph 57



The relative weight of offers which have some component of billing per-second increased slightly.

Distribution of tariff modes (in seconds) | Graph 58



Currently, existing tariffs have the fact in the common that the prices do not differ according to the time and day the calls are made.

However, there are optional tariffs which offer the possibility to make calls at reduced prices during certain periods (at night or at the weekend). The additional offers also offer favourable prices for sending text messages or for accessing the Internet from mobile terminal equipment.

67 For the purposes of classifying according to time of use/call duration, the following are considered:

- Short - offers with billing per second, designed for quick calls with little time of use;
- Long - offers with packages of minutes or with the price per subsequent minutes different from the 1st minute, normally lower, providing the customer with more conversation time for the same value, where a tariff of normal use is chosen;
- Medium - all other offers not covered by the classifications above

Distribution of additional offers, by type | Graph 59



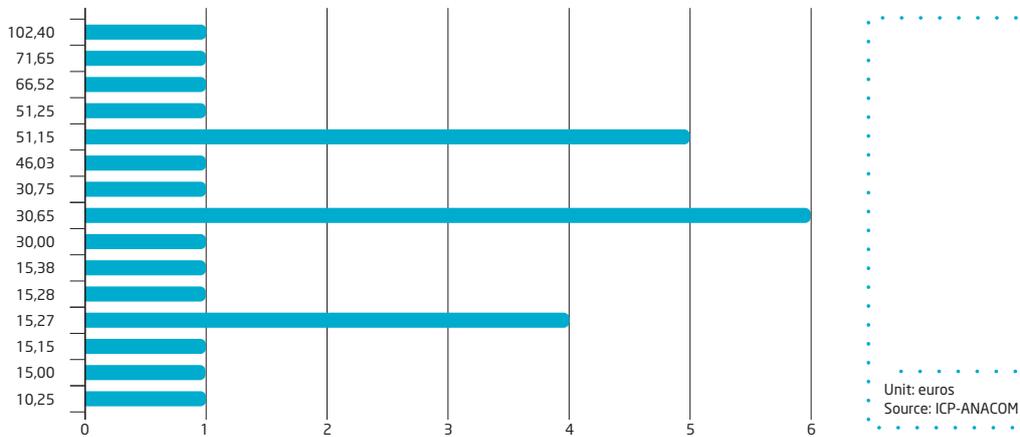
Note: Additional offers of mobile phone Internet access not included.

In 2009, an increase was reported in the number of optional tariffs for voice communications resulting, in particular, of offers with different prices according to specific international destinations, especially Brazil, Angola, Mozambique and the countries of Eastern Europe.

Besides the type of use, the payment mode and associated amounts should be taken into consideration.

In the case of the post-paid mode, the amount of the monthly fee ranges between 10,25 euros and 102,40 euros, and there are four offers available with three scales: 15,27 euros, 30,65 euros and 51,15 euros.

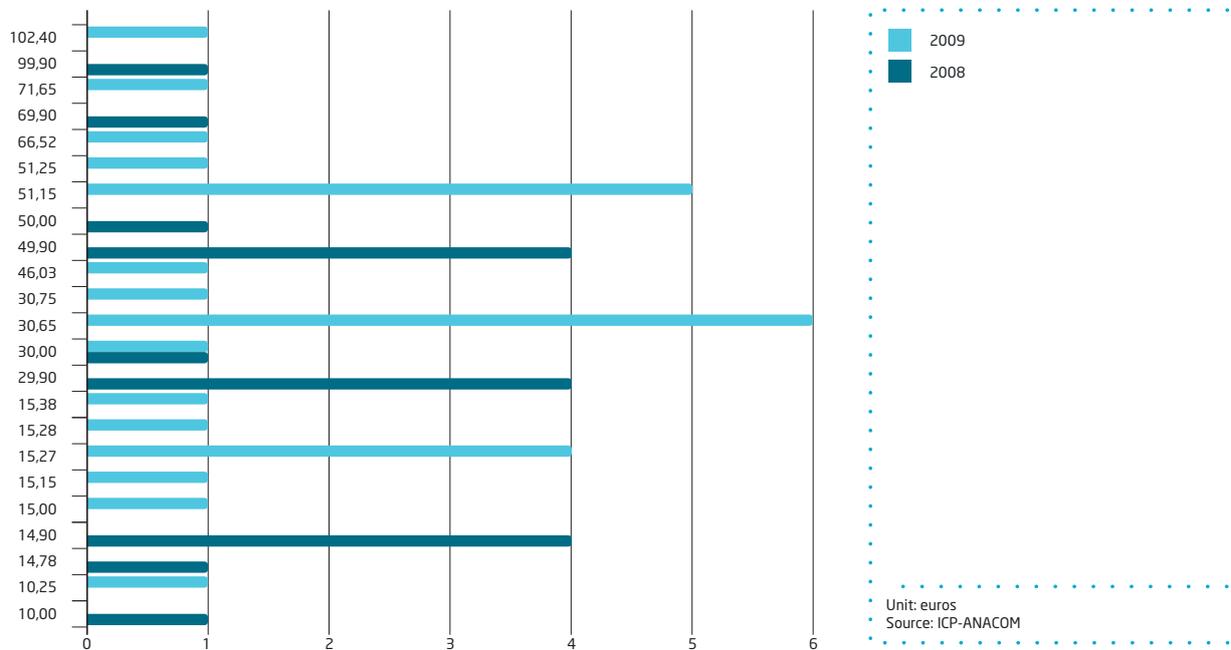
Amount of monthly fee of post-paid schemes: number of offers | Graph 60



Between 2008 and 2009, an increase was reported in the range of values of the monthly fee associated with post-paid offers.

Likewise, an increase of 2.5 % was reported in these monthly fees, compared to the previous year.

Evolution of the quantity of offers by value of monthly fee | Graph 61



In pre-paid mode, there are a wide range of possibilities for mandatory pre-payments, with differing time periods or amounts, in addition to non-mandatory pre-payment. The minimum amounts for charging also vary according to the tariff scheme.

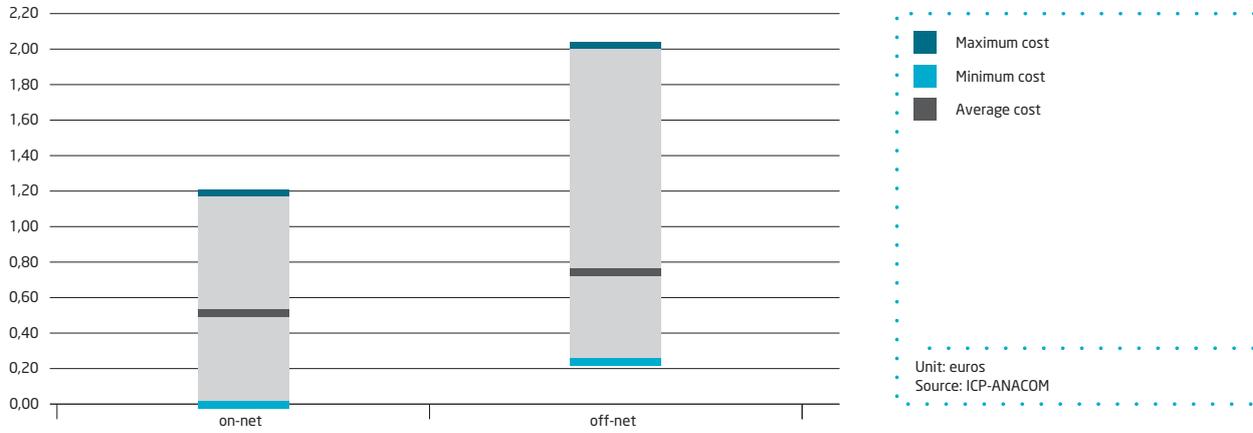
Taking into account the great diversity of tariff offers and their different components, the price of calls also varies greatly.

Depending on the tariff scheme chosen, the price per minute of a call within the network ranges between 0 euros and

40 cents, with the most common amount being 16,2 cents per minute. As far as off-net calls are concerned, the values range between 8 and 67,2 cents in the first minute while the most frequent value is 33 cents.

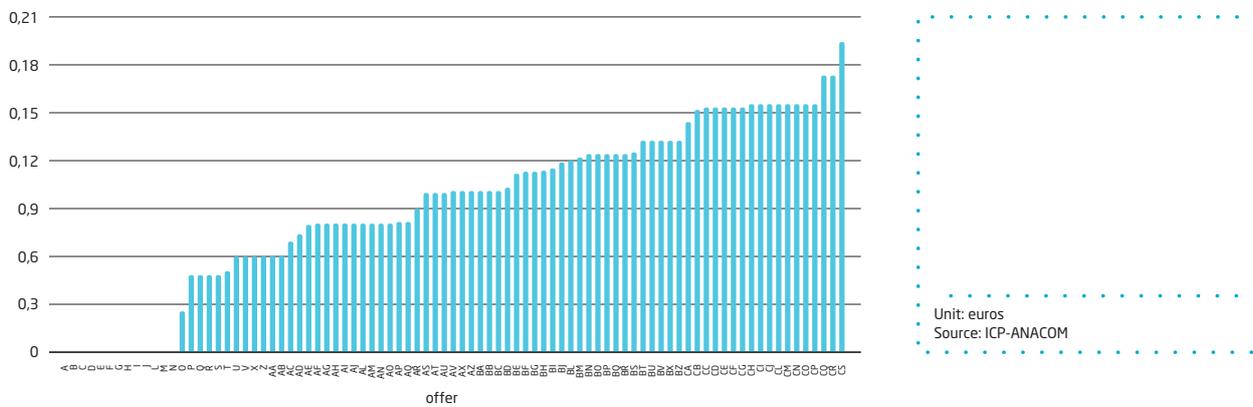
In the case of a 3-minute on-net call, according to existing tariff offers, the price of the call may vary between 0 euros and 1.20 euros, with the (simple) average value being 51.2 cents. For a 3-minute off-net call, prices vary between 24 cents and 2 euros.

Prices of a 3 minute call, by destination | Graph 62



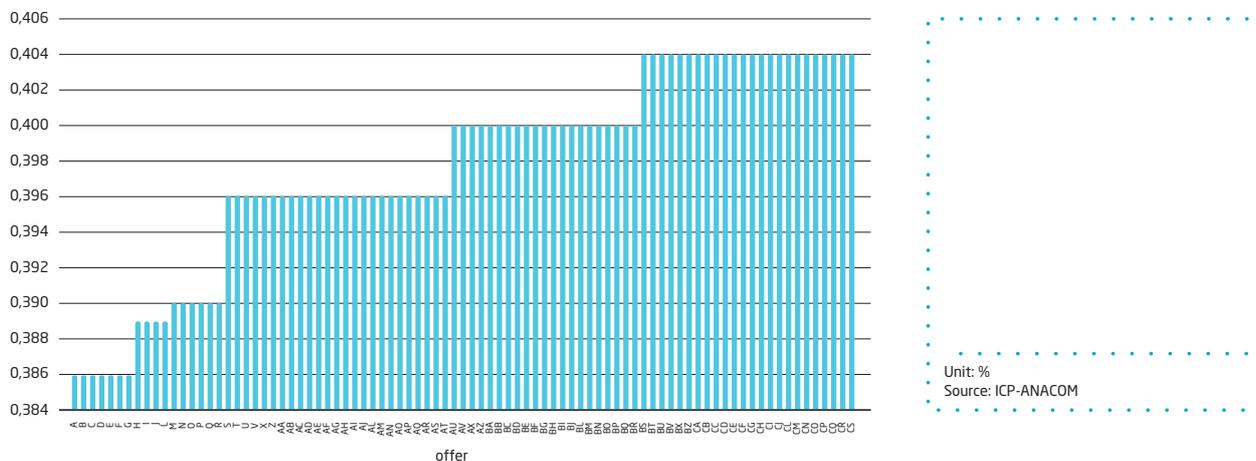
With regard to the price of SMS, this ranges between 0 and 19.4 cents per unit. Free messages are normally limited in terms of their number and period of validity of the pre-payment made.

Distribution of the cost of 1 on-net SMS by offer available | Graph 63



Regarding the price of multimedia messages, the range of amounts is narrower, and for the most part there is no difference according to the destination. In some tariffs it is possible to find free MMS, although with limited quantity.

Distribution of the cost of 1 on-net MMS by offer available | Graph 64



Internet access service with mobile phone

In 2007 specific *Mobile phone Internet* offers were launched, with daily or monthly subscription options. These have been maintained in 2008, and in 2009 the number of

available options was expanded in terms of the period of subscription and in terms of included traffic volume.

Specific *Mobile phone Internet* offers - 2009 | Table 72

	Optimus (Sonaecom)	TMN	Vodafone
Monthly access	Monthly Internet (150 MB) 7.62 €	IT Light 75 MB 5.00 €	Internet 75 (75 MB) 5 €
		IT Standard 150 MB 7.62 €	Internet 250 (250 MB) 10 €
		IT Super 250 MB 10.00 €	Internet 500 (500 MB) 15 €
		IT Super Plus 500 MB 15.00 €	
			Applicable to iPhone
Weekly access	BlackBerry Internet Service 4.00 €	BlackBerry BIS 15.00 €	
	BlackBerry Internet Total 11.62 €	BlackBerry BIS light 10.00 €	
	Internet Já 25 MB 1.25 €		
Daily access	Internet Smart 75 MB 2.50 €		
	Internet Power 250 MB 5.00 €		
	Daily Internet (up to 10 MB) 0.999 €	IT Daily (up to 15 MB) 0.999 € (0.333 € for every 100 kb)	Daily Internet (up to 10 MB) 1 €

Unit: included traffic / price
Source: Operator websites.

These supplementary tariffs were conceived to provide users with access to the Internet without requiring the use of a portable computer or connection cables. Users need to have compatible mobile terminal equipment (commonly known as smart phones or PDAs) to be able to use all the features associated with Internet use, including access to email, whereas it is possible to configure more than one email account, access different applications, including social networks, exchange messages using chat or messenger

and obtain weather information. It is also possible to access certain applications which use geo-referencing information.

Mobile TV

As regards Mobile TV, Optimus and Vodafone currently have 30 channels available and TMN has 38. The tariff offers provide a range of options, as can be seen in the following table.

Offers of Mobile TV service | Table 73

Optimus	TMN	Vodafone
30 channels	38 channels	30 channels
Month Pack: 7.5 € /month – includes all channels (except Premium).	Meo total: 7.62 €/ month (monthly unlimited access)	Monthly subscription: 7.44 € (unlimited access to all channels, except adult channels). First 30 days free for new activations.
Week Pack: 1.99 € /week – includes all channels (except Premium).	Meo week total: 2.02 €/week (weekly unlimited access)	Weekly subscription: 1.97 € (with unlimited access for 7 days, except adult channels). First 7 days free for new activations.
Day Pack: 0.99 € /day - includes all channels (except Premium).	Meo total 24h: 0.91 €/24h (unlimited access for 24 hours to all channels)	Daily subscription: 0.89 € (with unlimited access to all channels for 24h, except adult channels).
Premium Channel: 2.50 € /day – 2 hour limit of use.	Meo week total: 4.47 € / month (unlimited access to entertainment, children's and music channels)	
	Meo news and sport: 4.36 €/month (unlimited access to national information and sports channels)	
	Meo total + Internet: 12.10 € /month (monthly access to Internet on mobile phone and to Meo Total)	

Source: Operator websites.

3.2.5. Service price levels

The level of prices charged for the service in Portugal in comparison with the EU countries included in the OECD and the evolution of the prices of this service between 2002 and 2009 are presented below.

International comparison of MTS prices⁶⁸

According to the information available, the price level in Portugal in 2009 was below the average for pre-paid plans. However, with respect to post-paid plans, the prices charged in Portugal were higher than the average for all consumption profiles.

International price comparisons (November 2009) - deviations from the average | Table 74

Package \ Profile	Low consumption	Average consumption	High consumption
Post-paid	21.3 %	31.9 %	50.7 %
Pre-paid	-8.8 %	-17.2 %	-13.6 %

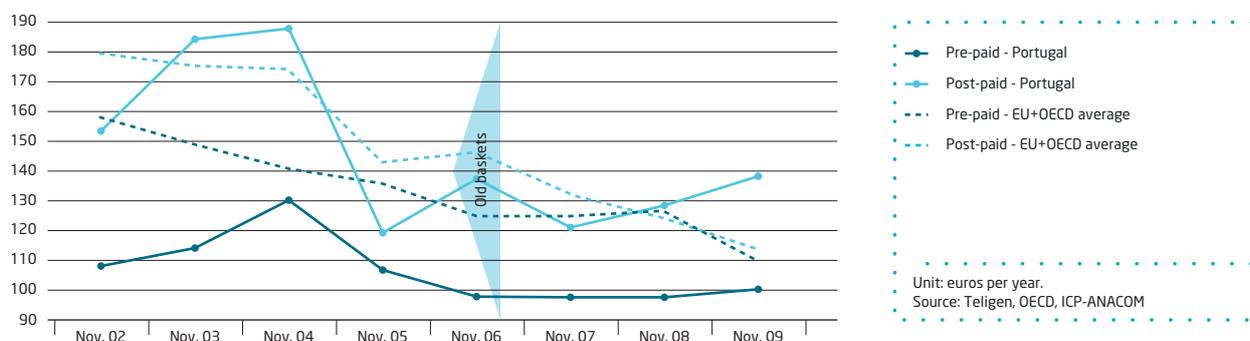
Unit: %
Source: Teligen, OECD, ICP-ANACOM
Note: excluding VAT and without PPP.

Evolution of prices charged in Portugal and comparison with the EU (2002/2009)

The graphs below show the main trends in the evolution of the prices of the service in Portugal since 2002.

In the case of the low consumption profile, the cost of pre-paid plans is always below the average. The post-paid tariff schemes, which have been below the average in recent years, were above average in 2008 and 2009.

Price evolution - low consumption basket | Graph 65



Note: In order to highlight the variations which occurred, the X axis intersects the Y axis at 90.

⁶⁸ Methodology note:

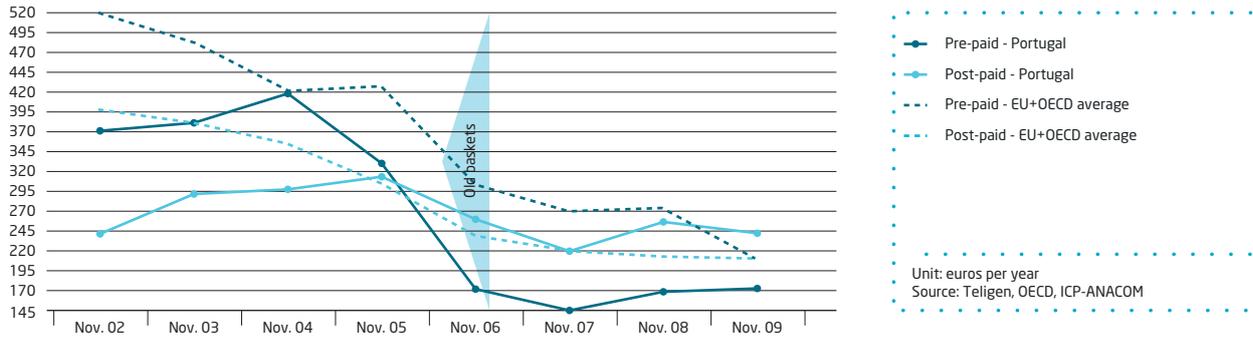
The results of the shown baskets were taken from OECD/Teligen database of November 2009 and are in Euros, VAT excluded and without considering PPP (purchasing power parity). From the OECD countries, those that are part of the EU were selected. Taking into account that, by default, OECD/Teligen always produces two results per country (regarding the incumbent operator and the second more representative), the operator with the lowest tariff plan, regarding the annual invoice for each usage basket and profile, was selected for each country.

The deviations shown refer to the average of the selected countries, Portugal excluded. The shown values are those of the new baskets defined in 2006.

In the case of the medium consumption profile, the prices of post-paid plans were above average, albeit to a lesser extent than in the previous year. The pre-paid tariff schemes,

despite the increase recorded in 2009, are still significantly below the average of the countries considered.

Price evolution - average consumption basket | Graph 66

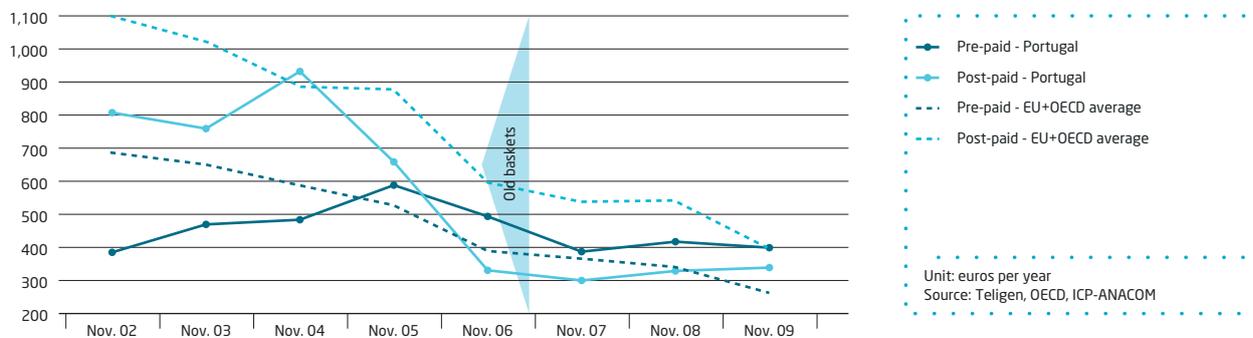


Note: In order to highlight the variations which occurred, the X axis intersects the Y axis at 145.

In terms of the high consumption profile, once again the price of the pre-paid plans is below the average amount in the other countries. The price of post-paid plans is above the

average, despite a decline of 4 % in relation to the previous year.

Price evolution - high consumption basket | Graph 67



Note: In order to highlight the variations which occurred, the X axis intersects the Y axis at 200.

3.2.6. Quality of service of the mobile networks

ICP-ANACOM has been carrying out studies to evaluate the quality of the mobile networks in Portugal.

In 2009, an evaluation was again conducted of the quality of voice and video-telephony mobile services in Portugal and of coverage of GSM and WCDMA networks offered by the operators Sonaecom (Optimus), TMN and Vodafone in the main urban centres and along the main roads of mainland Portugal. Measurements on the ground were taken between 14 September and 20 October 2009⁶⁹.

The evaluation was based on the analysis of technical parameters which reflect perception of quality from a consumer perspective. Specifically, six indicators were examined: network coverage; service accessibility; call establishment time; call termination rate; call audio quality; and call video quality.

The evaluation conducted by ICP-ANACOM shows that the GSM mobile communication systems have good levels of GSM radio coverage and good voice service performance, both in urban centres and along main roads.

The video-telephony service maintains its positive evolution trend. Mobile communications systems exhibit good performance in urban agglomerations, with the capacity of establishing and maintaining video-telephony calls recording levels close to those for the voice service. But the video-telephony service still does not perform adequately along major roads, as a direct consequence of the areas with poor or even non-existent WCDMA coverage.

3.3. MTS user and usage profile

The following sections characterize the MTS user and usage of the service⁷⁰.

3.3.1. Characterization of the MTS user

The main reason for subscribing to MTS in Portugal is to be contactable at all times.

Benefits of having a mobile phone | Table 75

	Portugal	EU25
Safety of being able to make a call anywhere, if something goes wrong	15	37
Possibility of being contactable anywhere and at any time	55	33
Freedom to make calls when away from home	20	18

Unit: %

Source: European Commission, Eurobarometer 66.3 (E-Communications Household Survey), 2008.

According to the information gathered in the *Inquérito ao Consumo das Comunicações Electrónicas* (Electronic Communications Consumer Survey) 2009⁷⁰, the age and education level variables are those which most separate MTS users from non-users.

In fact, and similarly to that which has been seen since this type of information began to be gathered, there is a negative correlation between age and MTS penetration. It is noted that only 59.6 % of persons aged 65 or over had a mobile phone at the end of 2009. There is, however, a trend towards increased penetration in all age groups.

⁶⁹ See Publication on ICP-ANACOM website at www.anacom.pt and follow links to Home Page > Publications > Quality Reports

⁷⁰ The results presented here contain differences in size in relation to the surveys of previous years. This is due to a change in the methodology for gathering information. Previously subscribers of the FTS and the MTS were interviewed. This year physical interviews were used.

MTS penetration by age group | Table 76

Age group of respondents	Dez. 2009
15-24	95.0
25-34	94.5
35-44	89.8
45-54	84.1
55-64	79.8
65 and over	59.6

Unit: %

Source: ICP-ANACOM, *Inquérito ao Consumo das Comunicações Eletrônicas* (Electronic communications consumer Survey), December 2009.

Base: Individuals, 15 years of age or older (making total or partial payment themselves, or by family) according to age group.

Note 1: The coefficient of variation is considered as sampling error indicator, based on the variance of the "proportion" estimator of a simple random sample and assuming a significance level of 95 %. The following key is used:

(#) Coefficient of variation greater than or equal to 25 % (unreliable estimate)

(*) Coefficient of variation greater than or equal to 10 % and less than 25 % (acceptable estimate)

(no symbol) Coefficient of variation less than 10 % (reliable estimate)

Note 2: The proportions highlighted in blue indicate those that are significantly different (column) in accordance with the test of two samples for proportions. Higher proportions are highlighted in light blue and lower proportions in dark blue.

Likewise, it can be seen that among those with a lower social class, MTS penetration is lower, as was reported in previous surveys.

MTS penetration by social class | Table 77

Social class	Dec. 2009
A/B	93.5
C	92.6
D	78.3
E	79.7

Unit: %

Source: ICP-ANACOM, *Inquérito ao Consumo das Comunicações Eletrônicas* (Electronic communications consumer Survey), December 2009.

Base: Individuals, 15 years of age or older (making total or partial payment themselves, or by family) according to social class of family household.

Note 1: The coefficient of variation is considered as sampling error indicator, based on the variance of the "proportion" estimator of a simple random sample and assuming a significance level of 95 %. The following key is used:

(#) Coefficient of variation greater than or equal to 25 % (unreliable estimate)

(*) Coefficient of variation greater than or equal to 10 % and less than 25 % (acceptable estimate)

(no symbol) Coefficient of variation less than 10 % (reliable estimate)

Note 2: The proportions highlighted in blue indicate those that are significantly different (column) in accordance with the test of two samples for proportions. Higher proportions are highlighted in light blue and lower proportions in dark blue.

Note 3: Social class is determined according to the level of education and profession of the highest paid individual in the household. Social class A is the highest and social class E is the lowest.

MTS penetration is also lower among individuals with a lower level of education.

MTS penetration by level of education | Table 78

Level of education	Dec. 2009
Higher education	93.4
Secondary education	96.4
3rd stage primary	94.2
2nd stage primary	90.6
1st stage primary or less	70.9

Unit: %

Source: ICP-ANACOM, *Inquérito ao Consumo das Comunicações Eletrónicas* (Electronic communications consumer Survey), December 2009.
Base: Individuals, 15 years of age or older (making total or partial payment themselves, or by family) according to education level.

Note 1: The coefficient of variation is considered as sampling error indicator, based on the variance of the "proportion" estimator of a simple random sample and assuming a significance level of 95 %. The following key is used:

(#) Coefficient of variation greater than or equal to 25 % (unreliable estimate)

(*) Coefficient of variation greater than or equal to 10 % and less than 25 % (acceptable estimate)

(no symbol) Coefficient of variation less than 10 % (reliable estimate)

Note 2: The proportions highlighted in blue indicate those that are significantly different (column) in accordance with the test of two samples for proportions. Higher proportions are highlighted in light blue and lower proportions in dark blue.

It terms of employment status, a lower level of penetration can be seen in retired individuals, confirming the conclusion previously reached in relation to age group.

MTS penetration according to employment status of the individual | Table 79

Level of education	Dec. 2009
Employed	90.2
Unemployed	90.3
Students	98.9
Retired	67.7
Other	71.5

Unit: %

Source: ICP-ANACOM, *Inquérito ao Consumo das Comunicações Eletrónicas* (Electronic communications consumer Survey), December 2009.
Base: Individuals, 15 years of age or older (making total or partial payment themselves, or by family) according to employment status

Note 1: The coefficient of variation is considered as sampling error indicator, based on the variance of the "proportion" estimator of a simple random sample and assuming a significance level of 95 %. The following key is used:

(#) Coefficient of variation greater than or equal to 25 % (unreliable estimate)

(*) Coefficient of variation greater than or equal to 10 % and less than 25 % (acceptable estimate)

(no symbol) Coefficient of variation less than 10 % (reliable estimate)

Note 2: The proportions highlighted in blue indicate those that are significantly different (column) in accordance with the test of two samples for proportions. Higher proportions are highlighted in light blue and lower proportions in dark blue.

3.3.2. Barriers to subscribing to the service

The main reasons indicated by consumers for not subscribing to the service is their preference for the fixed telephone service or the fact that they have no need of the mobile service.

Reasons for not using the mobile service | Table 80

	Dec. 2008	Dec. 2009
Uses fixed telephone	49.5	41.8 *
Too expensive	18.7 *	14.2 *
Does not need to communicate by this means	16.5 *	28.9 *
Difficult to work with it	12.6 *	9.8 #
Other reasons	2.0 #	3.6 #
Don't know / No response	0.7	1.7
Total	100	100

Unit: %

Source: ICP-ANACOM, *Inquérito ao Consumo das Comunicações Electrónicas*, December 2008 and 2009

Note: The coefficient of variation is considered as sampling error indicator, based on the variance of the "proportion" estimator of a simple random sample and assuming a significance level of 95 %. The following key is used:

(#) Coefficient of variation greater than or equal to 25 % (unreliable estimate)

(*) Coefficient of variation greater than or equal to 10 % and less than 25 % (acceptable estimate)

(no symbol) Coefficient of variation less than 10 % (reliable estimate)

The price of the service and difficulty in operating the equipment are other barriers indicated by the consumers.

As happened in the previous year, the order of the main reasons for not accessing the service changed, although the reasons "does not need", "too expensive" and "uses the fixed telephone" continue to stand out, the latter being the most important in 2008 and 2009.

3.3.3. Characterization and level of usage of the service

In this section the level and type of usage of the MTS is detailed, taking into account the evolution of the number of

subscribers, the tariff schemes, the traffic and users of the various services and the revenue.

Service subscribers

At the end of 2009 there were 15.9 million subscribers⁷¹ to the MTS, which represents a 6.5 % increase in total subscribers in relation to the previous year, this value being slightly below the average for the 2005/2009 period.

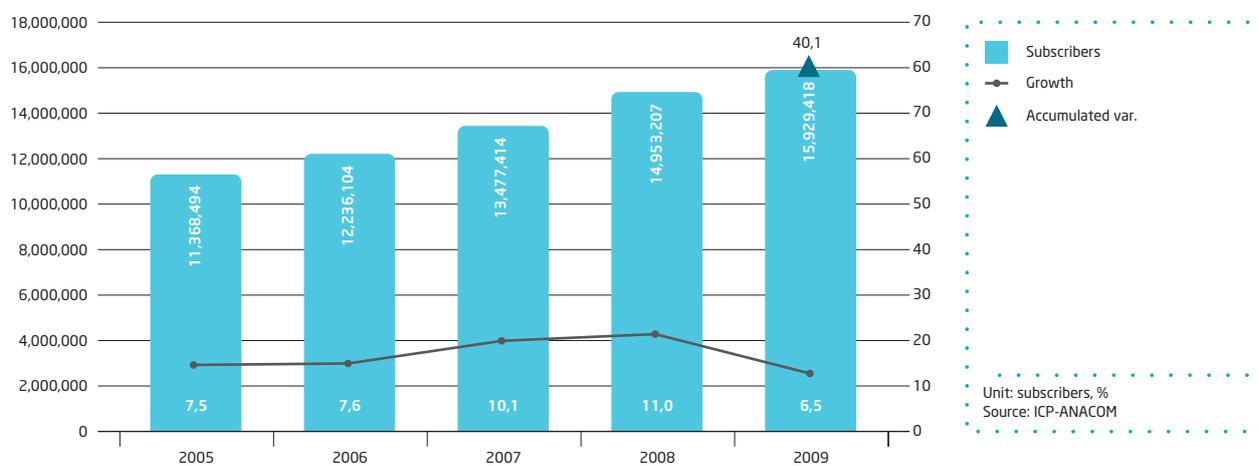
⁷¹ The definition of subscriber was approved by a determination of ICP-ANACOM's Board of Directors of 07.02.2002. It relates to the number of cards that are under a contractual relationship with one of the national Mobile Telephone Service operators, which were granted the right to originate or receive traffic through their networks.

Number of subscribers | Table 81

	2008	2009	Var. 2008/2009	Average annual var. 2005/2009	Accumulated var. 2005/2009
MTS subscribers	14,953,207	15,929,418	6.5 %	8.8 %	40.1 %

Unit: 1 subscriber, %
Source: ICP-ANACOM

Evolution of the number of subscribers and growth rates | Graph 68



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

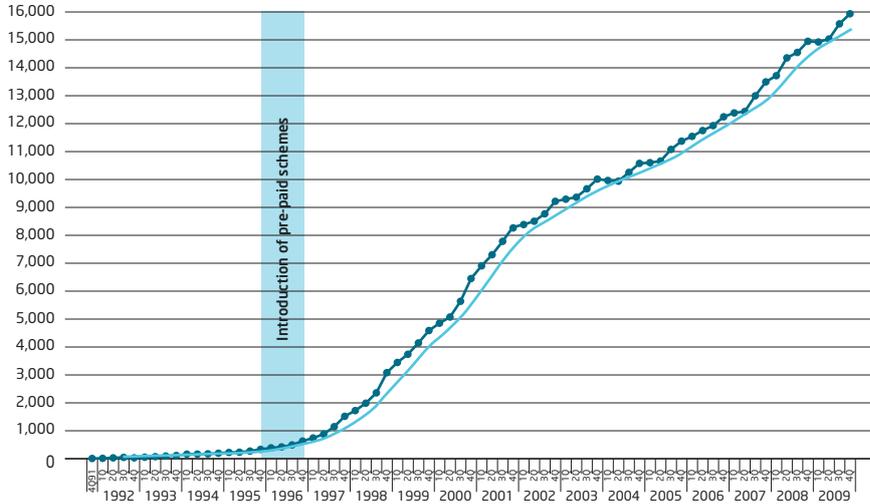
- development of 3G services. The number of users of 3G/UMTS services in Portugal reached around 6 million at the end of 2009;
- emergence of new offers of mobile broadband Internet access;
- launch of specific offers within the scope of the development of the information society (e-opportunities,

e-schools and e-teachers initiatives). In this case most of the tariff schemes are post-paid;

- development of new applications associated with machines, for example, fleet management, vending machines, alarms, meters and video surveillance.

These factors contributed to maintaining the trend for growth in the number of MTS subscribers in Portugal.

Evolution of the number of subscribers and growth trend | Graph 69



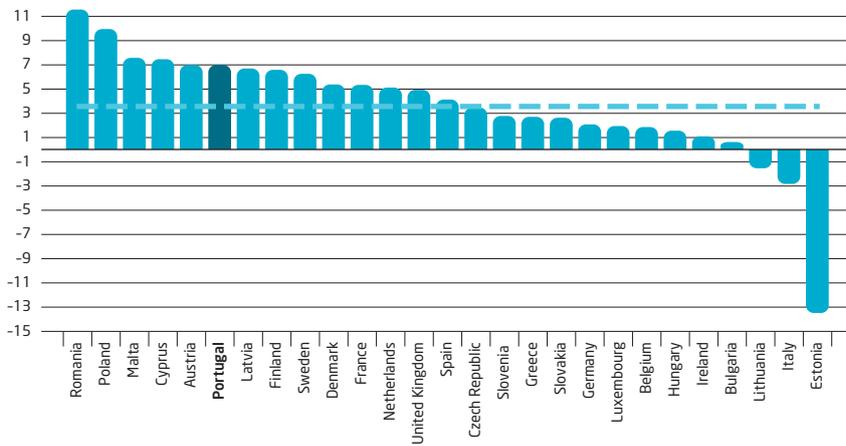
Subscribers
Tendency

Unit: thousands of seconds
Source: ICP-ANACOM

It is noted that the growth rate in the number of subscribers in Portugal was above the EU average. At EU level, the

growth of the service slowed in 2009 - on average, it slowed from 7.2 % to 3.5 %⁷².

Growth rate of subscribers in the EU27 countries in 2009 | Graph 70



Growth rate
EU27 average

Unit: %
Source: European Commission, Progress report on the single European market in electronic communications in 2009 (15th Report).

Note: data with reference to September 2009.

72 Values with reference to September 2009. Certain countries rectified values reported in previous years.

The number of users that have already signed up to 3rd generation mobile services (IMT2000/UMTS) in Portugal has increased significantly.

Number of users of UMTS services and data services | Table 82

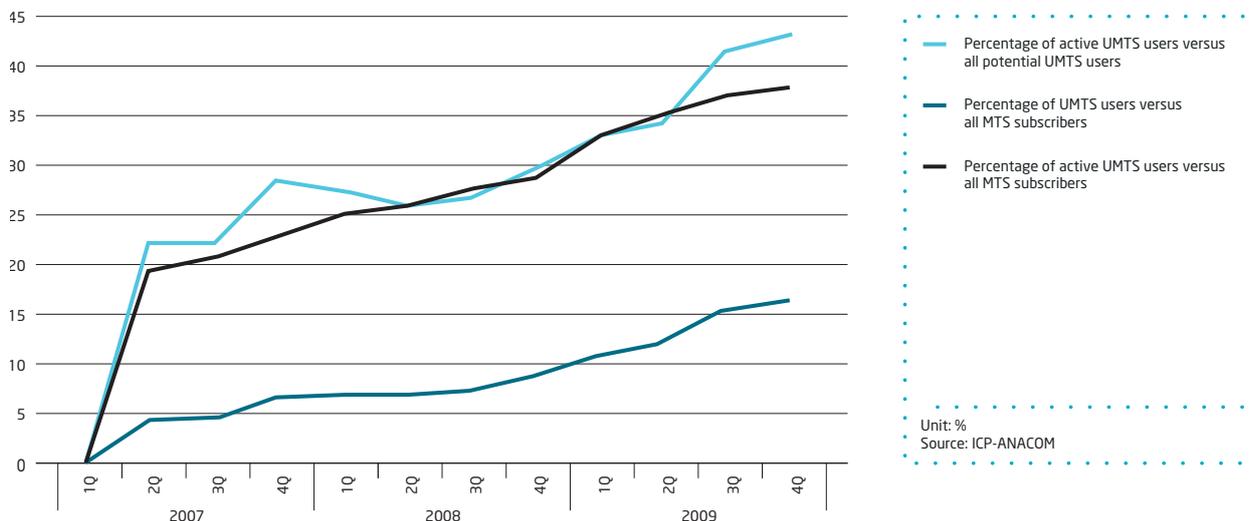
	2008	2009	Var. 2008/2009	Average annual var. 2007/2009
Total number of potential users of UMTS services	4,320	5,984	38.5 %	39.5 %
No. of which were active in the period reported	1,284	2,580	101.0 %	72.3 %

Unit: thousands of users, %
Source: ICP-ANACOM

Evolution in the number of mobile broadband users was influenced by the changes introduced in the offers of this type of service by its providers, as well as the implementation of Government initiatives: *e-escola*, *e-professores* and *e-oportunidades* (e-school, e-teachers and e-opportunities). These initiatives enabled the acquisition of a laptop and access to broadband Internet at reduced prices.

At the end of 2009, users of the UMTS⁷³ service in Portugal represented around 37.6 % of all MTS subscribers.

Evolution of UMTS penetration in Portugal | Graph 71



⁷³ Number of SIM/USIM (Subscriber Identity Module/Universal Subscriber Identity Module) cards that made at least one authentication and registration on the mobile operator's network, since the launch of the service, enabling it them to use any of typical UMTS network services (i.e. video-telephony or broadband data transmission). Those cards that made at least one authentication and registration on the mobile operator's network during the period under analysis are considered active cards. Cards that were deactivated until the end of the period under analysis were excluded. Migrations from SIM GSM to USIM UMTS should be considered, when it applies

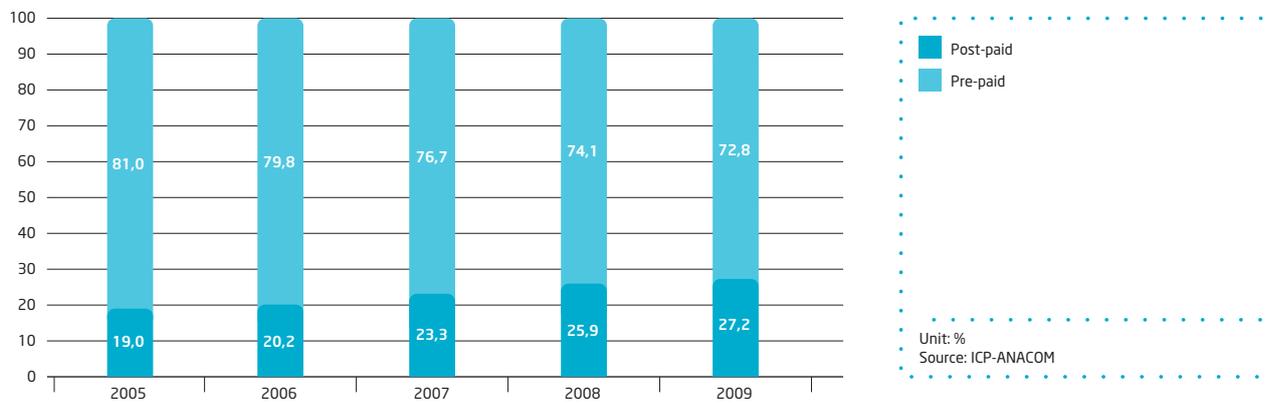
Since this information first began to be compiled, there has been an increase in subscription to the service and an increase in the intensity of its usage by subscribers. In fact, in two years, the proportion of MTS subscribers who have signed up to UMTS has grown almost 15 % points and the percentage of active users has increased 15 % points, making up around 16.2 % of all MTS subscribers. This differential is yet greater since the specific services of the 3rd generation, specifically video calls are seldom used as they require both the caller and the receiver of the call to have suitable terminals.

On the other hand, it should be taken into account that the price of these services might present an obstacle to frequent use by customers who may opt for sporadic use, or do little more than “test out” the service.

Tariff schemes

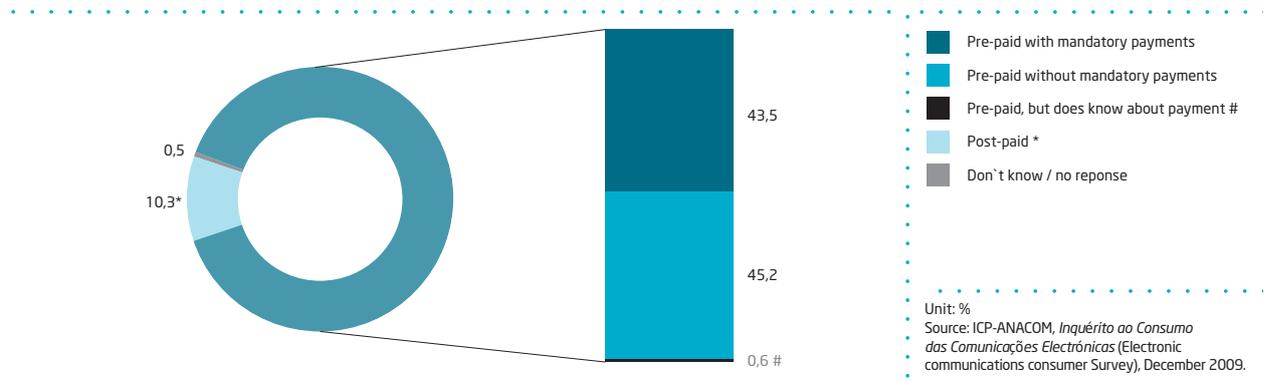
With regard to the tariff schemes used by the MTS subscribers, around 72.8 % of the subscribers use pre-paid schemes.

Distribution of subscribers by type of tariff scheme | Graph 72



Within the pre-paid schemes, around half of the users aged 15 or over prefer pre-paid schemes with no mandatory, pre-payments, while the rest use schemes with mandatory pre-payments.

Type of tariff scheme most used | Graph 73



Base: Individuals, 15 years of age or older with access to mobile telephone service

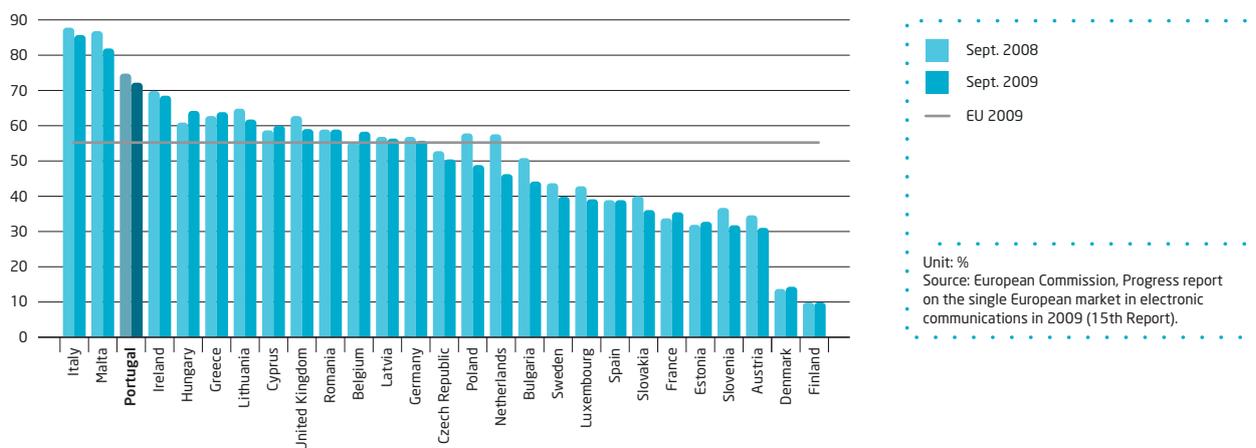
Note: The coefficient of variation is considered as sampling error indicator, based on the variance of the “proportion” estimator of a simple random sample and assuming a significance level of 95 %. The following key is used:
 (#) Coefficient of variation greater than or equal to 25 % (unreliable estimate)
 (*) Coefficient of variation greater than or equal to 10 % and less than 25 % (acceptable estimate)
 (no symbol) Coefficient of variation less than 10 % (reliable estimate)

Portugal is among the countries in which the weight of the pre-paid schemes is more significant, immediately after Malta and Italy. Finland and Denmark present the lowest values. It is recalled that Portugal was a pioneer in introducing the pre-paid system in the mobile telephone service. TMN first introduced the MIMO produce in 1995. These products are

associated with greater control over the bill for the service and do not require the payment of monthly subscription fees.

In 2009, the proportion of pre-paid cards in the EU was, on average, 52 %.

Weight of pre-paid cards in the total of subscribers - Portugal vs. EU | Graph 74



It should be mentioned, however, that since 2005 the proportion of pre-paid tariff schemes has been decreasing in some countries, namely those where the proportion of pre-paid schemes is higher. This evolution is explained by the emergence of new post-paid offers (i.e. bundles of minutes or traffic included in the monthly subscription which were initially valid for consumption of minutes but which were expanded to the consumption of messages or even data

traffic), and by the development of the new 3rd generation services, which are post-paid offers in many cases.

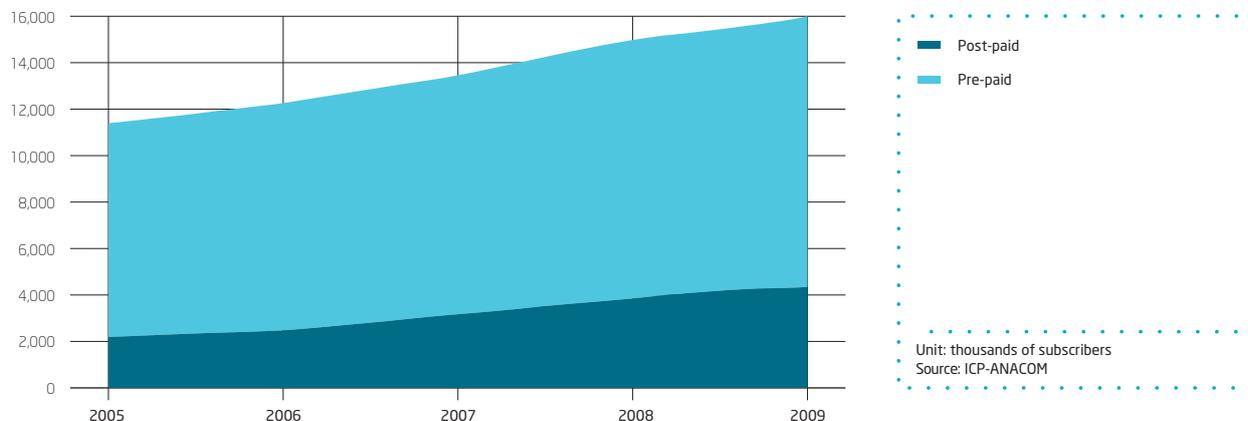
As a result of these factors, in 2009, post-paid schemes grew 12.1 %. Since 2005, there has been a cumulative growth in this type of scheme in excess of 100 %.

Number of subscribers by tariff scheme | Table 83

	2008	2009	Var. 2008/2009	Annual average var. 2005/2009	Accumulated var. 2005/2009
Post-paid	3,873,298	4,340,577	12.1 %	19.1 %	101.3 %
Pre-paid	11,079,909	11,588,841	4.6 %	5.9 %	25.8 %

Unit: 1 subscriber; %
Source: ICP-ANACOM

Evolution in the number of subscribers by type of tariff scheme | Graph 75



As noted above, the increase in the weight of post-paid subscribers is due in great part to subscription to new services of mobile broadband Internet access which imply, to a greater extent, post-paid products.

On the other hand, according to the users themselves, the most common tariffs are those that have different prices for all the networks and which do not include special prices for determined numbers. These tariffs often have lower prices for on-net communications (it should be noted that users are not always aware of their tariff type).

Type of tariff scheme | Table 84

	Dec. 2009
Same prices for all the networks and special prices for a range of chosen numbers	14.9
Same prices for all the networks but without special prices for a range of chosen numbers	15.1
Different prices for all the networks and special prices for a range of chosen numbers	16.8
Different prices for all the networks but without special prices for a range of chosen numbers	36.6*
Don't know / no response	16.5
Total	100.0

Unit: %

Source: ICP-ANACOM, *Inquérito ao Consumo das Comunicações Eletrónicas* (Electronic Communications Consumer Survey), December 2009.

Base: Individuals, 15 years of age or older with access to mobile telephone service.

Note: The coefficient of variation is considered as sampling error indicator, based on the variance of the "proportion" estimator of a simple random sample and assuming a significance level of 95 %. The following key is used:

(#) Coefficient of variation greater than or equal to 25 % (unreliable estimate)

(*) Coefficient of variation greater than or equal to 10 % and less than 25 % (acceptable estimate)

(no symbol) Coefficient of variation less than 10 % (reliable estimate)

Per-second tariffs

It is also noted that, in 2009 and due to legislative imposition, new per-second tariffs were introduced. Per-second tariffs

accounted for at least 35 % of subscriptions, although not all these tariffs resulted from legislative intervention.

Subscription to tariff plans with per-second tariffs | Table 85

	Dec. 2008	Dec. 2009
Yes	34.7	35.4
No	28.2	37.1
Don't know / no response	37.1	27.5
Total	100	100

Unit: %
 Source: ICP-ANACOM, *Inquérito ao Consumo das Comunicações Electrónicas*, December 2008 and 2009
 Base: Individuals, 15 years of age or older with access to mobile telephone service.

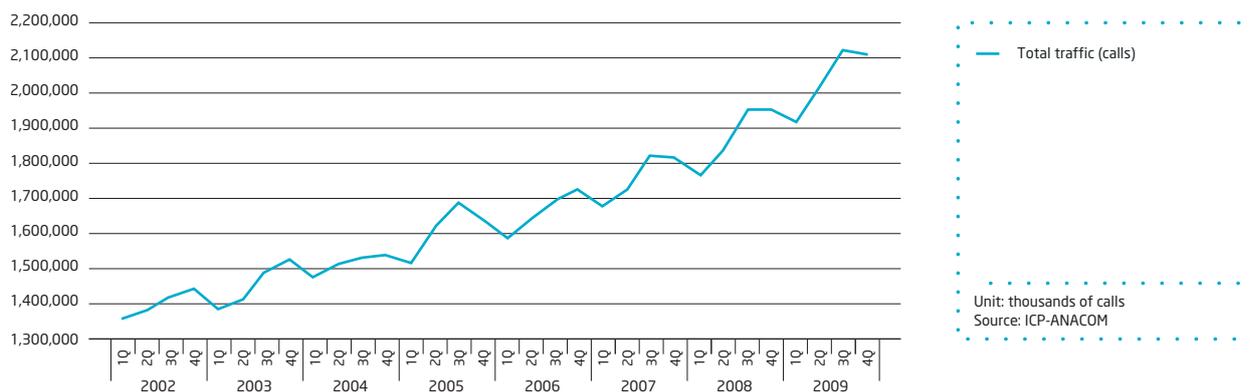
Note: The coefficient of variation is considered as sampling error indicator, based on the variance of the "proportion" estimator of a simple random sample and assuming a significance level of 95 %. The following key is used:
 (#) Coefficient of variation greater than or equal to 25 % (unreliable estimate)
 (*) Coefficient of variation greater than or equal to 10 % and less than 25 % (acceptable estimate)
 (no symbol) Coefficient of variation less than 10 % (reliable estimate)

Voice traffic: characterization and level of usage

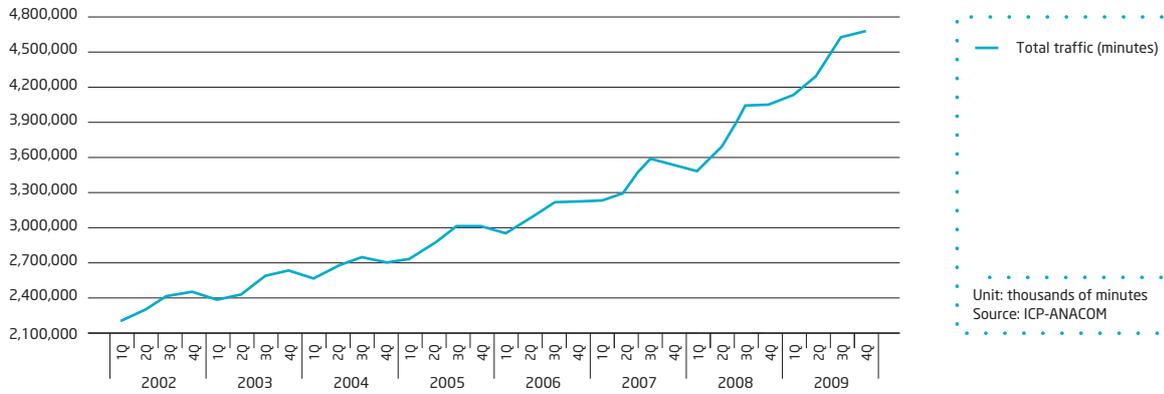
As can be seen in the following graphs, the trend in MTS traffic is upward. The growing trend in traffic is related to the increase in the number of subscribers, the increasingly

mass use of the service and also the decline in the use of the FTS.

Evolution of quarterly outgoing MTS traffic - calls | Graph 76

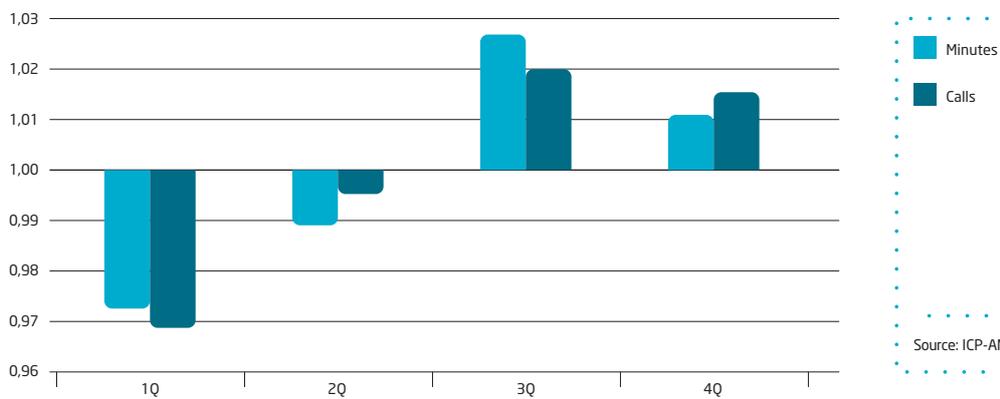


Evolution of quarterly outgoing MTS traffic - minutes | Graph 77



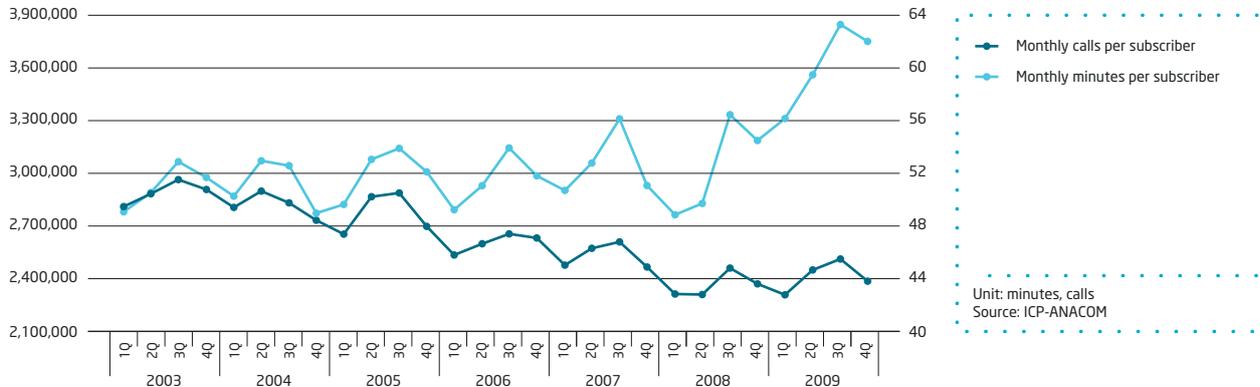
Increases of a seasonal nature were reported in the 3rd and 4th quarters of each year, linked to the summer and Christmas holiday periods.

Seasonality coefficients for outgoing traffic | Graph 78



Monthly traffic per subscriber reached average values of almost 100 minutes and 45 calls.

Evolution of monthly traffic per subscriber | Graph 79



Note: In order to highlight the seasonal variation and the trend, the X axis intersects the Y axis at figure 76, in the case of minutes and figure 40 in the case of calls.

A downward trend has been reported in the number of calls per subscriber. The average monthly number of calls per subscriber reached approximately 44 in the 4th quarter of 2009. However this figure does not truly reflect the behaviour of consumers of mobile voice calls, since the denominator of this indicator is based on the number of Subscriber Identity Module (SIM) cards installed in equipment such as POS, alarms, control and monitoring systems, data cards, etc., which have increased in relative weight.

The difference between the trends reported in traffic in minutes and traffic in calls can be explained by:

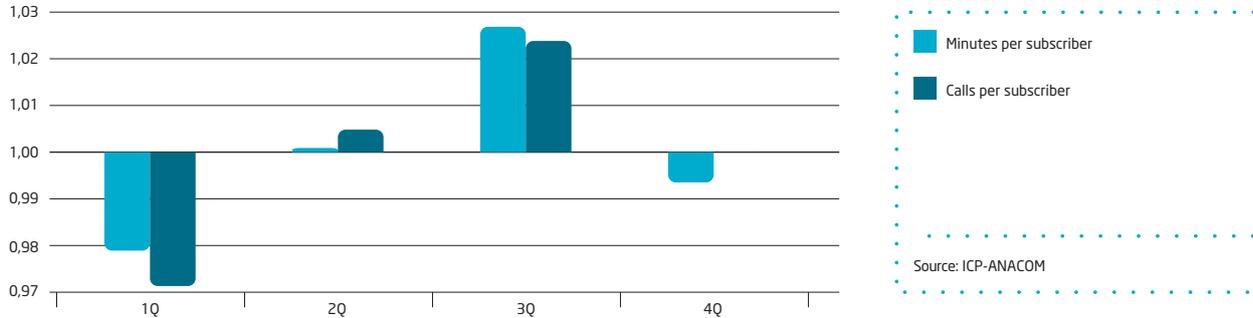
- Commercial and tariff factors which incentivise longer calls, especially offers with traffic volume included and/or

free communications between subscribers and temporary campaigns allowing users to make calls for a limited time at a reduced price.

- The fact that there are cards associated with data transmission offers and which do not generate calls may also influence the trend shown above.

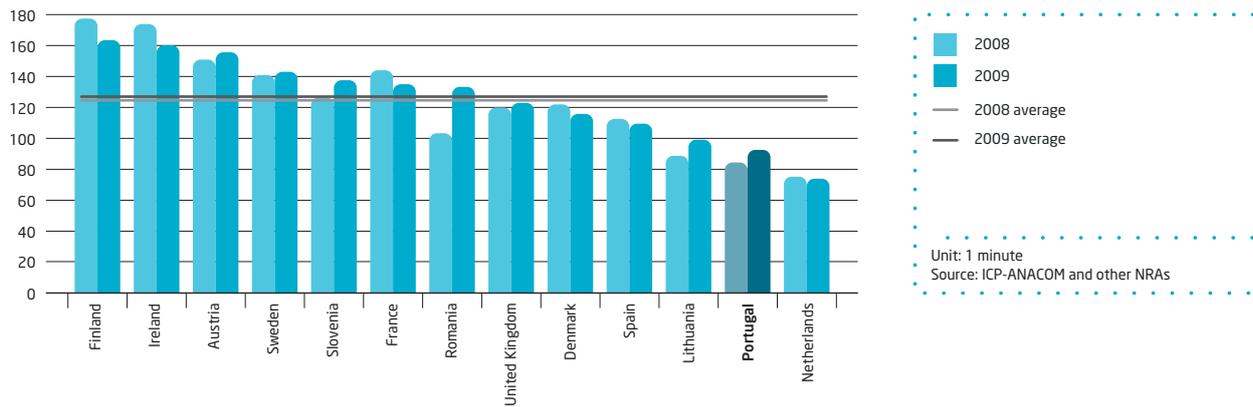
The number of minutes per subscriber reached peaks during the 3rd quarter, for the reasons mentioned above.

Seasonality coefficient for monthly traffic per subscriber | Graph 80



The following graph shows an international comparison of traffic per subscriber. As can be seen, according to the information available, use of the service in Portugal is lower than the average of the countries considered.

Minutes per month per subscriber – international comparisons | Graph 81

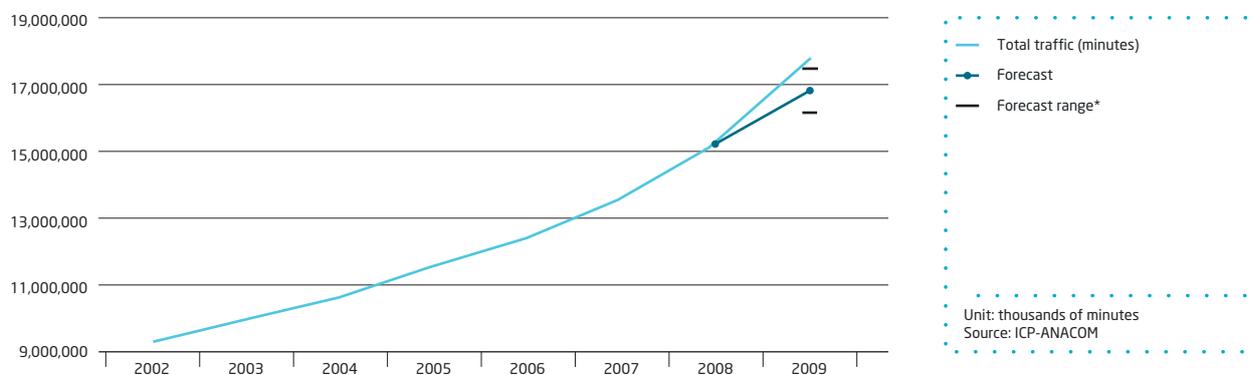


Note: For the calculations, in the case of the Netherlands, Romania and Sweden only six months of traffic was considered, and in the case of Austria, nine months, remaining countries 12 months.

Voice traffic: evolution in 2009

In 2009 voice traffic in terms of minutes recorded the highest growth rate of recent years, clearly exceeding the historical trend.

Series of annual voice MTS traffic in minutes and econometric forecast | Graph 82



Note: * Forecast range with 95 % significance level.

A linear regression model was used estimated using quarterly data with the following significant independent variables at a 95 % confidence level: quadratic trend (t and t2) and seasonal dummies for the 1st and 3rd quarter. Model adjusted R at 0.986

The number of conversation minutes originating on the mobile networks grew around 16.2 % over the previous year, totalling around 17.7 billion minutes. As mentioned above, this trend is due to the increase reported in the

number of subscribers, the massification of the service, the existence of offers with free calls or reduced pricing and also a declining use of the FTS.

Voice traffic in minutes | Table 86

	2008	2009	Var. 2008/2009	Annual average var. 2005/2009	Accumulated var. 2005/2009
Outgoing traffic	15,272	17,753	16,2 %	11.2 %	52.9 %
Own network – Own network	10,762	13,255	23.2 %	13.7 %	67.2 %
Own network – National FTS	961	935	-2.7 %	3.1 %	12.8 %
Own network – International networks	690	672	-2.6 %	5.8 %	25.1 %
Own network – Other national MTS	2,859	2,891	1.1 %	5.7 %	25.0 %
Incoming traffic	15,432	17,862	15.7 %	10.6 %	49.6 %
Own network – Own network	10,762	13,255	23.2 %	13.7 %	67.2 %
National FTS – Own network	1,136	1,004	-11.6 %	-3.3 %	-12.5 %
International networks – Own network	685	675	-1.5 %	5.4 %	23.5 %
Other national MTS – Own network	2,850	2,928	2.8 %	6.1 %	26.5 %

Unit: millions of minutes; %
Source: ICP-ANACOM

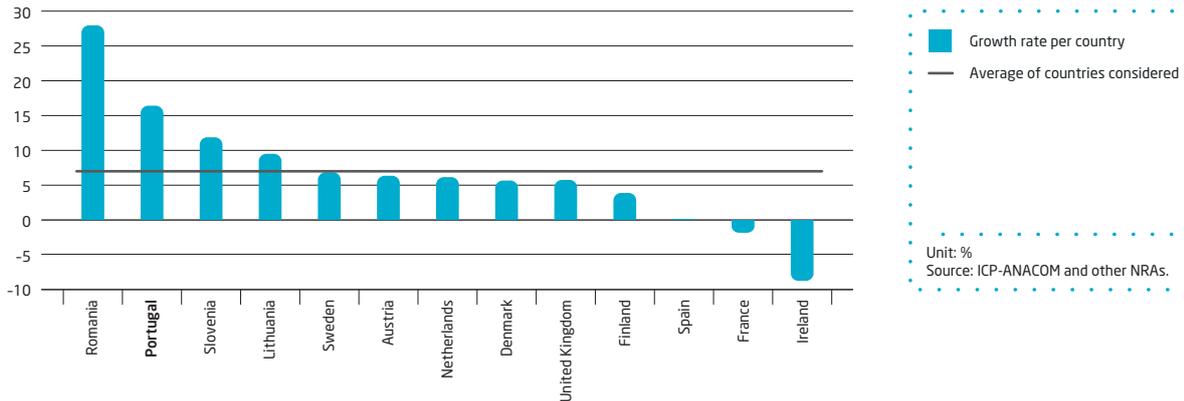
The number of minutes terminating on mobile networks totalled over 17.8 billion and recorded an increase of 15.7 %

in relation to the previous year, also exceeding the increases of recent years.

Between 2005 and 2009, there was an increase of around 53 % in outgoing traffic and around 50 % in incoming traffic, exceeding the rate of growth in the number of subscribers.

It can also be seen that the growth in mobile network traffic in 2009 was about 10 % points above the average of the countries considered.

Growth of traffic in minutes in 2009 – international comparisons | Graph 83

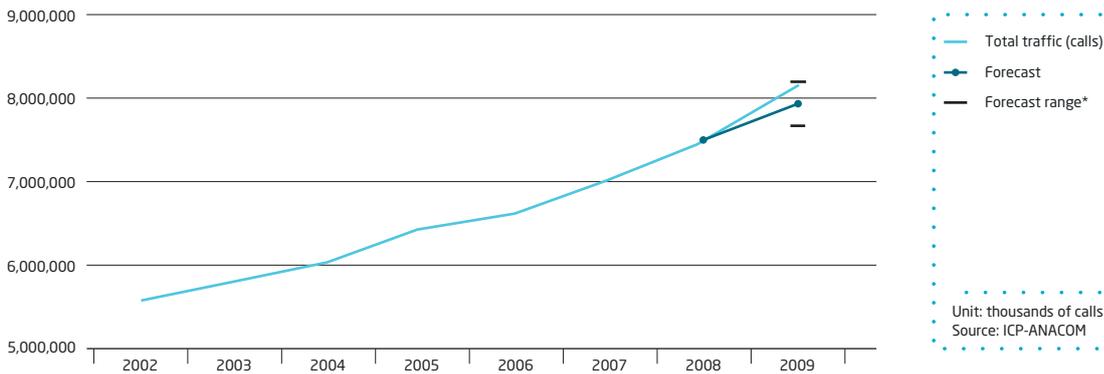


Note: Netherlands, Romania and Sweden comprise traffic information from six months, Austria from nine months and the remaining considered countries of 12 months.

Regarding the number of calls, in 2009 MTS subscribers made over 8.1 billion calls, 8.7 % up on the previous year. In line with traffic measured in minutes, the growth seen in

the number of calls reported in 2009 was greater than that seen in recent years, although within the historical trend.

Annual MTS voice traffic series in calls and econometric forecast | Graph 84



Notes: * Forecast range with 95 % significance level.

A linear regression model was used estimated using quarterly data with the following significant independent variables at a 95 % confidence level: quadratic trend (t and t2) and seasonal dummies for the 1st and 3rd quarter. Model adjusted R2 at 0.978.

Over the same period, MTS subscribers received over 8.1 billion calls, representing an increase of 8.7 % over the previous year.

Voice traffic in calls | Table 87

	2008	2009	Var. 2008/2009	Annual average var. 2005/2009	Accumulated var. 2005/2009
Outgoing traffic	7,509	8,163	8.7 %	6.1 %	26.5 %
Own network – Own network	5,104	5,769	13.0 %	7.3 %	32.8 %
Own network – National FTS	527	513	-2.7 %	0.0 %	0.1 %
Own network – International networks	266	257	-3.4 %	5.5 %	23.7 %
Own network – Other national MTS	1,613	1,625	0.7 %	4.0 %	17.1 %
Incoming traffic	7,512	8,136	8.3 %	5.4 %	24.2 %
Own network – Own network	5,104	5,769	13.0 %	7.3 %	32.8 %
National FTS – Own network	579	506	-12.5 %	-5.2 %	-19.2 %
International networks – Own network	225	220	-2.5 %	3.8 %	16.2 %
Other national MTS – Own network	1,605	1,642	2.3 %	4.3 %	18.1 %

Unit: thousands of calls, %
Source: ICP-ANACOM

Between 2005 and 2009, growth in outgoing traffic was reported at around 24.6 % and growth in incoming traffic at about 24.2 %.

These traffic growth rates are below the growth rates reported with respect to the number of subscribers.

Voice traffic: evolution in 2009 by type of calls

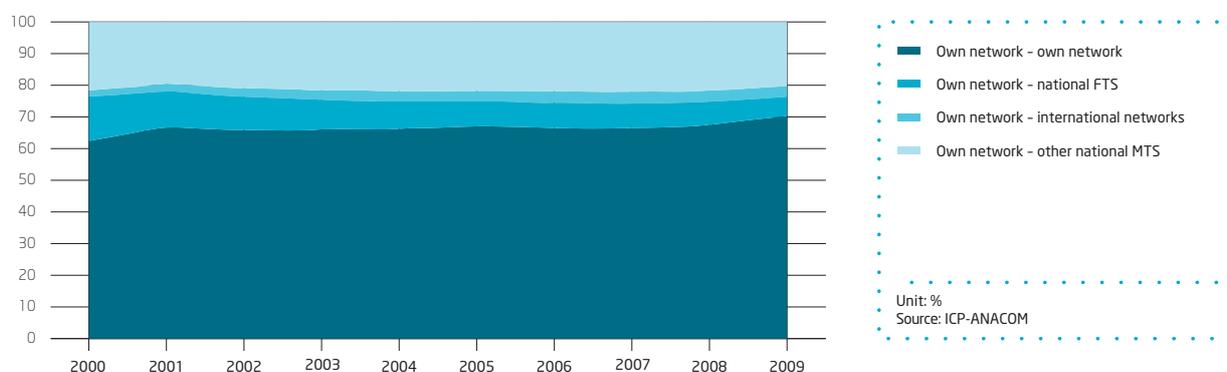
Regarding the type of calls made, it is reported that about 2/3 of calls are made to the same network as the one on which the call originated. Other mobile operators' networks

made up the destination of around 20 % of traffic, followed by the FTS.

There is no significant change in the relative weight of types of calls when incoming traffic is reported.

There has, on the other hand, been a gradual reduction in the weight of calls terminating and originating in the fixed networks, which is associated with the decline in FTS use for voice communications.

Distribution of voice traffic in calls by type of call | Graph 85



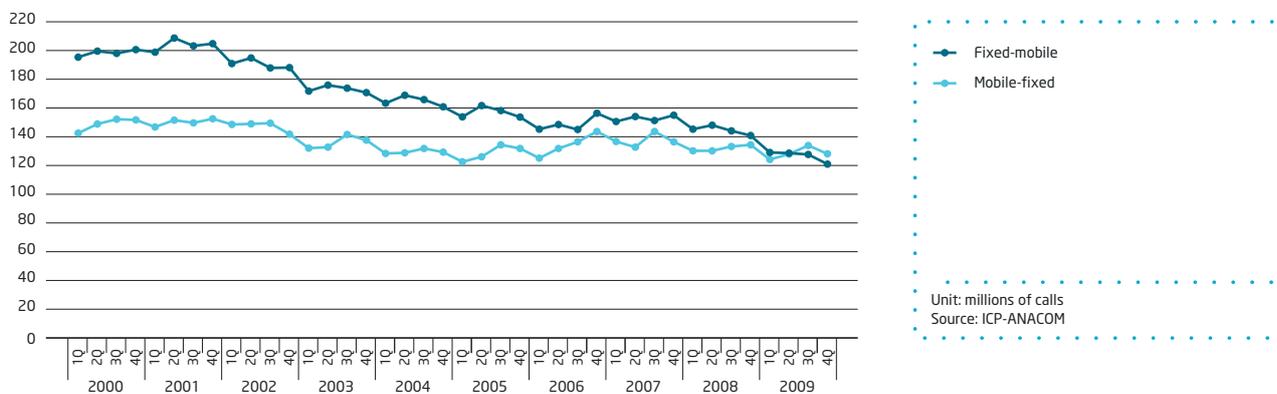
Analyzing the evolution of calls by type of call, it can be seen that on-net traffic, due to its total weight, determines the overall evolution of the traffic. Inter-network traffic grew at a below average rate, falling short of the increase in the number of subscribers. Mobile-fixed traffic and international traffic even reported a negative change.

The declining trend in mobile-fixed and fixed-mobile traffic has been recorded for a few years now and is associated with the phenomenon of fixed-mobile substitution. In 2009, a decrease was reported in absolute terms of this type of traffic in terms of calls (-12.5 % in the case of incoming traffic and -2.7 % in outgoing traffic).

Fixed-to-mobile and mobile-to-fixed traffic

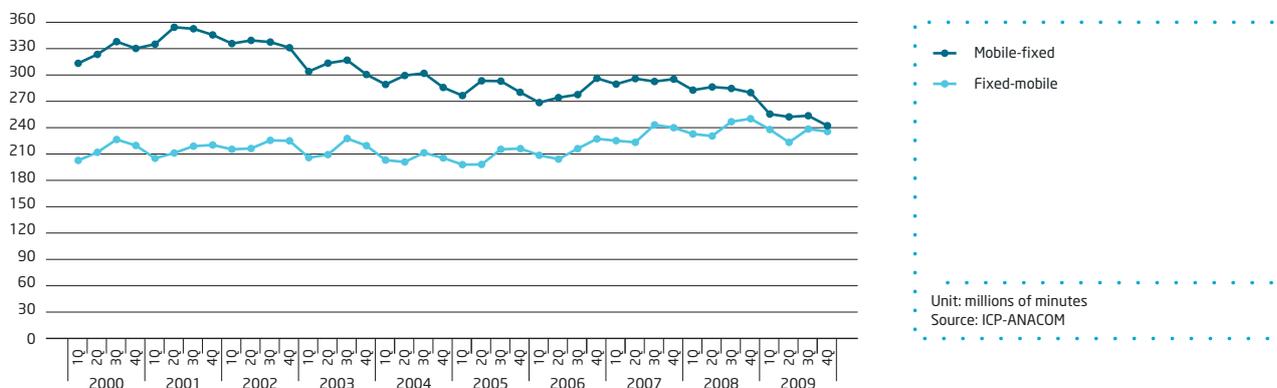
The particular evolution of fixed-mobile and mobile-fixed traffic merit a more detailed analysis of its characteristics.

Quarterly evolution in the number of mobile-fixed and fixed-mobile calls | Graph 86



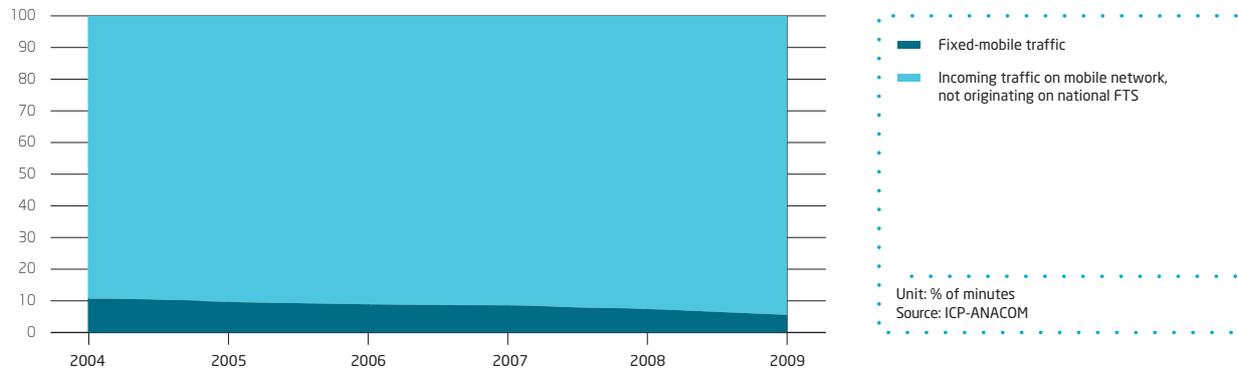
Regarding the volume of minutes, the previous trend continued in 2009, with fixed-mobile traffic decreasing by around 11.6 % in relation to the previous year.

Quarterly evolution in the number of mobile-fixed and fixed- mobile minutes | Graph 87



This type of traffic now represents less than 5.6 % of minutes terminating on the mobile network.

Weight of fixed-mobile traffic in total incoming traffic (minutes) | Graph 88



It is reported that, while the volume of traffic originating on the fixed network and terminating on the mobile network has historically been greater than the volume of traffic originating on the mobile network and terminating on the fixed network, the latter has fallen more slowly than the former.

As such, while in 2005 mobile-fixed calls represented 82 % of fixed-mobile calls, in 2009, the volume of mobile-fixed calls exceeded the volume of fixed-mobile calls.

In terms of minutes, the ratio between the two types of traffic grew over 20 % points over the same period, reaching 93 % in 2009.

Voice traffic: average duration of calls

The average duration of outgoing calls reached 130 seconds in 2009. The duration of calls originating and terminating on mobile networks has been increasing over recent years. The exception is the duration of international calls which has remained constant, although these are the calls that are reported with the longest duration: 157 seconds, in the case of originating traffic, and 184 seconds in the case of terminating traffic. It is of note that the average duration of calls on the mobile network is about one minute less than the duration of calls on the fixed network.

Average duration of calls | Table 88

	2005	2006	2007	2008	2009
Total outgoing traffic	108	112	116	122	130
Own network – Own network	109	115	120	127	138
Own network – National FTS	97	96	101	109	109
Own network – International networks	155	155	155	156	157
Own network – Other national MTS	100	103	105	106	107
Total incoming traffic	109	112	115	116	117
Own network – Own network	109	115	120	127	138
National FTS – Own network	110	113	116	118	119
International networks – Own network	174	178	185	183	184
Other national MTS – Own network	100	103	105	107	107

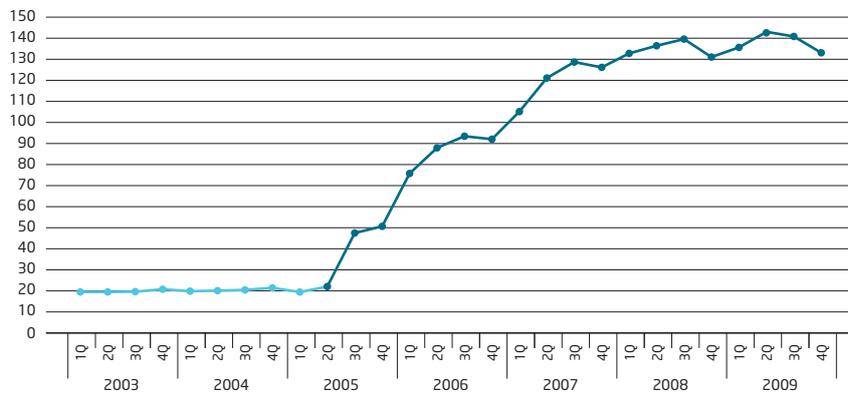
Unit: seconds
Source: ICP-ANACOM

The increase in the duration of national calls in 2009 may be related to the launch of specific offers for youth segments which allow for unlimited calls between subscribers for a fixed amount per month (*Moche TMN, TAG Optimus and Yorn Extravaganza or Vita 91 Extreme* from Vodafone). There have also been temporary campaigns with a fixed price per call, which also encourage longer calls.

SMS

Up to the second quarter of 2005, the average monthly figure recorded for SMS per subscriber was around 20. This figure changed significantly from that date on and increased significantly in the periods that followed. In 2007, the monthly average number of SMS per subscriber exceeded 100 and in the 2nd quarter of 2009, the figure reached 143 SMS per subscriber each month.

Evolution in the number of SMS per subscriber per month | Graph 89



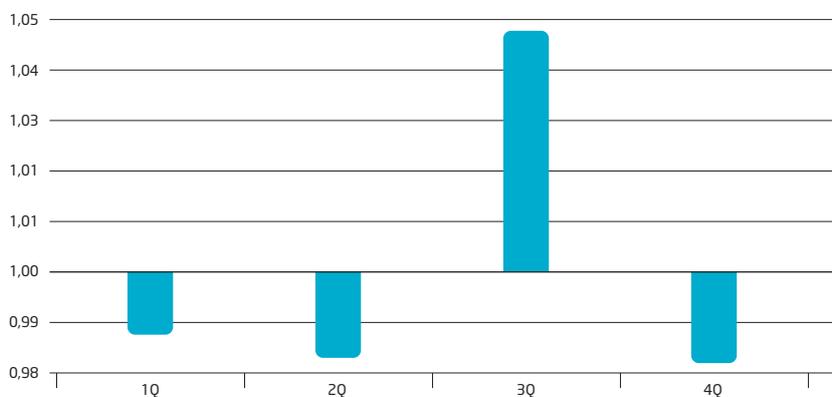
Unit: messages per subscriber
Source: ICP-ANACOM

If only actual users of text message services are considered, representing 88 % of total subscribers, the average number of messages per user reaches 151 messages per month.

Average SMS traffic per subscriber also sees seasonal variations, in particular in the 3rd quarter.

This evolution is associated with new tariff offers and promotions launched by the operators.

Seasonality coefficient for SMS per subscriber | Graph 90



SMS messages per subscriber per month

Source: ICP-ANACOM

It should be noted that Premium messages represent less than 1 % of total SMS. However an intensification in the use of this type of message has been reported in social activities.

Overall, the rate of growth in text messages was reported at 9.3 %, 16 % points less than in 2008.

SMS originating in own network | Table 89

	2008	2009	Var. 2008/2009	Annual average var. 2005/2009	Accumulated var. 2005/2009
Number of SMS messages	23,299	25,473	9.3 %	53.0 %	447.6 %

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

Quarterly evolution in the number of SMS | Graph 91

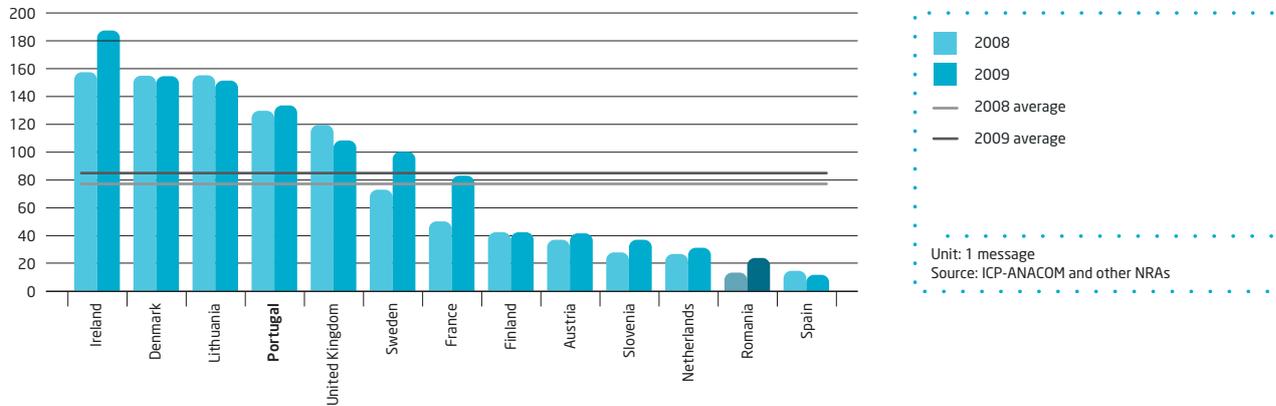


Unit: millions of messages
Source: ICP-ANACOM

The reported deceleration of growth occurred despite the use of the SMS service as a complement to "social network" calls (operators have launched specific service to provide updates on the "status" of the user through SMS).

According to the information available, use of SMS in Portugal is greater than the average of those countries for which it was possible to obtain information.

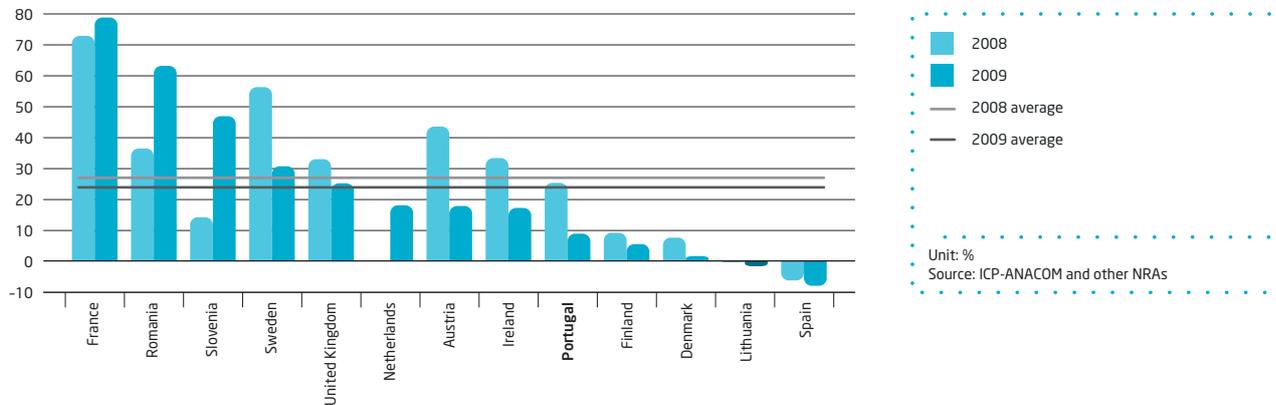
Number of SMS per subscriber per month - international comparisons | Graph 92



Note: Netherlands, Romania and Sweden comprise traffic information from six months, Austria from nine months and the remaining considered countries of 12 months.

The rate of growth in SMS traffic in Portugal is below the average reported for the countries considered, with higher rates of growth reported in various countries.

Growth of SMS traffic - international comparisons | Graph 93



Note: Netherlands, Romania and Sweden comprise traffic information from six months, Austria from nine months and the remaining considered countries of 12 months.

Roaming traffic: voice and SMS

The number of users of the roaming out⁷⁴ service corresponds to around 20 % of total MTS subscribers.

Roaming out users | Table 90

	2008	2009	Var. 2008/2009
Roaming out users	3,000	3,205	6.8 %

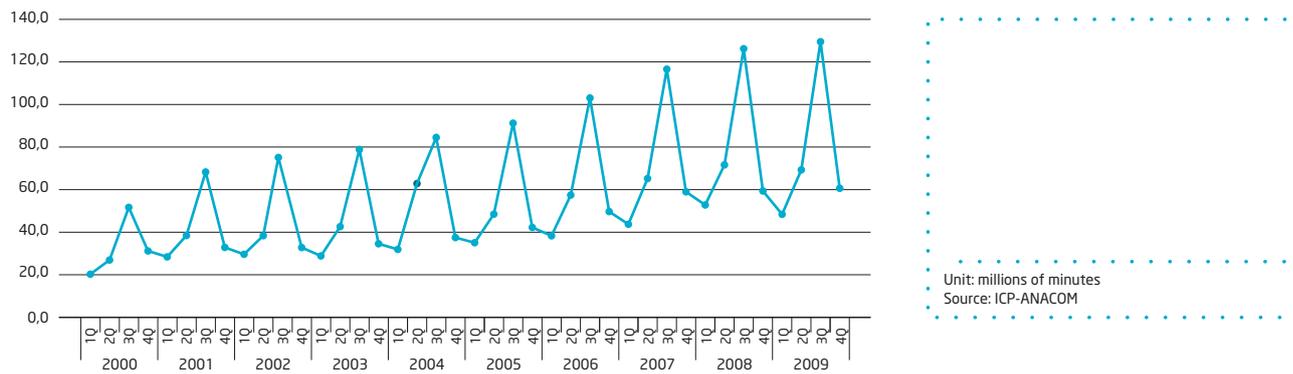
Unit: thousands of users, %
Source: ICP-ANACOM

⁷⁴ Subscribers of national operators that use the networks of foreign operators when they are not in Portugal.

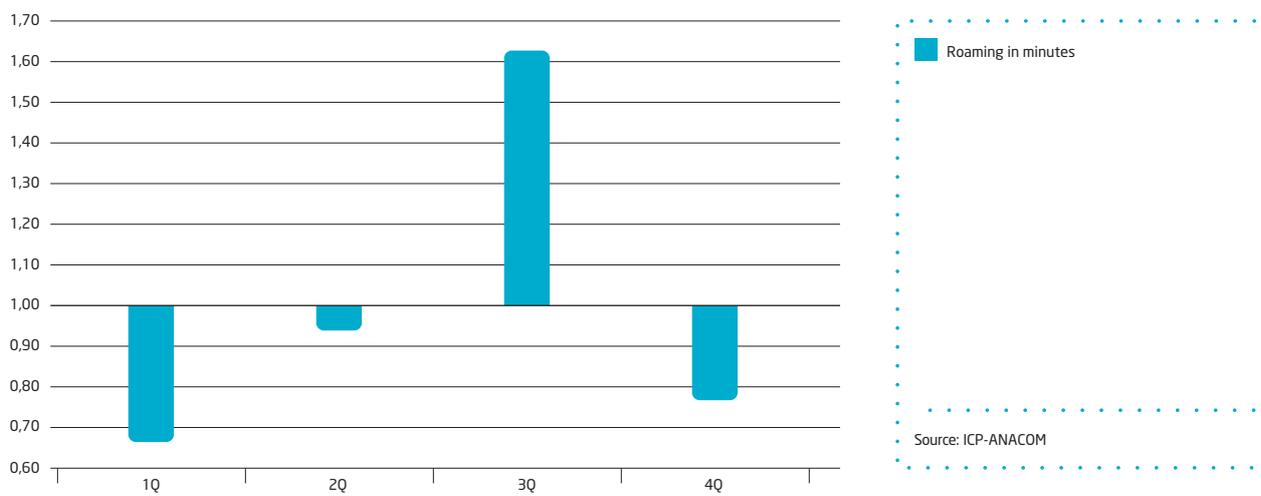
Roaming traffic is highly seasonal, related with the summer holiday period and is affected by some international events held in Portugal (in the following graph it can be seen that

the “Euro 2004” phenomenon had an effect on roaming in traffic⁷⁵ in the 2nd quarter of 2004).

Quarterly evolution of roaming in traffic | Graph 94



Seasonality coefficient for roaming in traffic | Graph 95



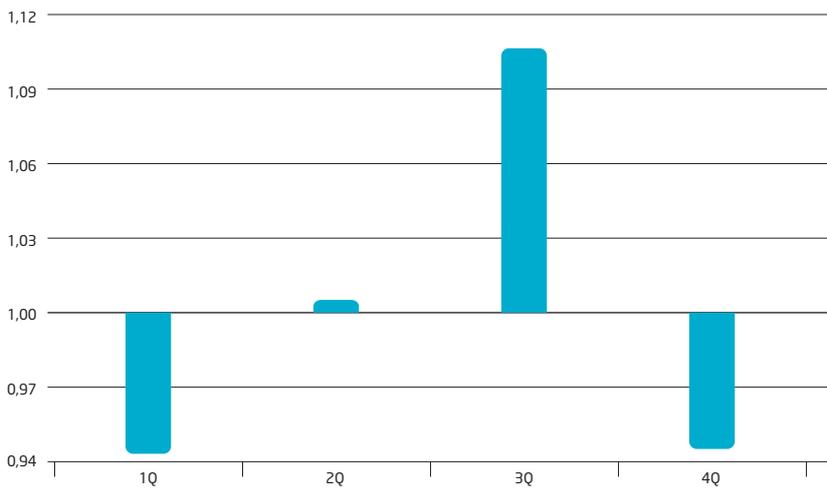
⁷⁵ Traffic by subscribers of foreign operators using the national networks.

Quarterly evolution of roaming out traffic | Graph 96



Unit: millions of minutes
Source: ICP-ANACOM

Seasonality coefficient for roaming out traffic | Graph 97



Roaming out minutes

Source: ICP-ANACOM

The seasonality shown above is driven by the marketing policies of the operators which promote specific roaming campaigns in school holiday periods - Carnival and Easter.

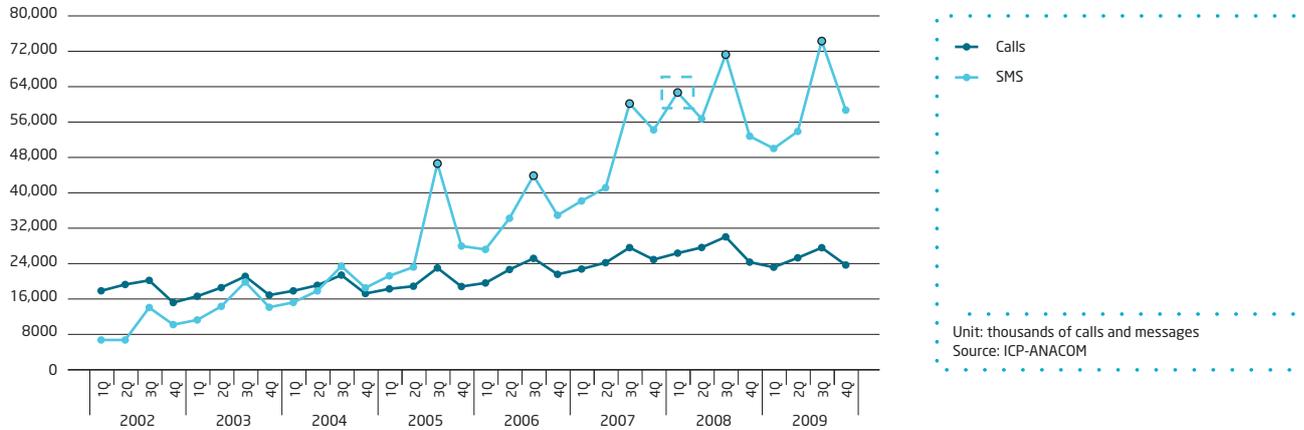
With specific respect to SMS, a growing trend is seen towards the use of the service in roaming out, which could be due to the pricing level established for this type of call and the value of terminations in these cases.

Additionally, promotional campaigns by operators designed to intensify the use of SMS add considerably to the number of messages received in roaming. It should be highlighted

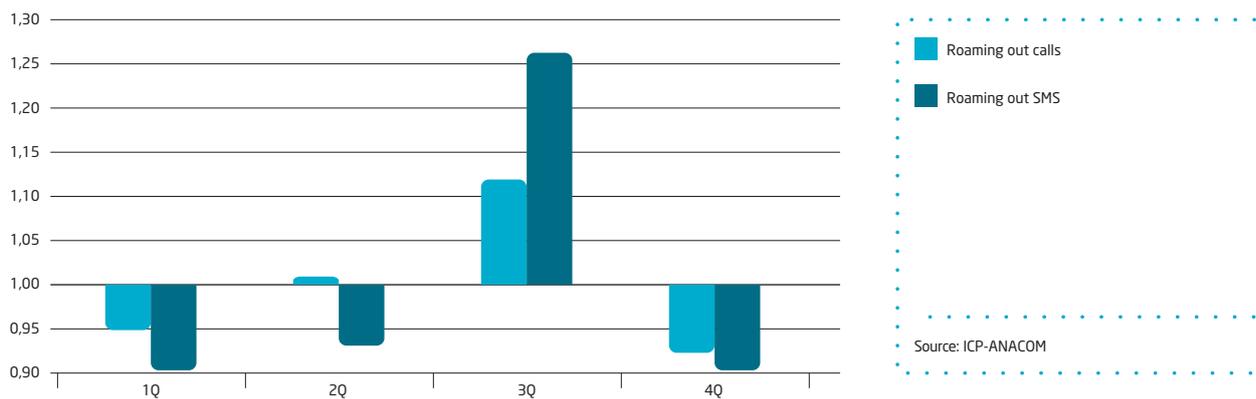
that received roaming in messages have no costs for the roamer while receipt of a voice call implies the payment of part of the call, which corresponds to the termination cost of the foreign operator where the roamer is registered. This, in connection with the campaigns mentioned above, explains the peaks in the third quarters of the years from 2005 to 2009, coinciding with the holiday periods.

It should also be noted that in 1Q08 there was a movement contrary to that of previous years, which may be related with the period of the Easter holidays, which occurred in March in 2008.

Evolution of roaming out traffic by type of traffic | Graph 98



Seasonality coefficient for roaming out traffic | Graph 99



Roaming in traffic reported slight declines in 2009, with the exception of text messages, which increased by over 18 %.

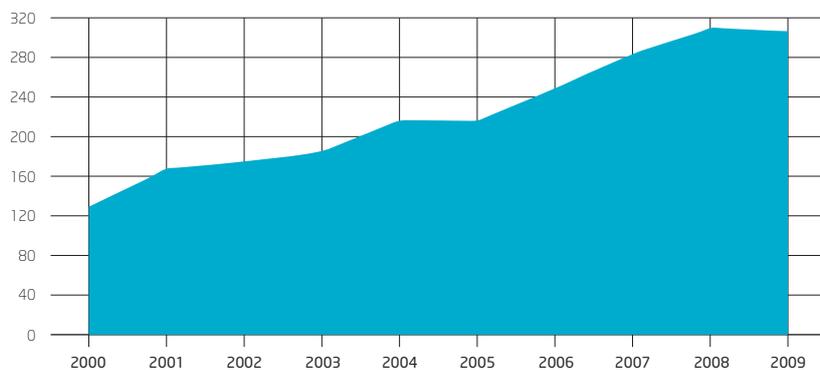
The average duration of calls in roaming in was 127 seconds, one second longer than the figure recorded in the previous year. On average terms, calls made in roaming are longer than those made on the national networks.

Roaming in traffic | Table 91

	2008	2009	Var. 2008/2009	Annual average var. 2005/2009	Accumulated var. 2005/2009
Voice calls in roaming in	147,337	144,880	-1.7 %	7.0 %	31.2 %
No. of minutes in roaming in	309,646	307,121	-0.8 %	9.1 %	41.7 %
Text messages in roaming in	290,334	343,064	18.2 %	22.2 %	123.2 %
Average duration of calls (secs)	126.1	127.2	1.1 secs.		

Unit: thousands, %, seconds
Source: ICP-ANACOM

Evolution of the volume of roaming in traffic | Graph 100



Unit: millions of minutes
Source: ICP-ANACOM

Roaming out traffic was reported as declining by 7.6 % in the case of calls, by 7.8 % in the case of minutes and 2.7 %

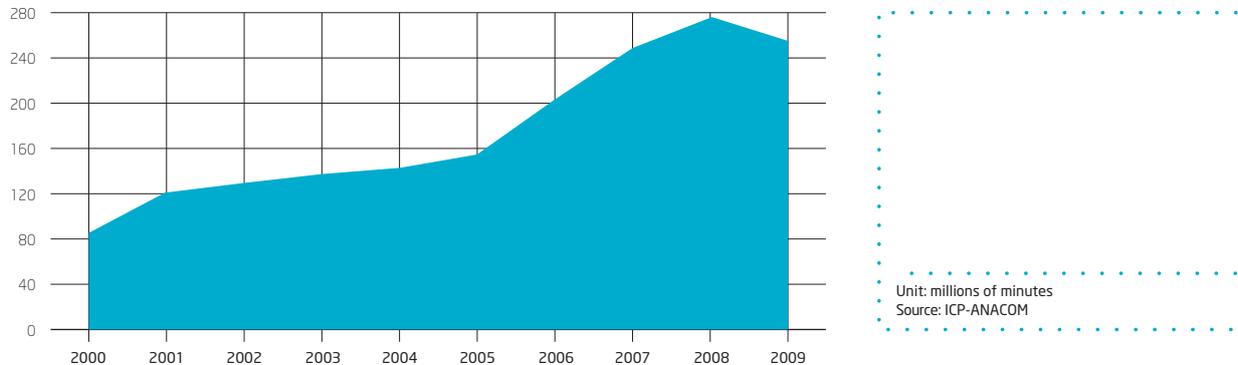
in the case of text messages. This decline may be due to the economic climate.

Roaming out traffic | Table 92

	2008	2009	Var. 2008/2009	Annual average var. 2005/2009	Accumulated var. 2005/2009
Voice calls in roaming out	107,842	99,691	-7.6 %	6.2 %	27.2 %
No. of minutes in roaming out	276,943	255,414	-7.8 %	13.3 %	65.1 %
Text messages in roaming out	243,145	236,571	-2.7 %	18.9 %	99.9 %
Average duration of calls (secs)	154.1	154.2	0.1 secs.		

Unit: thousands, %, seconds
Source: ICP-ANACOM

Evolution of roaming out traffic volume | Graph 101



Over the course of 2009, the average duration of roaming out calls remained at around 154 seconds per call.

Roaming in traffic exceeded roaming out traffic, and in the last year, gained importance in relative terms, in particular regarding the volume of minutes and messages. Roaming out traffic in terms of minutes represents 83 % of roaming in traffic, 6 % points less than in the previous year. The relative importance of the volume of messages in roaming out declined by 15 % points, and now represents 69 % of roaming in messages.

Effect of the entry into force of Regulation (EC) no. 717/2007

On 29 July 2007, the regulation on international roaming (EC) no. 717/2007 of the European Parliament and of the Council of 27 July 2007⁷⁶ was published on roaming on public mobile telephone networks within the Community. This regulation set out to establish a range of obligations applicable to companies providing the mobile telephone service, in particular:

- The provision, to all roaming customers, of a eurotariff, applicable to all intercommunity voice calls made or

received while roaming, with a maximum price determined by the regulation.

- Compliance with the maximum limits established in the regulation for the average wholesale tariff which the operators of a visited mobile network can charge the domestic operator of a roaming customer with respect to intra-community voice calls made or received while roaming.
- Obligations which aim to increase transparency in terms of pricing and improved provision of information on tariffs to users of community roaming services.

This regulation was later extended to SMS.

Subsequent to the Regulation's entry into force, it was seen that:

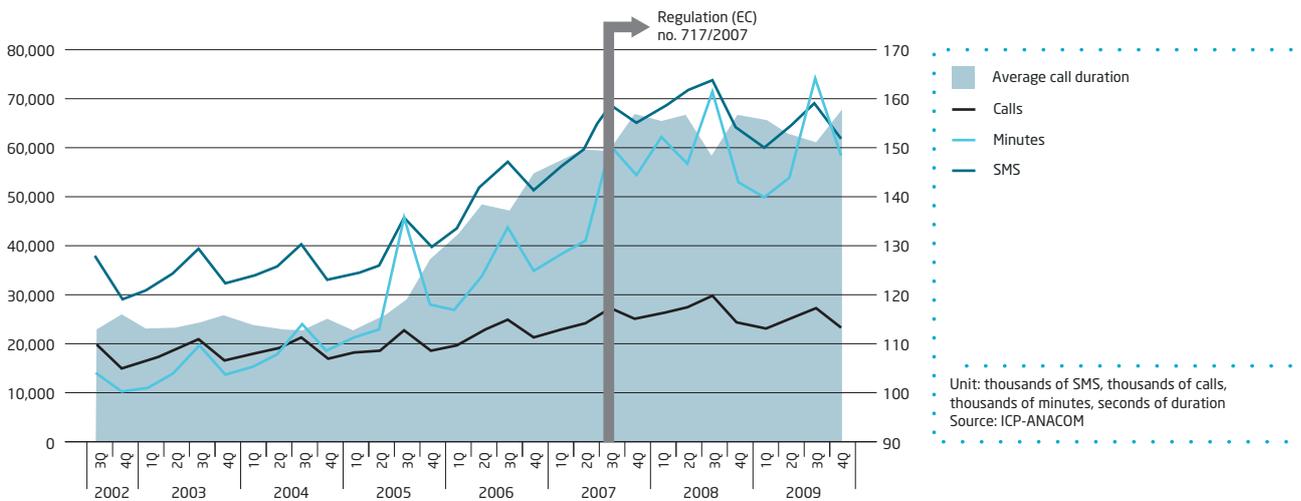
- The number of SMS increased, on average by 17 % per quarter⁷⁷. (It is noted that the operators anticipated the extension of the regulation to SMS and reduced pricing).

⁷⁶ See www.anacom.pt at Home Page > Legislation > EUROPEAN UNION LAW > I. Electronic communications > Roaming on public mobile telephone networks within the Community > Regulation EC no. 717/2007 of the European Parliament and of the Council, of 27.6.2007

⁷⁷ A linear regression model was used, estimated using the following significant independent variables at a 95 % confidence level: rising linear trend (t), dummy with respect to structure change from 3rd quarter 2007 (with entry of regulation under analysis) with positive impact and seasonal dummy for 3rd quarter with positive coefficient. The adjusted determination coefficient is 0.951, showing that the independent variables included in the estimate explain 95 % of the dependent variable in question (number of SMS).

- The number of calls increased by 9 % on average terms⁷⁸; As stated above, the positive impact of the entry into force of the Regulation did not stop the net effect of various factors which gave rise to a negative trend in call traffic.
- Trend in total duration (traffic measured in minutes) and average of calls in roaming out changed direction from a steepening growth trend (positive quadratic trend) to a slightly declining trend (negative quadratic trend) upon the regulation's entry into force⁷⁹.

Quarterly evolution in the use of SMS, calls, minutes and average duration of calls in roaming out
| Graph 102



Note: The econometric analysis of the different series considered the period between 3rd quarter 2002 and 4th quarter 2009.

Data services

Among data services, sending multimedia messages (MMS) continues to be the 3G service generating the most use

(33.2 % of mobile users). Internet access from the mobile phone has been reported as the 3G service with an increase in the number of users.

78 A linear regression model was used, estimated using the following significant independent variables at a 95 % confidence level: rising linear trend (t), dummy with respect to structure change from 3rd quarter 2007 (with entry of regulation under analysis) with positive coefficient and seasonal dummies for 3rd quarter (associated with positive coefficient). The adjusted determination coefficient is 0. 874, showing that the independent variables included in the estimate explain 87 % of the dependent variable in question (number of calls).

79 To estimate the total duration of calls, the linear regression model was used, estimated using the following significant independent variables at a 95 % confidence level: positive quadratic trend (t1 and t12) up to 3rd quarter 2007, negative quadratic trend (t2 and t22) from 3rd quarter 2007 and seasonal dummies for 2nd and 3rd quarter (associated with positive coefficient). The adjusted determination coefficient is 0. 977, showing that the independent variables included in the estimate explain 98 % of the dependent variable in question. The estimation of average duration of calls use the same significant variables, with differences only in the seasonal dummies, with only the dummy referring to the 3rd quarter deemed significant, with only the period from s005 considered (with a negative coefficient). The adjusted determination coefficient is 0. 977, showing that the independent variables included in the estimate explain 98 % of the dependent variable in question.

Services used with the 3G mobile phone | Table 93

(use in last month)	Dec. 2008	Dec. 2009
MMS	37.8	33.2
Video calls	11.4 *	6.4 *
Access to the operator's portal	7.9 #	5.4 #
Access to the Internet (via mobile phone)	9.0 *	11.2 *
Access to e-mail	4.8 #	4.1 #
Use of mobile TV	-	1.2 #
Music download	9.9 *	3.0 #
Video download	5.7 #	1.2 #
None of the above	52.7	60.8

Unit: %

Source: ICP-ANACOM, *Inquérito ao Consumo das Comunicações Eletrónicas* (Electronic communications consumer Survey), December 2008 and 2009
Base: Individuals, 15 years of age or older with 3G mobile phone, with this the most used.

Note 1: Multiple choice question in both periods

Note 2: The coefficient of variation is considered as sampling error indicator, based on the variance of the "proportion" estimator of a simple random sample and assuming a significance level of 95 %. The following key is used:

(#) Coefficient of variation greater than or equal to 25 % (unreliable estimate)

(*) Coefficient of variation greater than or equal to 10 % and less than 25 % (acceptable estimate)

(no symbol) Coefficient of variation less than 10 % (reliable estimate)

However, as seen previously, there is great dispersal in the use of data services.

The evolution of the main data services is presented below.

MMS Traffic

Multimedia messages traffic, known as MMS, reported a significant increase in 2009, although the number of MMS per subscriber remained small.

MMS originating in own network | Table 94

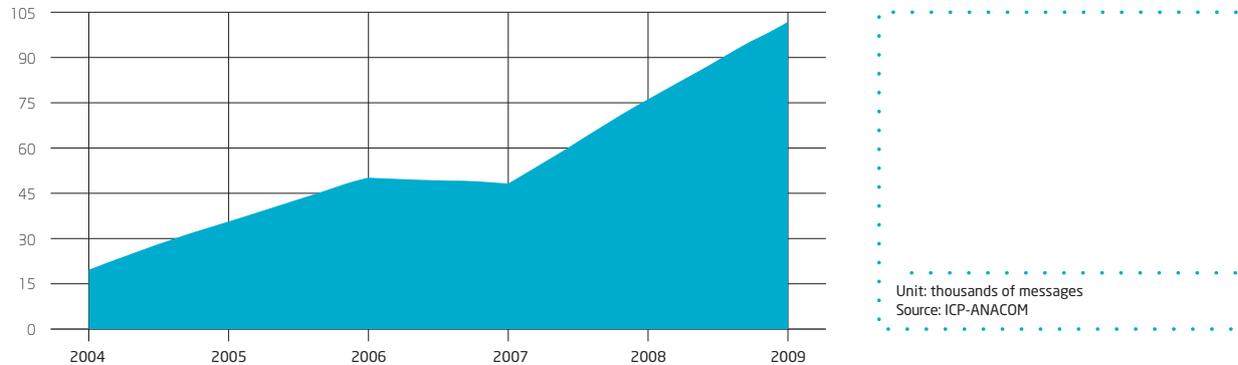
	2008	2009	Var. 2008/2009	Annual average var. 2005/2009	Accumulated var. 2005/2009
Number of multimedia messages	76,846	102,444	33.3 %	30.0 %	185.7 %

Unit: milhares de mensagens, %
Source: ICP-ANACOM

It should be noted that the use of this service requires compatible terminal equipment. In the case of the user

receiving the call, it is also possible to consult the message on the operator's website.

Evolution in the number of MMS sent | Graph 103



When compared with the volume of SMS, MMS volume is very low.

Video telephony

The video telephony service demonstrates a level of traffic which is still in the early stages of growth, although significant variation was recorded in 2009.

Video call traffic | Table 95

	2007	2008	2009	Var. 2008/2009
Number of video calls	3,569	4,942	5,375	8.8 %
Volume of video calls traffic	5,842	14,352	21,717	51.3 %

Unit: thousand calls, thousand minutes, %
Source: ICP-ANACOM

It should be mentioned that the use of this service also requires compatible terminal equipment.

On the other hand, according to the results of the evaluation of the quality of the video telephony service (UMTS) in the main urban centres and on the major roads of Mainland Portugal, carried out by ICP-ANACOM in September and October 2009²⁴, the performance of the video telephony service continues to improve, especially in terms of the Accessibility of Service indicator.

Mobile TV

The Mobile TV service was introduced in 2006.

The number of users of this service levelled off in 2009, with 496 thousand users reported at the end of the year, representing 3 % of the total subscribers and 19.2 % of active users of 3G services.

Mobile TV users | Table 96

	2008	2009	Var. 2008/2009
Number of Mobile TV users	501	496	-1.0 %

Unit: thousands of users, %
Source: ICP-ANACOM

WAP

The data volumes of services provided using the WAP protocol reported an increase in 2009 of 8.3 % over the previous year. Despite average traffic per session increasing

by around 26 %, the number of session fell by 14.3 %. This trend may be related to the development of 3G services (covered in the chapter on the Internet Access Service).

Accesses to data services | Table 97

	2008	2009	Var. 2008/2009
APN WAP sessions	174,386	149,522	-14.3 %
Volume of APN WAP sessions (MB)	26,971	29,221	8.3 %

Unit: thousand sessions, thousand MB, %
Source: ICP-ANACOM

Service revenue and average revenue per subscriber⁸⁰

The volume of revenues from the service to customers reached totalled 2.72 billion euros, representing an increase of 0.1 % over the previous year.

⁸⁰ The figures reported are based on data compiled from operators.

Revenues from the provision of the service to customers | Table 98

	2008		2009		Var.
	Absolute value	%	Absolute value	%	2008 / 2009
Revenue from monthly fees (subscriptions and additional services)	159,299	5.9 %	203,975	7.5 %	28.0 %
Revenue from voice communications	1,857,964	68.4 %	1,730,798	63.7 %	-6.8 %
of which revenue from roaming out	151,755	5.6 %	122,082	4.5 %	-19.6 %
Revenue from message services	258,220	9.5 %	239,763	8.8 %	-7.1 %
of which revenue from MMS	13,316	0.5 %	14,392	0.5 %	8.1 %
Revenue from mobile data services	346,306	12.7 %	429,638	15.8 %	24.1 %
Other revenues excluding sales of equipment (with respect to portability)	64,414	2.4 %	78,054	2.9 %	21.2 %
Revenue from the provision of the service to customers	2,717,396		2,720,935		0.1 %

Source: ICP-ANACOM
Unit: thousands of euros, %

Note: The figures presented differ from those previously released due to corrections made by the operators. Revenues from services to operators and the sale of equipment are not included.

The growth in revenues was fuelled by data services, particularly by mobile broadband Internet access. Data services now count for around 15.8 of the total revenue, 3.1 % points more than in the previous year.

The reduction in roaming tariffs imposed by the EU (see the section on roaming traffic) may have affected the revenues derived from this traffic, which declined 19.6 % in relation to the previous year. This decline occurred alongside a fall in

traffic (-7.8 % in terms of calls and minutes and -2.7 % in terms of messages).

According to the data available, it is estimated that the average monthly revenue derived per subscriber fell around 7.8 % in 2009 and 17.5 % since 2005.

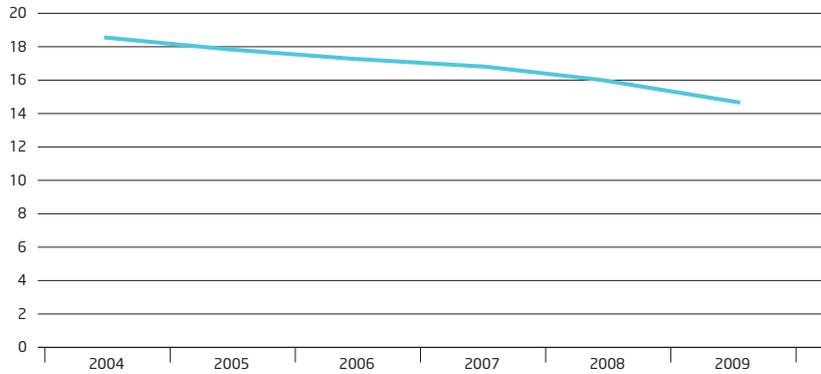
Average monthly revenue per subscriber | Table 99

	2005	2006	2007	2008	2009	Var. 2008 / 2009
Average monthly revenue per average subscriber	17.79 €	17.30 €	16.84 €	15.97 €	14.68 €	-7.8 %

Unit: euros, %
Source: ICP-ANACOM

Note: Calculations made with the figures reported for revenue derived from service to customers, excluding the sale of equipment and average number of subscribers in the year.

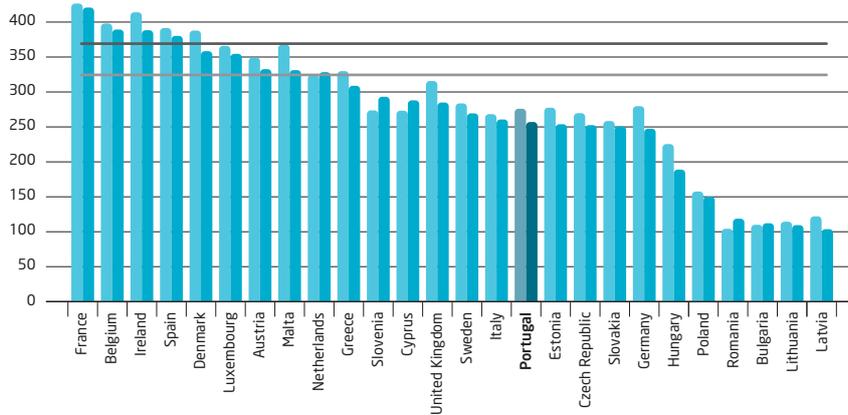
Evolution in average monthly revenue per subscriber | Graph 104



Unit: euros
Source: ICP-ANACOM

In relation to the other EU countries, in 2008, the average revenue per subscriber calculated in Portugal was very similar to the average.

Average annual revenue per user in the EU 2008 | Graph 105



Unit: euros
Source: European Commission, Progress report on the single European market in electronic communications in 2009 (15th Report).

Note: Equipment subsidies not included in Slovakia, Spain, France, Italy, Lithuania, Portugal and Sweden.

3.3.4. Consumer evaluation

In order to evaluate consumer perceptions as to the quality of the MTS, some items from the *Inquérito ao Consumo das Comunicações Eletrônicas* (Electronic communications consumer survey) of December 2009 are presented below.

In general terms, and according to this survey, MTS consumers are satisfied with the service provided by their provider, with 81 % of respondents giving an evaluation equal to or greater than 7 (on a scale of 1 - very dissatisfied to 10 very satisfied).

Level of satisfaction with the service provided by their operator | Table 100

	Dec. 2008	Dec. 2009
Negative (1 to 4)	2.4 *	2.8 *
Low positive (5 and 6)	21.3	16.5
Medium positive (7 and 8)	61.2	52.8
Highly positive (9 and 10)	15.2	27.9
Total	100	100

Unit: %

Source: ICP-ANACOM, *Inquérito ao Consumo das Comunicações Eletrônicas*, December 2008 and 2009

Base: Individuals, 15 years of age or older with access to mobile telephone service (not including non-responses).

Note 1: Original scale: 1: very dissatisfied; ...; 10: very satisfied

Note 2: The coefficient of variation is considered as sampling error indicator, based on the variance of the "proportion" estimator of a simple random sample and assuming a significance level of 95 %. The following key is used:

(#) Coefficient of variation greater than or equal to 25 % (unreliable estimate)

(*) Coefficient of variation greater than or equal to 10 % and less than 25 % (acceptable estimate)

(no symbol) Coefficient of variation less than 10 % (reliable estimate)

For this reason it is not common for consumers to make complaints to their operators. Overall, and according to the surveys of previous years, 1 out of every 8 users have

complained to their mobile operators since becoming their customers.

Complaints to the main operator (in the last 12 months) | Table 101

	Dec. 2008	Dec. 2009
Yes	3.6 *	4.6 *
No	96.3	95.1
Don't know/No response	0.0	0.3
Total	100	100

Unit: %

Source: ICP-ANACOM, *Inquérito ao Consumo das Comunicações Eletrônicas*, December 2008 and 2009

Base: Individuals, 15 years of age or older with access to mobile telephone service.

Note: The coefficient of variation is considered as sampling error indicator, based on the variance of the "proportion" estimator of a simple random sample and assuming a significance level of 95 %. The following key is used:

(#) Coefficient of variation greater than or equal to 25 % (unreliable estimate)

(*) Coefficient of variation greater than or equal to 10 % and less than 25 % (acceptable estimate)

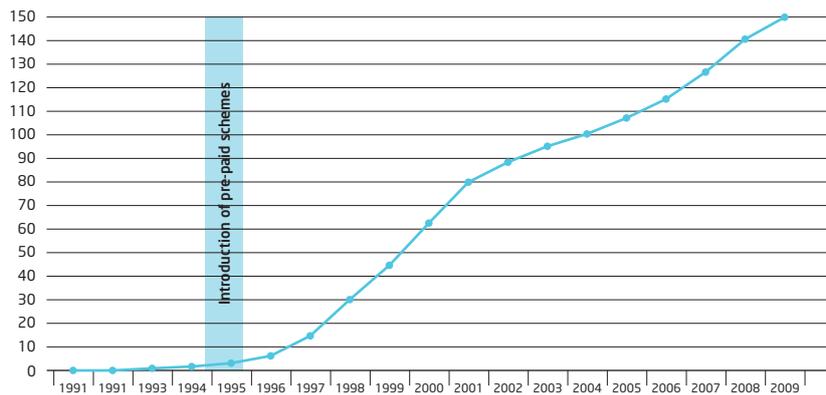
(no symbol) Coefficient of variation less than 10 % (reliable estimate)

3.4. Service penetration

MTS penetration in Portugal once again reached very high levels this year. By the end of 2009, the rate of

penetration of the service had increased to 149.9 per 100 inhabitants.

MTS penetration in Portugal | Graph 106



Unit: subscribers per 100 inhabitants
Source: ICP-ANACOM

It is noted that, according to *Inquérito ao Consumo das Comunicações Electrónicas* (Electronic communications consumer survey) of December 2009, around 92.4 % of those residing in Portugal were MTS customers.

The difference between the penetration indicated above, on one hand, and the responses to the cited survey are due to a number of factors, for example:

- The fact that there are users with more than one active card;

Number of active cards | Table 102

	Dec. 2008	Dec. 2009
1 card	90.6	92.4
2 cards	8.5 *	6.5 *
3 or more cards	0.8 #	1.1 #
Total	100	100

Unit: %
Source: ICP-ANACOM, *Inquérito ao Consumo das Comunicações Electrónicas*, December 2008 and 2009
Base: Individuals, 15 years of age or older with access to mobile telephone service (non-responses not included).

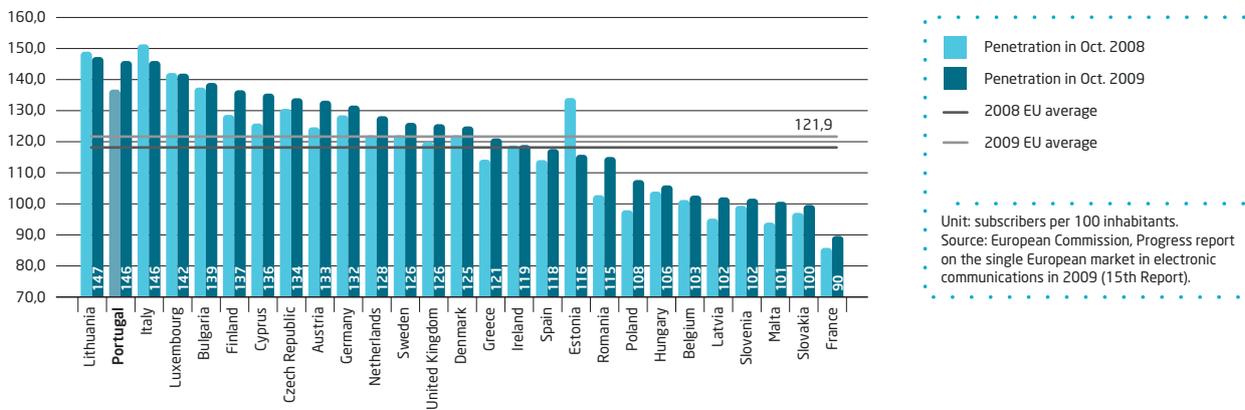
Note: The coefficient of variation is considered as sampling error indicator, based on the variance of the "proportion" estimator of a simple random sample and assuming a significance level of 95 %. The following key is used:
(#) Coefficient of variation greater than or equal to 25 % (unreliable estimate)
(*) Coefficient of variation greater than or equal to 10 % and less than 25 % (acceptable estimate)
(no symbol) Coefficient of variation less than 10 % (reliable estimate)

- The activation of new SIM cards for the exclusive use of data services and access to the Internet;
- The fact that there are active cards connected to machines, equipment and vehicles (automatic payment terminals using the mobile network, alarm, security, telemetry and telemetric equipment, etc.);

- The fact that there are cards connected to companies.

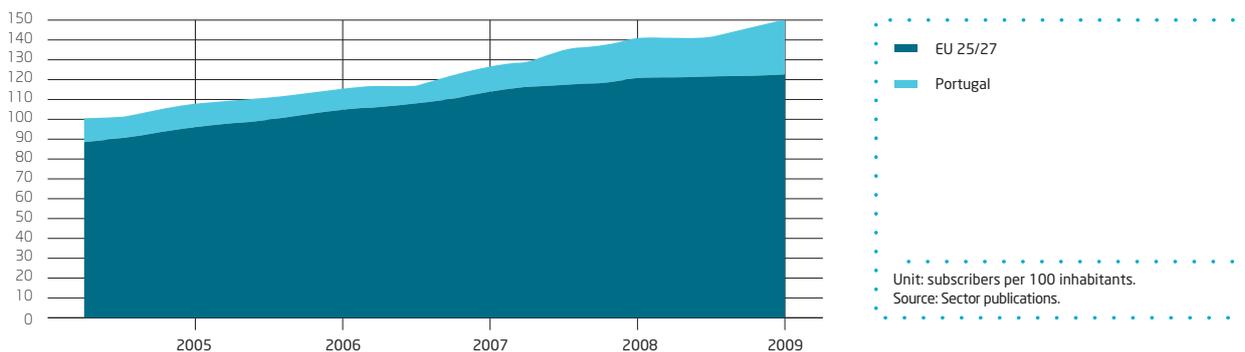
MTS penetration reported in 2009 remains above EU average, ranking 2nd among the 27 EU countries.

MTS penetration in the EU | Graph 107



MTS penetration in Portugal has been consistently above the EU average.

Evolution of MTS penetration in Portugal and in the EU | Graph 108



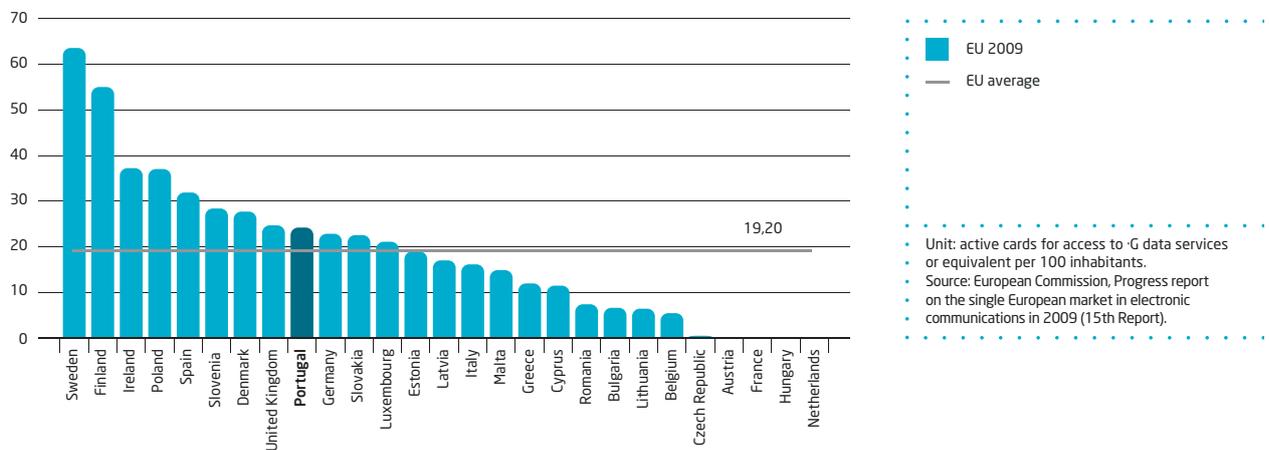
Note: for the periods prior to 2007, only the countries of the EU25 are considered.

The growth in MTS penetration and its evolution in relation to the European average has been influenced, in particular, by the rapid introduction of GSM services in Portugal, by the low penetration of the FTS, by investment in terms of marketing and by the introduction of innovations by the operators who are present in the market (especially, innovations in terms of tariffs). In particular, the introduction of pre-paid offers, together with the simplification of the administrative process associated with the purchase and activation of a mobile phone, have allowed for the widespread use of the

service and “democratization” of mobile phone use, which has been transformed from a status symbol into a regular commodity available to all.

According to the EC, at the end of 2009, Portugal was in 9th place among the EU27 countries in terms of penetration of users of mobile broadband (i.e. users with active cards who use the 3rd generation services such as access to Internet content, multi-player games, VoD or other equivalent data services, excluding SMS and MMS).

UMTS penetration in the EU27 - 2009 | Graph 109



Note: Information not available for Austria, France, Hungary and Netherlands.

II - The mobile home

According to the *Inquérito ao Consumo dos Serviços de Comunicações Electrónicas* (Electronic Communications Services Consumer Survey) promoted by ICP-ANACOM in

December 2009⁸¹, 45 % of Portuguese households do not use the fixed telephone service. The main reason indicated by these respondents for not subscribing to the fixed telephone service is the fact that they use the mobile telephone service.

Main reason for the household not accessing the fixed telephone service (FTS) | Graph 110



Base: Total family households.

Note 1: The coefficient of variation is considered as sampling error indicator, based on the variance of the "proportion" estimator of a simple random sample and assuming a significance level of 95 %. The following key is used:

- (#) Coefficient of variation greater than or equal to 25 % (unreliable estimate)
- (*) Coefficient of variation greater than or equal to 10 % and less than 25 % (acceptable estimate)
- (no symbol) Coefficient of variation less than 10 % (reliable estimate)

It is therefore estimated that around 1/4 of Portuguese households do not use the fixed telephone service in their homes because they use the mobile telephone service. These cases are designated here as 'mobile homes'. It is also noted that 43 % of 'mobile homes' are former subscribers to the fixed telephone service.

According to the *Inquérito ao Consumo dos Serviços de Comunicações Electrónicas* (Electronic Communications Services Consumer Survey), conducted of the residential population, individuals living alone and who reside in the Autonomous Region of Madeira or in the North Region of Mainland Portugal in areas of lower population density (2,000 to 5,000 inhabitants) have a greater propensity to be in a 'mobile home'.

According to the most recent data from the EC⁸², the % of Portuguese households that only use the mobile phone is much higher than the EU27 average.

In contrast, there are the households resident in more densely populated areas (over 100 thousand inhabitants), specifically the Lisbon Region, composed of two individuals where elderly people cohabit. In these cases the incidence of 'mobile homes' is significantly below the overall average.

Taking into account the importance of mobile homes in Portugal, an attempt will be made below to characterize these homes in socio-economic and demographic terms. In fact, the incidence of mobile homes presents significant differences in terms of region and family structure.

81 The universe is composed of individuals of 15 years or more who reside in private housing units located in Mainland Portugal or in the Autonomous Regions (Azores and Madeira). The sample is representative at the level of NUTS II (with sampling errors not exceeding 5.5 % points for the smaller regions - Alentejo, Algarve, A.R. Azores and A.R. Madeira and not exceeding 4.5 for the others) having been composed of 3,106 interviews. Households were selected by means of proportional stratified random sampling according to the crossing of the NUTS II Region variables and the size of the household. Within each household one individual was selected by means of sampling by quotas guaranteeing the marginal totals of the sex, age class, level of education and employment status variables, according to the General Population Census (2001) of INE - *Instituto Nacional de Estatística* (Statistics Portugal). Information compilation was performed using CAPI - Computer Assisted Personal Interviewing between 6 November and 20 December 2009. The results regarding the Mobile Telephone Service are based on the universe of the individuals and present a maximum margin of error of less than 2 p.p. (with a degree of reliability of 95 %). The results regarding the Fixed Telephone Service, internet Service and paid Television Service are based on the universe of the households and present a maximum margin of error of less than 2.6 p.p. (with a level of reliability of 95 %). Fieldwork and data processing was performed by the company GfK Metris.

82 CE, Eurobarometer 66.3 (E-Communications Household Survey, Junho 2008).

Percentage of mobile homes per region, family structure and social class | Table 103

NUTS I Region	North	27.4	Social class	A/B	22.9 *	
	Centre	23.6 *		C	25.6 *	
	Lisbon	19.3 *		D	23.5	
	Alentejo	27.0 *		E	24.1 *	
	Algarve	23.3 *		Less than 2,000 inhabitants	24.4	
	Azores	11.0 #	2,000 to 4,999 inhabitants	29.4 *		
	Madeira	30.7 *	5,000 to 9,999 inhabitants	22.3 *		
Family size	1 individual	30.1 *	Population	10,000 to 99,999 inhabitants	24.4 *	
	2 individuals	20.5 *		100,000 + inhabitants	17.9 *	
	3 individuals	22.8 *		Household with children		27.7 *
	4 or more individual	24.2 *		Household with elderly persons		17.1 *
	Total					23,8

Unit: %

Source: ICP-ANACOM, *Inquérito ao Consumo das Comunicações Eletrónicas* (Electronic Communications Services Consumer Survey), December 2009

Base: Total households with relevant characteristics.

Note 1: The coefficient of variation is considered as sampling error indicator, based on the variance of the "proportion" estimator of a simple random sample and assuming a significance level of 95 %. The following key is used:

(#)Coefficient of variation greater than or equal to 25 % (unreliable estimate)

(*)Coefficient of variation greater than or equal to 10 % and less than 25 % (acceptable estimate)

(no symbol) Coefficient of variation less than 10 % (reliable estimate)

Note 2: Social class is determined according to the level of education and profession of the highest paid individual in the household. Social class A is the highest and social class D is the lowest.

Note 3: The proportions highlighted in blue indicate those that are significantly different (column) in accordance with the test of two samples for proportions. Higher proportions are highlighted in light blue and lower proportions in dark blue.

The phenomenon of the "mobile home" is also more common in the groups of individual respondents aged 25 to 44 who are employed and with an education level equal to or above secondary level. In the groups of older, retired or otherwise

inactive individuals, and with a lower level of education, this phenomenon is not very marked.

Percentage of mobile homes by characteristics of individual respondent | Table 104

Employment Status	Employed	27.3
	Student	26.7 *
	Unemployed	26.7 *
	Retired	16.5 *
	Other inactive	17.9 *
	Level of education	Higher education
	Secondary education	26.1 *
	3rd stage primary	23.5 *
	2nd stage primary	31.4 *
	1st stage primary or less	20.2 *
Age group	15-24 years	25.5 *
	25-34 years	30.6 *
	35-44 years	28.7 *
	45-54 years	23.6 *
	55-64 years	18.9 *
	65 years or more	16.3 *
Total		23.8

Unit: %

Source: ICP-ANACOM, *Inquérito ao Consumo das Comunicações Electrónicas* (Electronic Communications Services Consumer Survey), December 2009

Base: Total households with relevant characteristics.

Note 1: The coefficient of variation is considered as sampling error indicator, based on the variance of the "proportion" estimator of a simple random sample and assuming a significance level of 95 %. The following key is used:

(#)Coefficient of variation greater than or equal to 25 % (unreliable estimate)

(*)Coefficient of variation greater than or equal to 10 % and less than 25 % (acceptable estimate)

(no symbol) Coefficient of variation less than 10 % (reliable estimate)

Note 2: The proportions highlighted in blue indicate those that are significantly different (column) in accordance with the test of two samples for proportions. Higher proportions are highlighted in light blue and lower proportions in dark blue.