

## ● 4. Mobile telephone service (MTS)

This chapter shows the state of the MTS at the end of 2008 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 2008 is presented below.

### Main aspects of the evolution of the service in 2008

- At the end of 2008, MTS penetration reached 140.4 per 100 inhabitants, one of the highest among the EU countries. MTS penetration recorded in 2008 continued to be above the EU average, ranking 5th among the 27 EU countries. However, service penetration growth was below the EU average.
- A very significant growth in UMTS users was recorded in 2008. At the end of the year, these users represented 29 per cent 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.
- In the year under analysis a tender was launched for the granting of another service provider license, with RNT being granted the right to use frequencies. However, taking into account that this entity did not comply with the legal requirements set out in the Tender Regulations, the license was not granted.
- On the other hand, the entry of one more service provider was recorded – ZON –, which uses the Vodafone network.
- The level of usage of voice services also recorded stronger growth than in the previous year (6.7 per cent in terms of calls and 11.9 per cent in terms of minutes). This growth is, however, lower than the growth in the number of subscribers in Portugal.
- 2008 once again recorded an increase in the number of text messages sent, although this was less significant

than in previous years. The volume of SMS increased 25.6 per cent in relation to the previous year. This upward trend in SMS, which began in mid 2005, was boosted by the mobile operators' promotional campaigns.

- The relatively new MMS, video telephony and Mobile TV services have seen high growth rates, although their penetration rate is still low. However, Mobile TV can be highlighted, with a total of 423 thousand users at the end of the year. This figure corresponds to around 2.8 per cent of total subscribers and 33 per cent of users of active 3G services.
- Revenue from the service to clients reached 2.7 billion Euros, this figure being slightly higher than that recorded in the previous year. The growth recorded was mostly in data transmission services, in particular internet and mobile portal access and SMS. The revenue 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.

### 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 radio means and the terminal equipment is mobile.

The service is provided by entities with a license for that purpose, since the use of frequencies is dependent on the granting of individual rights of use<sup>42</sup>, 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.

### MTS

The 1st generation (1G) of the mobile service was exclusively designed for voice communications. It used analogue signals and a transmission technique based on

<sup>42</sup> Cf. no. 3 of article 19 of Law no. 5/2004 of 10 February.

Frequency Division Multiple Access (FDMA)<sup>43</sup>. This transmission technique allocates a frequency band to each channel. 1G is identified with the analogue systems. In Portugal this service was provided by TMN from 1989 and terminated on 30 October 1999.

The 2nd generation (2G) uses the European Telecommunications Standards Institute's (ETSI) Global System for Mobile Communications / Digital Communications System (GSM/DCS) standards. It operates in the 900 MHz (GSM) and 1800 MHz (DCS) bands, using digital technology and providing access to low rate data services (e.g. fax and e-mail), besides voice. 2G enables the development of data transmission services and uses a more efficient technique regarding spectrum use, based on Time Division Multiple Access (TDMA)<sup>44</sup>.

GSM, which also made international roaming possible, has been hugely successful as a wireless technology and has had an unprecedented history of international acceptance. GSM networks had a very fast and broad geographical roll-out and are currently in around 219<sup>45</sup> countries and territories. Currently, GSM technology is used by a quarter of the world population and represents around 80 per cent of mobile communications technologies worldwide<sup>46</sup>.

Besides voice services, it should be mentioned, in particular, that GSM has enabled the development of the SMS<sup>47</sup> text messages service, a feature which makes it possible to send and receive short text messages, with alphanumeric characters, between mobile phones.

The technical specificities of this platform (narrowband) and the limitations of the terminal equipment (small screen, keyboard, battery life and limited memory and data processing capacity), although they have facilitated mobility on a large scale, do not allow access to the internet via a mobile phone to be identical to access from a personal

computer connected to a fixed telephone network. The GSM platform was, however, improved and developed to encompass a progressively broader offer of voice and data services.

Within this framework, 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)<sup>48</sup>, made it possible for there to be standardized communication between a mobile phone and a server installed in 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, *per se*. Among its main limitations are the slow access to the information sought and the fact that the content on offer is very specific and not particularly diversified.

The limitations of the aforementioned standards led to the development of the 2+ generation of mobile networks. Thus, we saw the introduction and development, from the GSM, of technologies aimed at supporting data services, such as GPRS<sup>49</sup> and Enhanced Data for GSM Environment (EDGE)<sup>50</sup>, which enabled the provision of mobile data services of greater quality, in terms of capacity and processing speed (from the 9.6 kbps transmission rates, 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 features, the mobile operators have made available, respectively, the Enhanced Messaging Service (EMS) and Multimedia Messaging Service (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 rings 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

<sup>43</sup> Interference-free access system that grants different frequencies to each user for access.

<sup>44</sup> Interference-free access system in which several users simultaneously access a single radio frequency by parting it into channels (time slots). Unlike FDMA, this system multiplies the frequency's capacity by dividing its use in time.

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

<sup>46</sup> According to information from GSM Association/Wireless Intelligence in the 1st quarter of 2007 there were 2392.76 million connections to GSM networks (<http://www.gsmworld.com/news/statistics/index.shtml>).

<sup>47</sup> This service was created during Phase 1 of the GSM standard.

<sup>48</sup> It is 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.

<sup>49</sup> Evolution of the GSM system, based on packet-switching, which enables transmission at speeds up to 115 kbps.

<sup>50</sup> Evolution of the GSM system which enables transmission at speeds up to 384 kbps.

for sending and receiving messages that include text, sounds, image and videos. It thus became possible to send moving messages and videos.

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

On the other hand, by enabling data communication without requiring a voice channel to be established, they make it possible to define tariffs guided by the volume of traffic and no longer 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).

3G, also digital, was designed for the convergence of fixed and mobile communications and multimedia, by making mobile networks closer to fixed ones with regard to capacity, and giving mobile users access to multimedia services at speeds of 384Kbps and above, for voice and data services.

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

UMTS technology uses the Wideband Code Division Multiple Access<sup>51</sup> (WCDMA) transmission mode, which is based on multiple access by code division. Although it is different from those used in the GSM/GPRS networks, this technology – which requires the development of complex networks and systems – was designed to be fully GSM compliant. The number of WCDMA subscribers worldwide at the end of 2008 was estimated to be around 287 million, corresponding to an annual growth rate of 55.4 per cent<sup>52</sup>.

UMTS makes it possible to offer advanced mobile multimedia services, regardless of the location of the user, which enables the development of new services and applications: internet-based services, e-commerce, location-dependent services, transmission of photographs directly from cameras (via the Bluetooth<sup>53</sup> protocol), transmission of live video, remote monitoring of persons and vehicles and downloading of games and music.

Modern mobile phones have countless functions: beyond phone calls, they give access to a variety of services that increase the flexibility of mobile communications, in particular call-waiting and call-on-hold, call re-routing, 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 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 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 HSPA (High Speed Packet Access) 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 14.4Mbits/s. However, the currently installed systems and terminals can only support speeds of 7.2 Mbits/s, while

<sup>51</sup> Broadband access system in which several users share the same frequency band through different codes assigned to each of them.

<sup>52</sup> <http://www.gsacom.com/news/statistics.php4>.

<sup>53</sup> 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.

typical speeds are around 0.5 to 1.5 Mbits/s. For operational reasons, some providers introduce a lower limit than the maximum that the terminals can transfer. Currently over 259 networks in 111 countries across the world support HSDPA<sup>54</sup>. It is estimated that by September 2008, the number of subscriptions worldwide will be 82.8 million.

Concerning HSUPA (uplink), this 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 the 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.

In Portugal, offers based on HSDPA appeared in March 2006 with a speed of 1.8Mbps. In September of the same year rates evolved to 3.6Mbps using USB connection modems, in addition to PCMCIA cards. In November 2006 there was an evolution to speeds of 7.2Mbps. Services based on 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.

Within the scope of mobile broadband, in 2009 trials with HSPA+ have already been announced and launched, using the most recent modulation techniques of 64QAM (Quadrature Amplitude Modulation), making it possible to surf the internet while mobile with a theoretical speed of up to 21.6 Mbps. The maximum theoretical speeds may reach 28.8 Mbps with the MIMO (Multiple Input Multiple Output) function which uses several aerials at the base stations and in the data equipment.

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

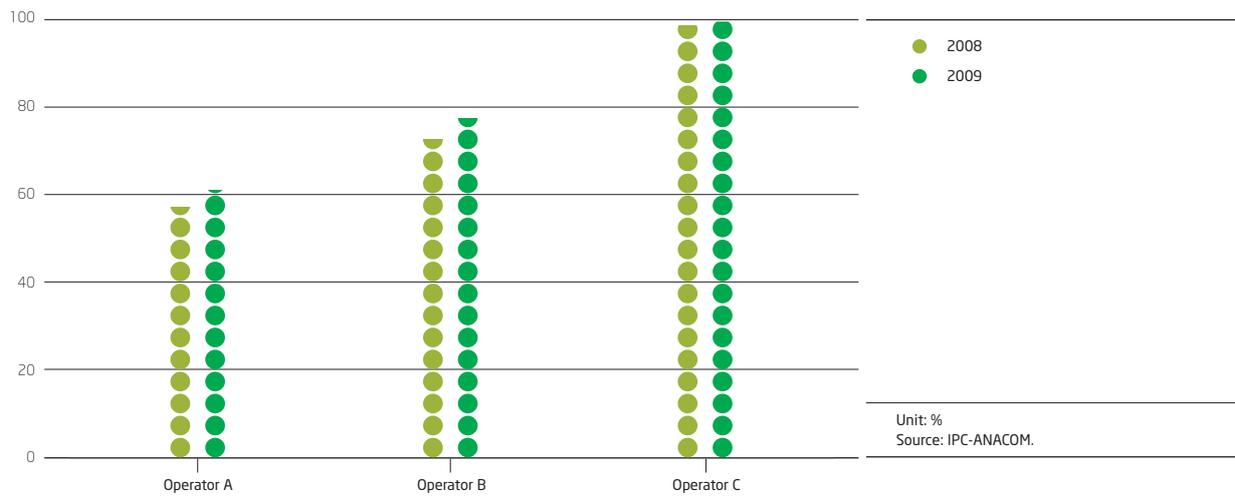
### **Geographic availability of the service**

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

On the other hand, and in line with that which is established in the UMTS licenses, MTS providers are obliged to cover the Portuguese territory in terms of population according to the following graph:

<sup>54</sup> <http://www.gsacom.com/news/statistics.php4>,  
[http://www.gsacom.com/downloads/pdf/GSA\\_GSM\\_3G\\_Network\\_Update\\_Feb2009.php4](http://www.gsacom.com/downloads/pdf/GSA_GSM_3G_Network_Update_Feb2009.php4)

**Theoretical population cover for transmission rates of 144 kbps**  
Graph 4.1



Regarding the different MTS access technologies, there is currently a wide cover in terms of 3G (WCDMA) in most of the cities. However, regarding major roads, the cover is low according to the results of studies to evaluate the quality of the service carried out by ICP-ANACOM<sup>55</sup>. The most recent study conducted in the Autonomous Regions also revealed that WCDMA cover in the Azores is low.

### MTS providers

MTS was first offered in Portugal in 1989 by the consortium made up of CTT – Correios de Portugal S. A. 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 the C-450 analogue technology.

In March 1991 there was a public tender to grant a license for the provision of MTS via GSM technology. This license was granted to Telecel – Comunicações Pessoais, S.A. 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 2021<sup>56</sup>.

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 to use the 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 2022<sup>57</sup>. The general conditions associated with the offer of the service and the conditions associated with the right to use frequencies were also 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 900MHz and 1800MHz frequency bands, respectively. Following that tender, a license was awarded to Optimus – Telecomunicações, S.A. Optimus began its commercial offer in August 1998. It should be mentioned that a determination of 24 October 2007 approved the final decision regarding the request for authorization to transmit rights to use frequencies and numbers assigned to OPTIMUS to the ownership of NOVIS<sup>58</sup>.

<sup>55</sup> <http://www.anacom.pt/template12.jsp?categoryId=237202> and <http://www.anacom.pt/template20.jsp?categoryId=1643&contentId=553755>

<sup>56</sup> [http://www.anacom.pt/streaming/licenca\\_vodafone\\_01\\_2006.pdf?contentId=384041&field=ATTACHED\\_FILE](http://www.anacom.pt/streaming/licenca_vodafone_01_2006.pdf?contentId=384041&field=ATTACHED_FILE)

<sup>57</sup> [http://www.anacom.pt/streaming/tmn\\_01\\_2007.pdf?categoryId=236363&contentId=462322&field=ATTACHED\\_FILE](http://www.anacom.pt/streaming/tmn_01_2007.pdf?categoryId=236363&contentId=462322&field=ATTACHED_FILE)

<sup>58</sup> [http://www.anacom.pt/streaming/decisaofinal24102007.pdf?categoryId=256662&contentId=531021&field=ATTACHED\\_FILE](http://www.anacom.pt/streaming/decisaofinal24102007.pdf?categoryId=256662&contentId=531021&field=ATTACHED_FILE)

### 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 – Comunicações Pessoais, SA (now Vodafone), TMN – Telecomunicações Móveis Nacionais, SA, OniWay – Infocomunicações, SA and Optimus – Telecomunicações, SA.

3G commercial 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).

### Licensing in the 450-470MHz band

On 4 October 2007 a public consultation was launched regarding the rights of frequency use in the 450-470MHz band to offer the publicly available terrestrial mobile service (MTS). Broadly, the document proposed granting this right of use to a single entity, establishing the form of a public tender as the procedure for granting this right of frequency use and granting individual rights of frequency use in the 450-470MHz band for the offer of the publicly available MTS at the request of mobile service providers with shared resources (trunking) at the end of the aforementioned public tender. This decision resulted from spectrum availability and sought to promote competition.

On 7 August 2008, the regulations for the public tender and the respective specifications were approved, and the tender was then launched.

In 2009, the Board of ICP-ANACOM approved the proposal to grant the right of frequency use, nationally, in the 450-470 MHz band to RNT - Rede Nacional de Telecomunicações, S.A., to offer the public terrestrial mobile service. RNT later requested, on two occasions, postponement of the deadline to comply with the obligations of top-up and provision of

collateral by which it was bound. ICP-ANACOM granted the first postponement, but denied the second.

### Mobile Virtual Network Operators (MVNO)

On 9 February 2007, ICP-ANACOM defined the regulatory framework for the MVNOS.

The activity of the mobile virtual network operator (MVNO<sup>59</sup>) 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 to use numbers. The MVNOS do not use rights of use of frequencies or their own infrastructures associated with the radio access network. They use radio means 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 thus have direct customers, i.e. they are solely responsible for the relationship with the end customer and design and market their own retail offer, with freedom to distinguish it from that of the operator they use, by defining their own commercial strategy.

It should be mentioned that on 30 November 2007, CTT – Correios de Portugal, S.A., 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 aforementioned entities, authorization statements were also issued to Companhia Portuguesa de Hipermercados, SA (Auchan) and ACP – Comunicações Electrónicas, Unipessoal, Lda. These entities did not begin

<sup>59</sup> Mobile Virtual Network Operator.

their activity during 2008, and have since lost the right to use the previously reserved number range.

### Current situation

As previously mentioned, the provider ZON TV Cabo entered these markets in 2008, and provides the mobile telephone service using the Vodafone network.

There are, therefore, 5 entities providing these services, as can be seen in the following table.

### MTS Providers Table 4.1

		Number ranges
Optimus Telecomunicações, S.A.	Network operator	93
TMN – Telecomunicações Móveis Nacionais, S.A.	Network operator	96, 925, 926 and 927
Vodafone Portugal – Comunicações Pessoais, S.A.	Network operator	91
CTT – Correios de Portugal, S.A.	Service provider using TMN network	9220 to 9222
ZON – TV Cabo Portugal, S.A.	Service provider using Vodafone network	9290 to 9294

Source: ICP-ANACOM.

It is also of note that in 2006 new offers emerged distributed commercially by entities other than the operator, using the Optimus network, namely:

- Talk Talk Mobile marketed by The Phone House with preferential tariffs for numbers within the brand;
- *Rede Bónus* marketed by Worten Mobile, also with preferential tariffs between clients of this network.

In 2007 and 2008 other offers of the same type appeared, using the TMN network and associated with sports 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 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, provided that the phone is charged with a pre-defined amount;
- The KAZOO offer was also launched in 2008. This offer is in partnership with charity organizations (Portuguese Anti-AIDS League, APCH, GIL Foundation, CASBI, “O Século” Foundation, 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 per cent of each pre-payment will revert to that cause, without any sum being deducted from his balance.

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

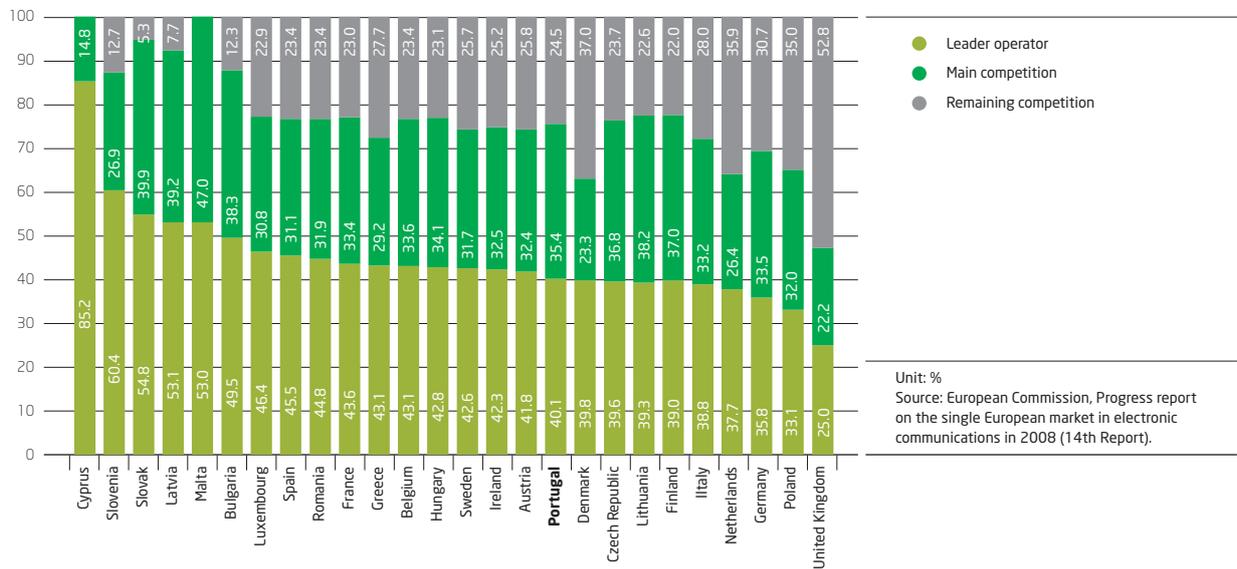
**Structure of the offer**

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

According to the data of the 14th Report on the implementation of the regulatory package for electronic communications, by the European Commission, most 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.

**Structure of the offer of mobile services in the EU**  
Graph 4.2



The level of concentration in Portugal may be connected with the existence of possible barriers to operator switching. In Portugal, only around 1.1 per cent of users stated that they had actually switched operator in the last

year<sup>60</sup>. Overall, and according to studies carried out in previous years, around 1 in 5 subscribers have switched operator since they adhered to the service.

<sup>60</sup> Electronic communications consumer survey 2008. 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 I having been composed of 2040 interviews on the Mainland and 780 interviews in each of the Autonomous Regions. 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 the National Institute of Statistics (INE). The gathering of information was by CAPI - Computer Assisted Personal Interviewing which took place between 5 November and 29 December 2008. 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 per cent). 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 3 p.p. (with a level of reliability of 95 per cent). The company TNS-Euroteste was responsible for the fieldwork and data handling.

**Mobile network operator switching in the last 12 months**  
**Table 4.2**

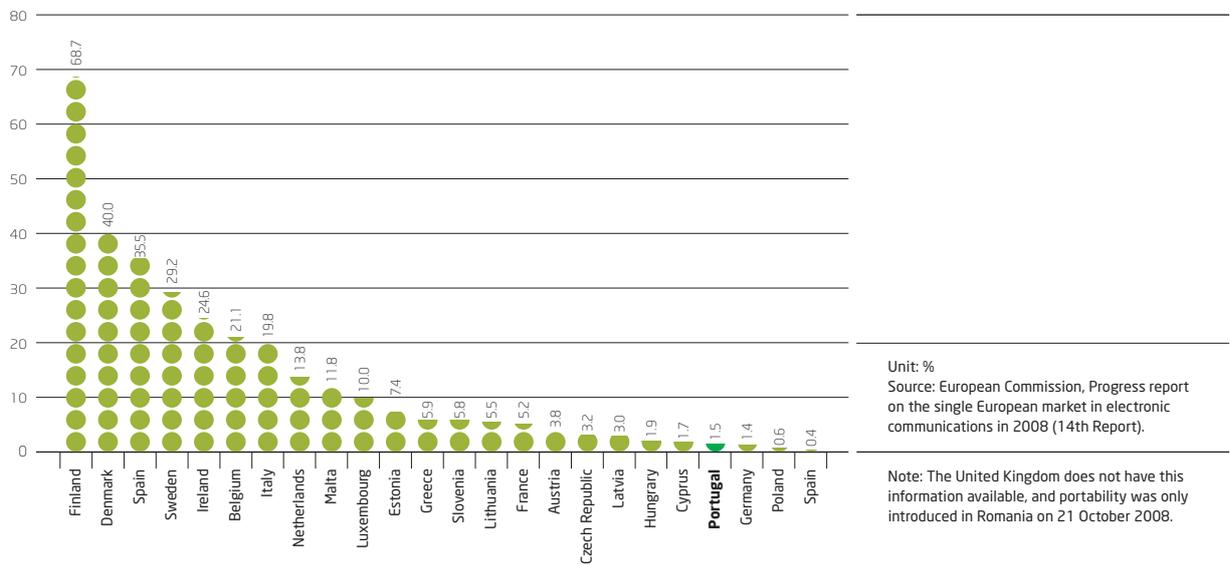
	<b>Dec. 2008</b>
Operator replaced	1.1
Switched from/to low cost network within the same operator	1.5
Did not switch but considered/tried to switch	4.9
Did not switch and did not consider the matter	90.8

Unit: %  
 Source: ICP-ANACOM, Electronic communications consumer Survey, December 2008.

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.

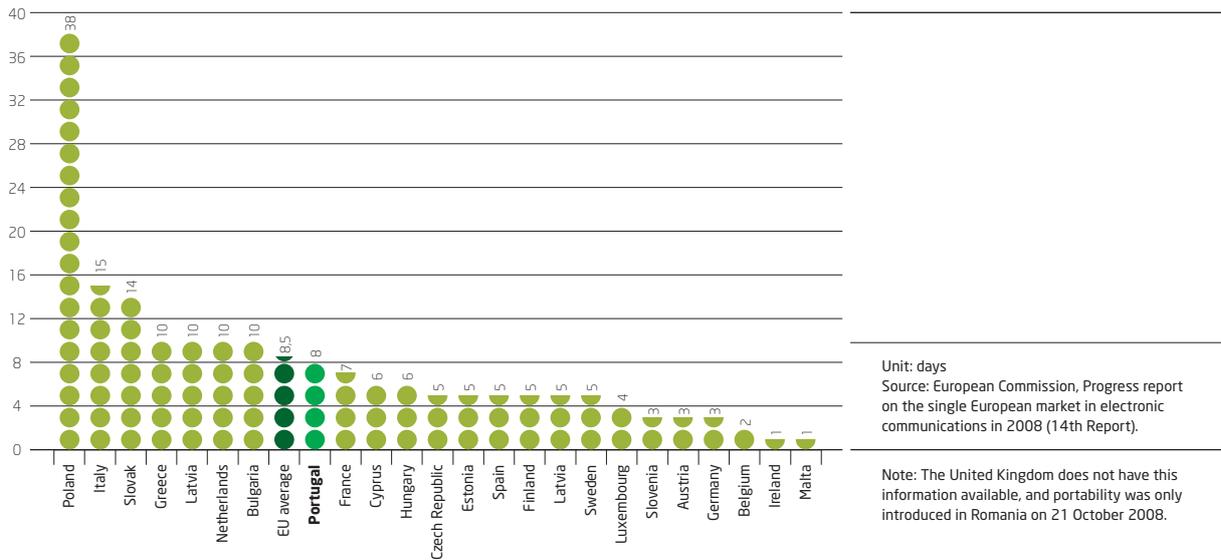
**Weight of ported mobile numbers in relation to total subscribers**  
**Graph 4.3**



The number of mobile portings at the end of 2008 was 223,335, which represents about 1.5 per cent of all service subscribers.

The time delay until the actual number porting occurs varies between 1 day in Malta and Ireland and 38 days in Poland. In Portugal, the average is 8 days, which is below the average of the countries considered.

**Days to provide portability**  
Graph 4.4



**MTS commercial offers and associated services**  
MTS, data service and Mobile TV offers are presented below.

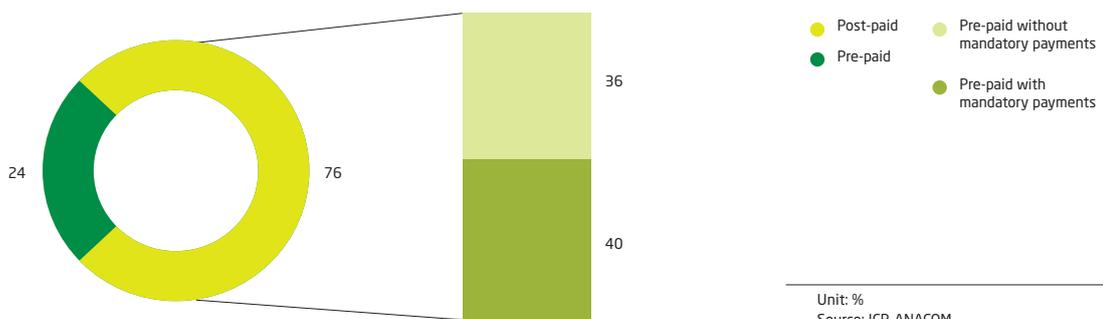
**MTS offers**

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

There are around 75 different MTS tariffs. It will be remembered 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 which are not service providers and which are aimed at specific groups of users, as previously mentioned.

Of the total of around 75 tariffs in existence, around three quarters are pre-paid tariffs, and the rest are post-paid.

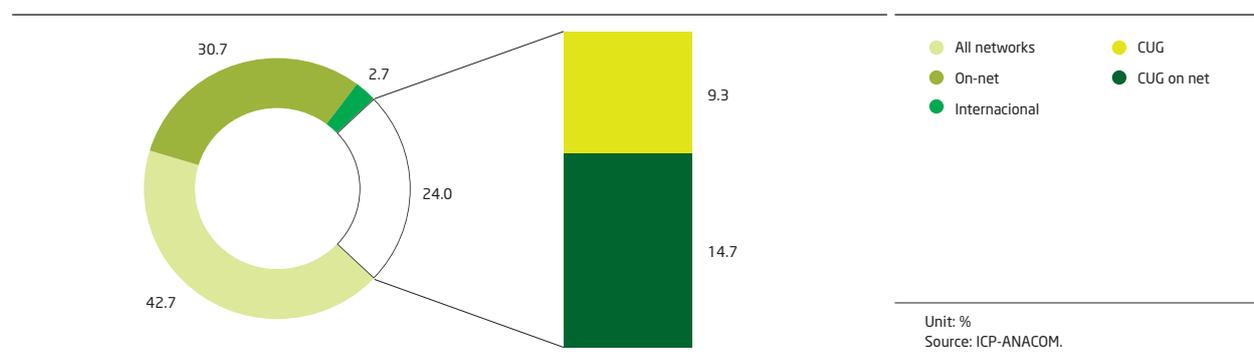
**Distribution of tariff schemes by type**  
Graph 4.5



Each of these groups is different in terms of payment/charging available and the type of users at whom it is aimed. According to the profile of call consumption, there are tariffs aimed at users who:

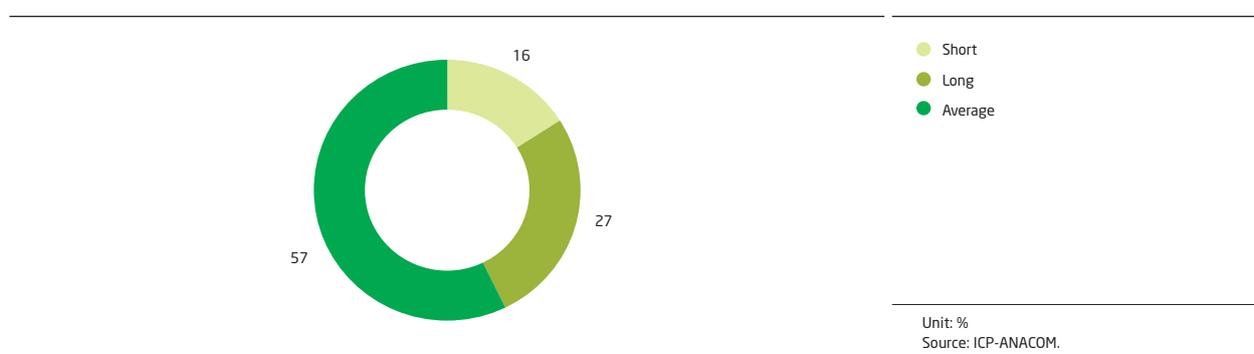
- make calls to all destination networks, i.e. tariffs with the same prices for all the networks;
- make calls to specific destinations, i.e. favourable price for the on-net, off-net, fixed or international network destination;

#### Distribution of tariff offers according to calls destination Graph 4.6

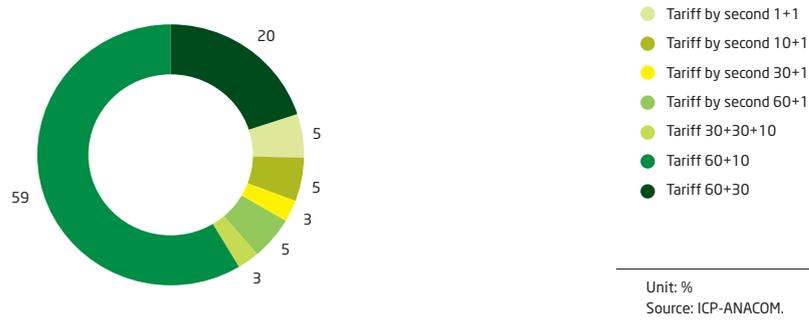


- make calls according to the amount of time, i.e. tariff with billing by the second, or tariff with the price per subsequent minutes different from the 1st minute;

#### Distribution of tariff offers according to time of use/ calls duration Graph 4.7



**Distribution of tariff modes (in seconds)**  
Graph 4.8

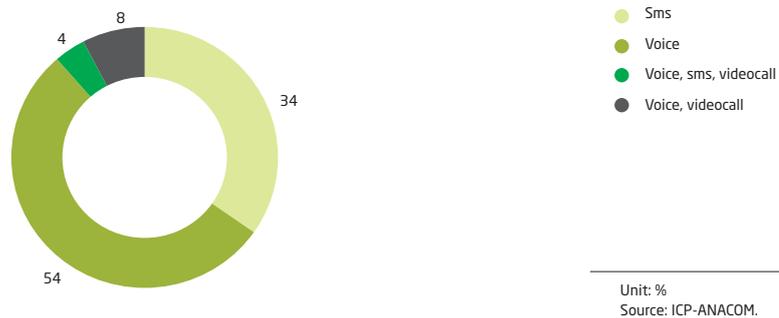


- make calls to specific user groups;
- prefer sending messages to making voice communications.

Currently all the existing tariffs have in the common the fact 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).

**Distribution of additional offers, by type**  
Graph 4.9

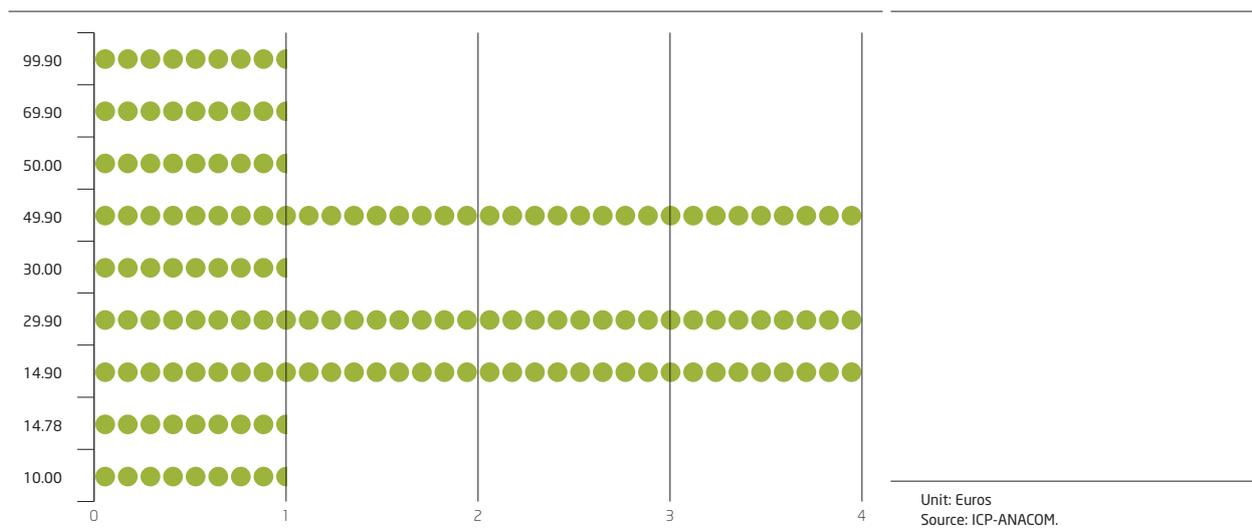


The additional offers also offer favourable prices for sending text messages.

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 is between €10 and €100, and there are 4 offers available with 3 scales: €14.90, €29.90 and €49.90.

**Amount of monthly fee of post-paid schemes: number of offers**  
Graph 4.10



In the pre-paid mode there are a wide range of possibilities for mandatory pre-payments, with differing time periods or amounts, in addition to no 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.

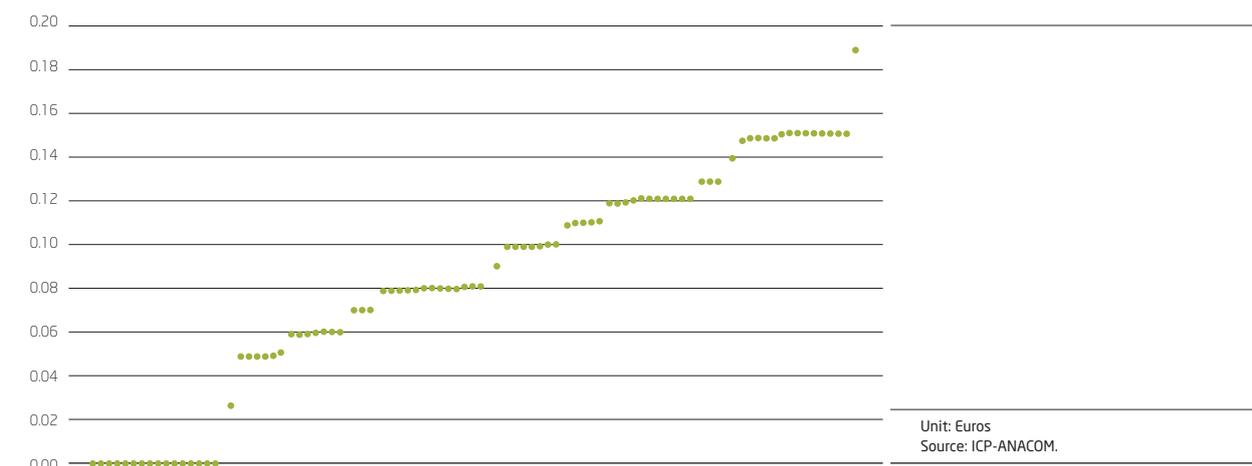
Depending on the tariff scheme chosen, the price per minute of a call within the network ranges between €0 and

40 cents, with the most common amount being 15.8 cents per minute.

In the case of a 3-minute on-net call, according to existing tariff offers, the price of the call may vary between €0 and €1.2, with the (simple) average value being 52 cents.

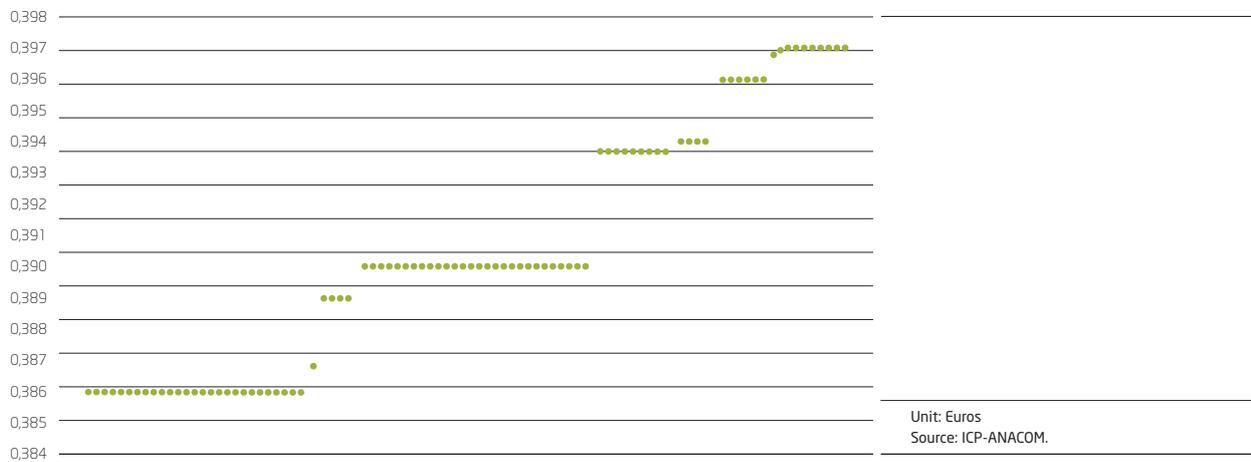
With regard to the price of SMS, this ranges between 0 and 19 cents per unit. However, free messages are normally limited in terms of their number and period of validity of the pre-payment made.

**Distribution of the cost of 1 on-net SMS by offer available**  
Graph 4.11



Regarding the price of multimedia messages, the range of amounts is less, and for the most part there is no difference according to the destination.

**Distribution of the cost of 1 on-net mms by offer available**  
Graph 4.12



MTS, data transmission services and Mobile TV offers are presented below.

**Data transmission services**

In 2007 specific “Mobile phone internet” offers were launched, with daily or monthly subscription options. These have been maintained in 2008.

**Specific “Mobile phone internet” offers – 2008**  
Table 4.3

<b>Optimus</b>	Monthly access: €7.5 (100 MB included)	Daily access: €0.99 per day (10 MB included)		
<b>TMN</b>	Monthly: €7.44 – up to 100MB usage.	Daily: €0.981 per day – up to 10 MB (€0.327 for each 100 kb)	Plus: €15 per month – up to 250 MB per month (includes 250 free SMS to TMN; unlimited wi-fi access for 3 months)	
<b>Vodafone</b>	Surfing: – €0.99 – up to 10 MB (access to WEB or WAP site, including Vodafone Live, until 12 pm); 10 cents for each additional MB	Surfing +: €7.44 (with unlimited access for 30 days;	Messenger: €2.97 (unlimited sending of instant messages). Valid for 30 days.	My Mail: Light – €2.98 (40 emails included); Standard: €5.95 (150 emails included)

Source: Operators' internet sites.

### Mobile TV

As regards Mobile TV, Optimus currently has 30 channels available, TMN has 38 and Vodafone has 27. The tariff

offers present a range of options, as can be seen in the following table.

**Mobile TV service**  
**Table 4.4**

Optimus	TMN	Vodafone
30 canais	38 canais	27 canais
Tariff scheme	Meo mobile tariff scheme	Tariff scheme
Month Pack: €7.5 /month – includes all channels (except Premium).	Meo total: €7.44/month (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: €1.97/week (unlimited access) Meo total 24h: €0.89/day (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 series and kids: €4.36/month (unlimited access to entertainment, children's and music 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 news and sport: €4.36/month (unlimited access to generalist, news and sports channels)	Adult channels: € 2.48 per 2-hour period/each channel
	Premium channels not included in the above: €3.47/channel/day.	

Source: Operators' internet sites.

### 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 2008 are presented below.

### International comparison of MTS prices<sup>61</sup>

According to the information available, the price level in Portugal in 2008 was below the average for pre-paid plans. However, regarding post-paid plans, the prices charged in Portugal were higher than the average for the consumption profiles.

**International price comparisons (November 2008) – deviations from the average**  
**Table 4.5**

Package   Profile	Low consumption	Average consumption	High consumption
Post-paid	3.8	21.3	22.0
Pre-paid	-23.1	-38.2	-38.4

Unit: %

Source: Teligen, OECD, ICP-ANACOM

<sup>61</sup> Methodology note:

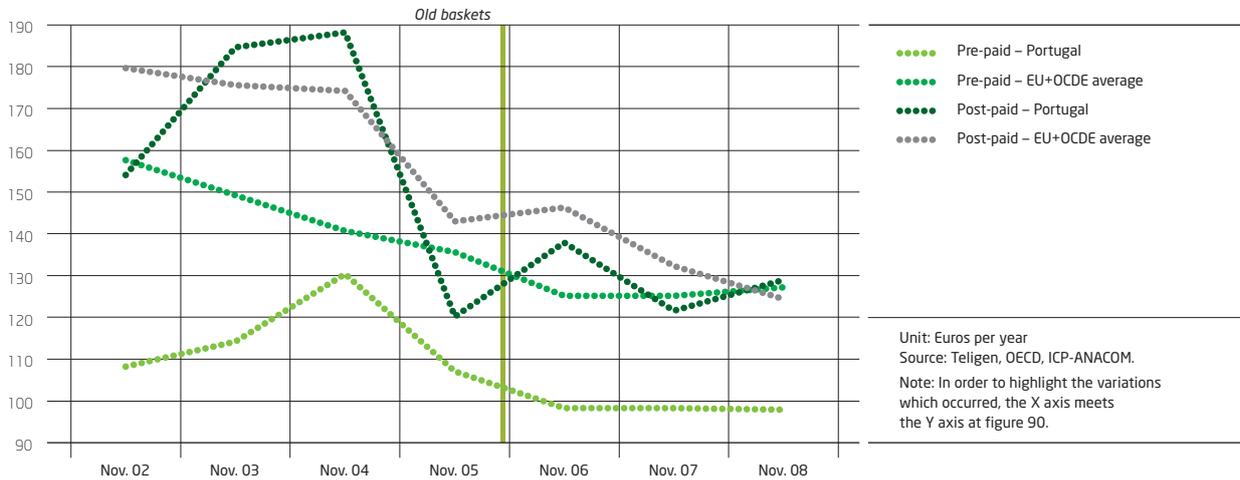
The results of the shown baskets were taken from OECD/Teligen database of November 2008 and are in Euros, VAT excluded and without considering PPP (purchasing power parity). From the OECD countries, those that are part of the EU were selected. Taking into account that, by default, OECD/Teligen always produces two results by country (regarding the incumbent operator and the second most representative one), the operator with the lowest tariff plan, regarding the annual invoice for each usage basket and profile, was selected for each country. The shown deviations refer to the average of the selected countries, Portugal excluded. The shown values are those of the new baskets defined in 2006.

**Evolution of prices charged in Portugal and comparison with the EU (2002/2008)**

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 it in 2008.

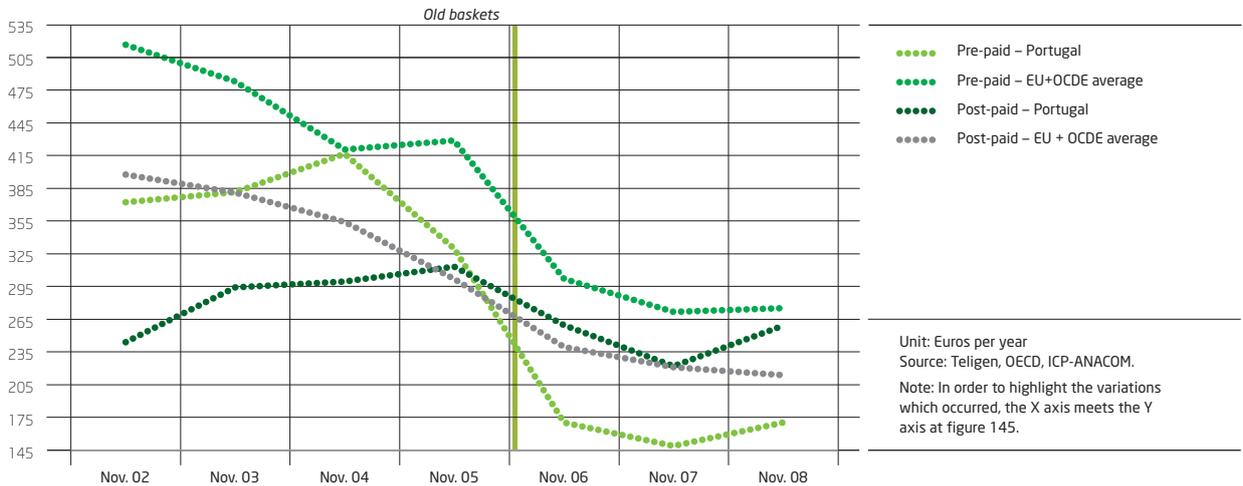
**Price evolution – low consumption basket**  
Graph 4.13



Regarding the average consumption profile, the price of post-paid plans increased, driving them away from the average. The pre-paid tariff schemes, despite the increase

recorded in 2008, are still significantly below the average of the countries considered.

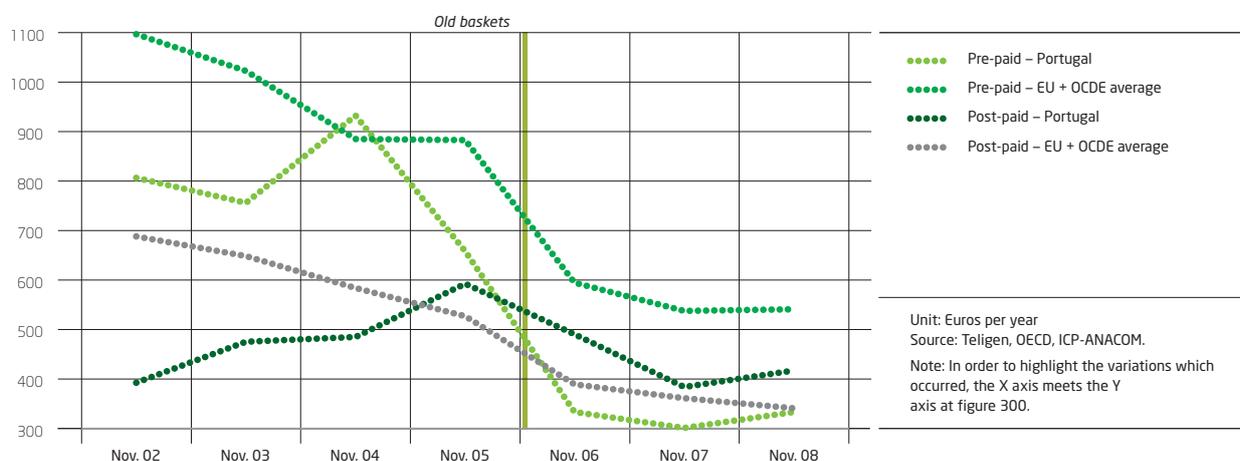
**Price evolution – average consumption basket**  
Graph 4.14



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 increased in 2008, and is above the average.

**Price evolution – high consumption basket**  
Graph 4.15



### 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 2008 it once again evaluated the quality of the mobile services (GSM), video telephony (UMTS) and network coverage (GSM and WCDMA) offered by the operators Optimus, TMN and Vodafone<sup>62</sup>.

- The main conclusions on the quality offered by the operators are as follows:

The mobile communications system present high levels of radio coverage and good performance in terms of the voice service, both in the urban agglomerations and on the major roads.

The performance of the UMTS systems, despite being lower than that of the GSM systems, has evolved

positively since ICP-ANACOM included these systems in its analysis (in November/December 2006). Significant differences can still be seen between the urban areas and major roads. While the systems perform well in the urban areas, with the capacity to establish and maintain video telephone calls close to the levels seen for the voice service in GSM, on the roads the video telephony service is still not performing adequately, which is a direct consequence of the areas with deficient or even without any WCDMA cover;

- The quality indicators of the SMS and MMS services suggested a very good performance. The mobile communications systems studies presented message delivery rates of over 98 per cent. The average time for delivering messages was less than 9 seconds, for the SMS service, and less than 54 seconds, for the MMS service. No particularly significant differences are observed throughout the day and between working

<sup>62</sup> Cf. <http://www.anacom.pt/template12.jsp?categoryId=265182>

days and the weekend in the performance of the services;

- The voice service provided by the operators Optimus, TMN and Vodafone has high levels of call termination rate and audio quality, and the differences between GSM and GSM/UMTS automatic selection are not significant;
- Regarding the radio coverage indicator, it can be seen that in GSM the networks have good coverage, both in the urban areas of Lisbon and Porto and along the Lisbon-Porto motorway (A1).

In WCDMA (UMTS) the networks have good levels of coverage in the urban areas while the levels seen on the major roads are lower, and some areas have insufficient coverage;

- The quality of service indicators on the CP train service demonstrate significant differences between the GSM and UMTS mobile communications systems. Generally, these

systems have better coverage in GSM and better performance of the voice service. Comparing the results of the voice service obtained in this study with those observed in the study conducted in November 2005, a positive evolution can be seen, with the indicators of Service Accessibility and Call Termination Rate presenting overall improvements of around 15 per cent. However, the overall results of this study are still below the results seen in the major roads, namely regarding the coverage of the networks and performance of the voice service.

### MTS user and usage profile

The following sections characterize the MTS user and usage of the service<sup>63</sup>.

#### 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 4.6

	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 electronic Communications Consumer Survey 2008<sup>35</sup>, 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 can be highlighted that only 47 per cent of persons aged 65 or over had a mobile phone at the end of 2008. There is, however, a trend towards increased penetration in all age groups.

<sup>63</sup> 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 class**  
**Table 4.7**

Age group	Dec. 2008
15-24	95.2
25-34	95.6
35-44	85.4
45-54	92.7
55-64	57.6
65 e mais	47.0
<b>Total</b>	<b>75.8</b>

Unit: %

Source: ICP-ANACOM, Electronic communications consumer Survey, December 2008.

It can also be seen that among those with a lower social status, MTS penetration is lower, as was reported in previous surveys.

**MTS penetration by social status level**  
**Table 4.8**

Social status	Dec. 2008
A/B	92.7
C1	92.0
C2	90.9
D	58.3

Unit: %

Source: ICP-ANACOM, Electronic communications consumer Survey, December 2008.

Note: 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.

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

**MTS penetration by level of education**  
**Table 4.9**

Level of education	Dec. 2008
Higher education	90.8
Secondary education	94.9
9th grade	95.3
6th grade	90.2
4th grade	68.4
Lower than 4th grade	32.3
<b>Total</b>	<b>75.8</b>

Unit: %

Source: ICP-ANACOM, Electronic communications consumer Survey, December 2008.

### Barriers to subscribing to the service

The main reasons indicated by consumers for not subscribing to the service are their preference for the fixed

telephone service or the fact that they do not need the mobile service.

**Reasons for not using the mobile service**  
**Table 4.10**

	Dec. 2008
Uses fixed telephone	49.5
Too expensive	18.7
Does not need to communicate by this means	16.5
Difficult to work with it	12.6
Other reasons	2.0
Na	0.7

Unit: %

Source: ICP-ANACOM, Electronic communications consumer Survey, December 2008.

The price of the service and the 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.

### Characterization and level of usage of the service

In this section we present the level and type of usage of the MTS, 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 2008 there were 14.9 million subscribers<sup>64</sup> to the MTS, which represents a 10.8 per cent increase in total subscribers in relation to the previous year, this value being slightly above the average for the 2004/2008 period.

### Number of subscribers

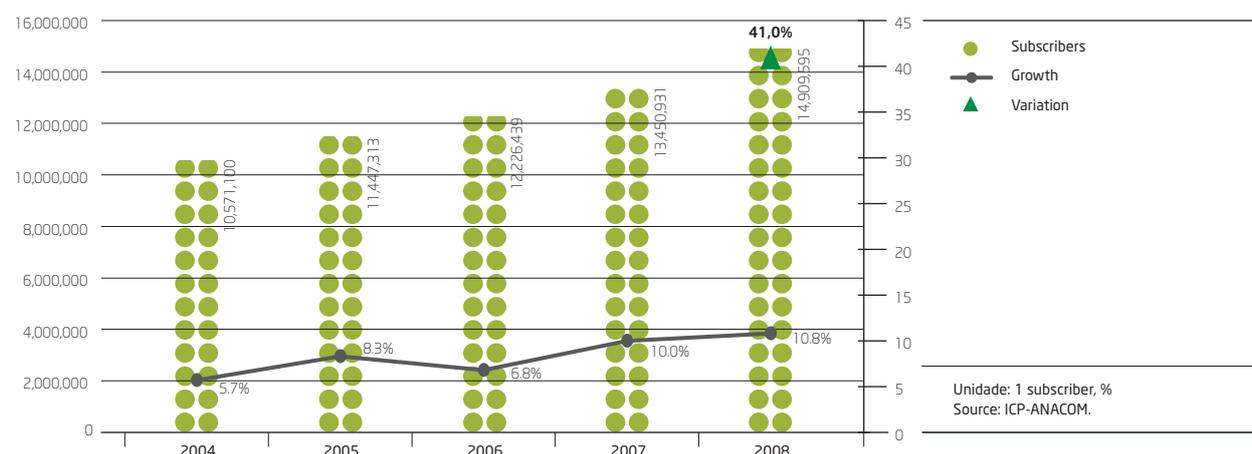
Table 4.11

	2007	2008	2007/2008 var.	2004/2008 average annual var.	2004/2008 var.
MTS subscribers	13,450,931	14,909,595	10.8%	9.0%	41.0%

Unit: 1 subscriber, %.  
Source: ICP-ANACOM.

### Evolution of the number of subscribers and growth rates

Graph 4.16



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

- Development of the 3G services. The number of users of 3G/UMTS services in Portugal reached around 4.32 million at the end of 2008;
- 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;

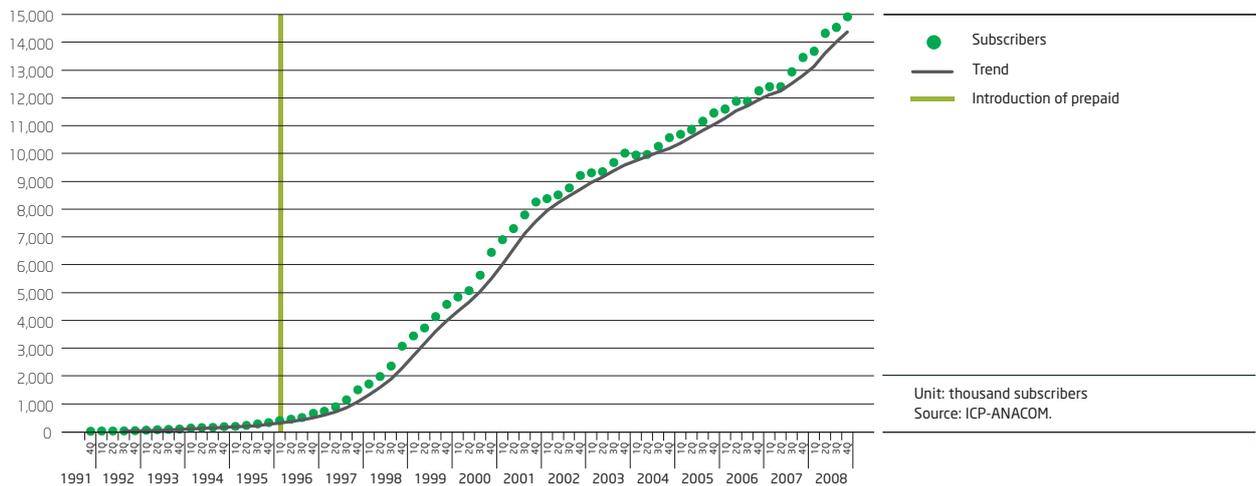
<sup>64</sup> The definition of subscriber was approved by a determination of ICP-ANACOM's Board of Directors of 07.02.2002. It relates to the number of cards that are under a contractual relationship with one of the national Mobile Telephone Service operators, which were granted the right to originate or receive traffic through their networks.

- Emergence of tariff schemes with billing by the second, from the start of the call, in both the pre-paid and post-paid system;
- Emergence of discount offers (Uzo, Rede 4, Vodafone Directo), in 2005;

- The development of new applications associated with machines, for example.

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

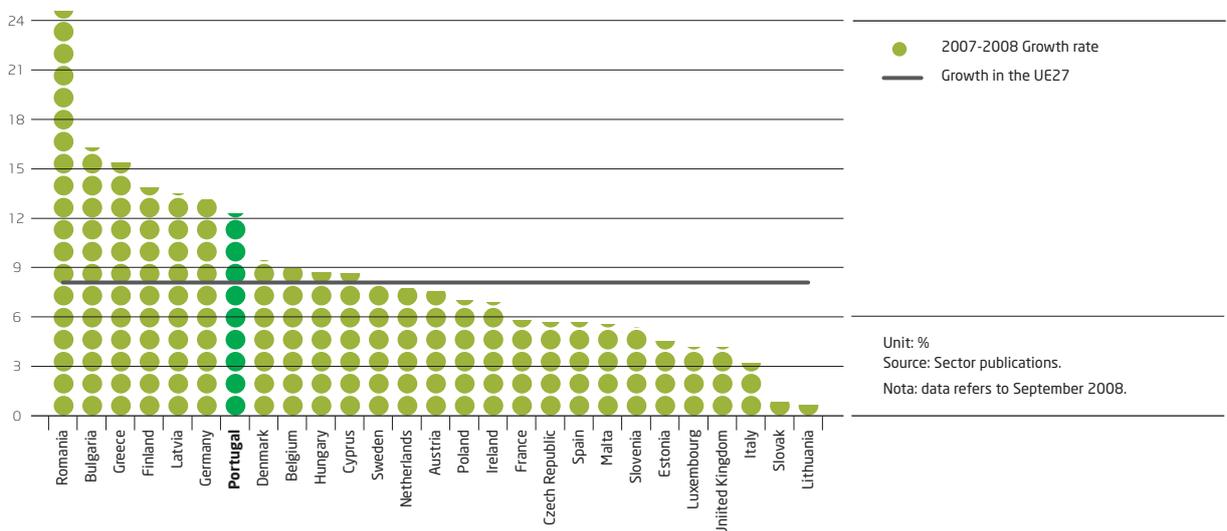
**Evolution of the number of subscribers and growth trend**  
Graph 4.17



It should be stressed that the growth rate of the number of subscribers in Portugal was greater than the EU average. At

EU level, the growth of the service slowed in 2008 – on average it went from 10.3 to 8.1 per cent<sup>65</sup>.

**Growth rate of subscribers in the EU27 countries in 2008**  
Graph 4.18



<sup>65</sup> Figures refer to September 2008.

The service is now developing mostly in the countries of Eastern Europe, namely Romania, Bulgaria, Slovakia, Greece, and Poland. This fact may be connected with the stage in the life cycle of this service and/or macroeconomic cyclical factors.

The number of users that have already adhered to the 3rd generation mobile services (IMT2000/UMTS) has increased significantly.

**Number of users of UMTS services and data services**  
**Table 4.12**

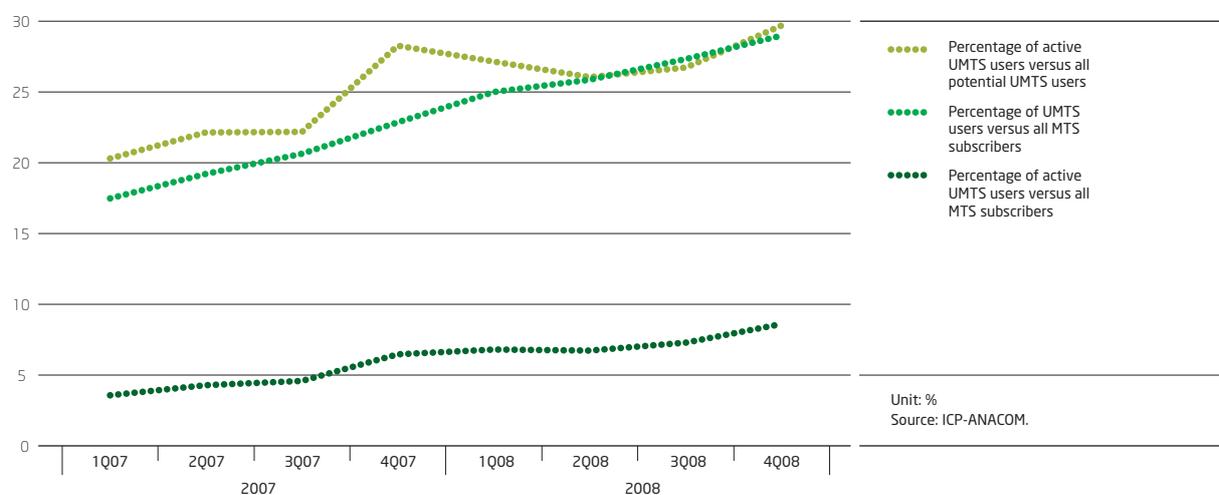
	2007	2008	2007/2008 var.
Total no. of potential users of UMTS services	3,074	4,320	40.5%
No. of which were active in the period of reporting	869	1,284	47.7%

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

The evolution of the number of mobile broadband users was influenced by the changes introduced in the offers of this type of service by the providers, as well as the implementation of Government initiatives: 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 2008, users of the UMTS<sup>66</sup> service in Portugal represented around 29 per cent of the total MTS subscribers.

**Evolution of UMTS penetration in Portugal**  
**Graph 4.19**



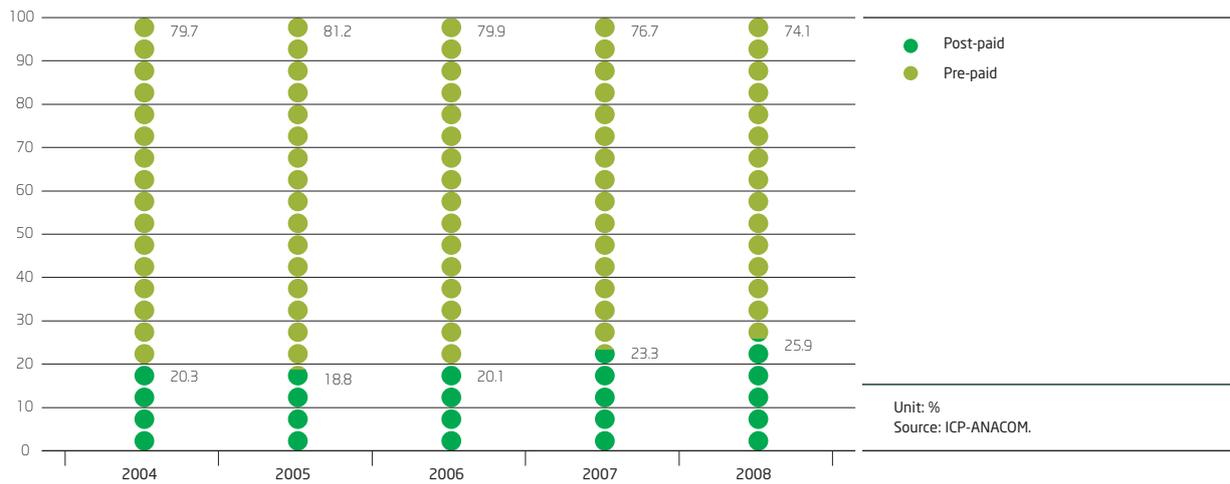
<sup>66</sup> Number of SIM/USIM (Subscriber Identity Module/Universal Subscriber Identity Module) cards that made at least one authentication and registration on the mobile operator's network, since the launch of the service, enabling it them to use any of typical UMTS network services (i.e. video-telephony 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 the gathering of this information began there has been an increase in adhesion 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 adhered to UMTS has grown almost 12 per cent and the percentage of active users has increased 9.4 per cent.

**Tariff schemes**

With regard to the tariff schemes used by the MTS subscribers, around 74.1 per cent of the subscribers use pre-paid schemes.

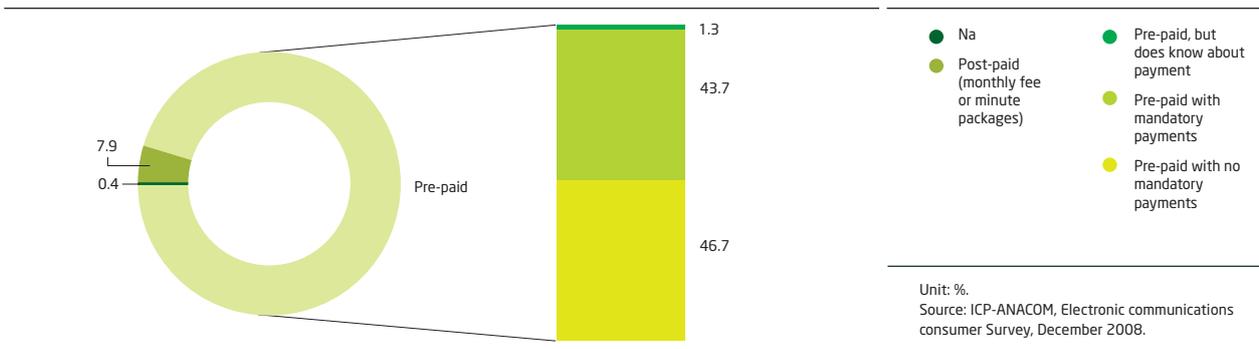
**Distribution of subscribers by type of tariff scheme**  
Graph 4.20



Within the pre-paid schemes, around half of the users aged 15 or over use schemes with mandatory pre-payments,

while the rest prefer pre-paid schemes with no mandatory pre-payments.

**Type of tariff scheme most used**  
Graph 4.21

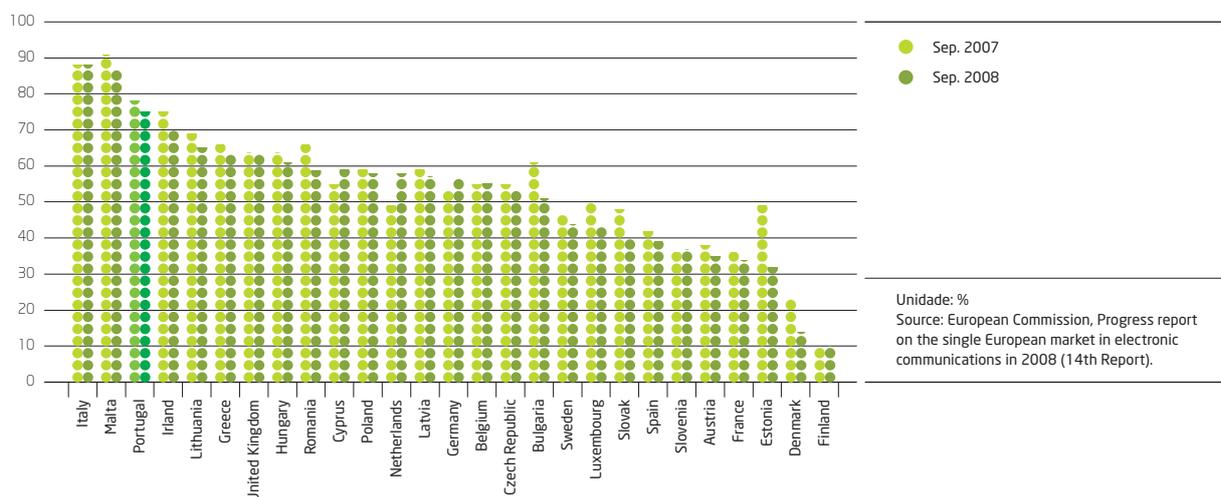


Portugal is among the countries in which the weight of the pre-paid schemes is more significant, immediately after Malta and Italy. Finland and Denmark present the lowest values. It should be remembered that Portugal was a pioneer in introducing the pre-paid system in the mobile telephone service. TMN 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 2008, the proportion of pre-paid cards in the EU was, on average, 52 per cent.

#### Weight of pre-paid cards in the total of subscribers – Portugal vs. EU Graph 4.22



The predominance of the pre-paid schemes may be explained by the fact that, after a certain level of penetration, the operators are obliged to attract customers from population segments with lower than average incomes and ages. This type of product is particularly targeted at responding to the needs of these segments of the population.

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

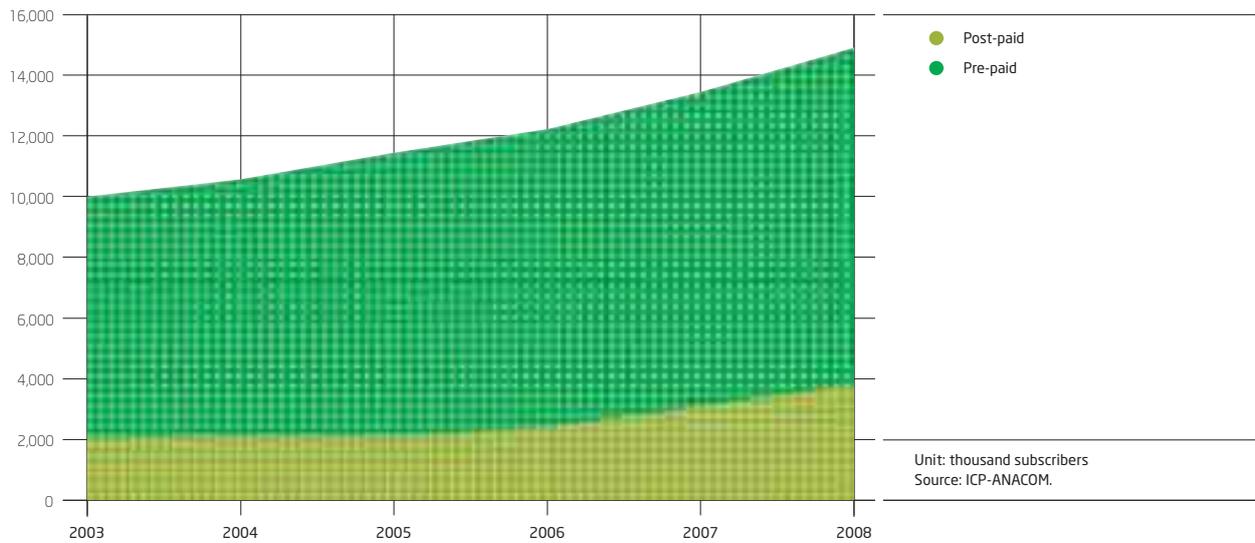
As a result of these factors, in 2008, post-paid schemes grew 23 per cent. Since 2004 there has been a cumulative growth in this type of scheme of around 80 per cent.

#### Number of subscribers by tariff scheme Table 4.13

	2007	2008	2007/2008 var.	2004/2008 average annual var.	2004/2008 var.
Post-paid	3,131,088	3,862,967	23.4%	15.8%	79.9%
Pre-paid	10,319,843	11,046,628	7.0%	7.0%	31.1%

Unit: 1 subscriber; %  
Source: ICP-ANACOM.

**Evolution of the number of subscribers by type of tariff scheme**  
Graph 4.23



Also of note is the fact that in 2008 new tariff schemes with billing by the second were introduced, via legislation. The percentage of subscribers to tariff schemes with billing

by the second is at least 35 per cent, although not all tariff schemes of this type have appeared as a result of the legislation.

**Adhesion to tariff schemes with billing by the second**  
Table 4.14

	<b>Dec. 2008</b>
Yes	34.7
No	28.2
Na	37.1
<b>Total</b>	<b>100.0</b>

Unit: %  
Source: ICP-ANACOM, Electronic communications consumer Survey 2008.

On the other hand, when users aged 15 or over are questioned in more depth about the type of tariff scheme they possess, it can be seen that the most common tariff

schemes are those which offer different prices for all the networks but without special prices for certain numbers.

**Type of tariff scheme**  
**Table 4.15**

	<b>Dec. 2008</b>
Different prices for all the networks and special prices for a range of chosen numbers	15.7
Different prices for all the networks but without special prices for a range of chosen numbers	40.0
Same prices for all the networks and special prices for a range of chosen numbers	12.0
Same prices for all the networks but without special prices for a range of chosen numbers	14.6
NaNr	17.6
<b>Total</b>	<b>100.0</b>

Unit: %

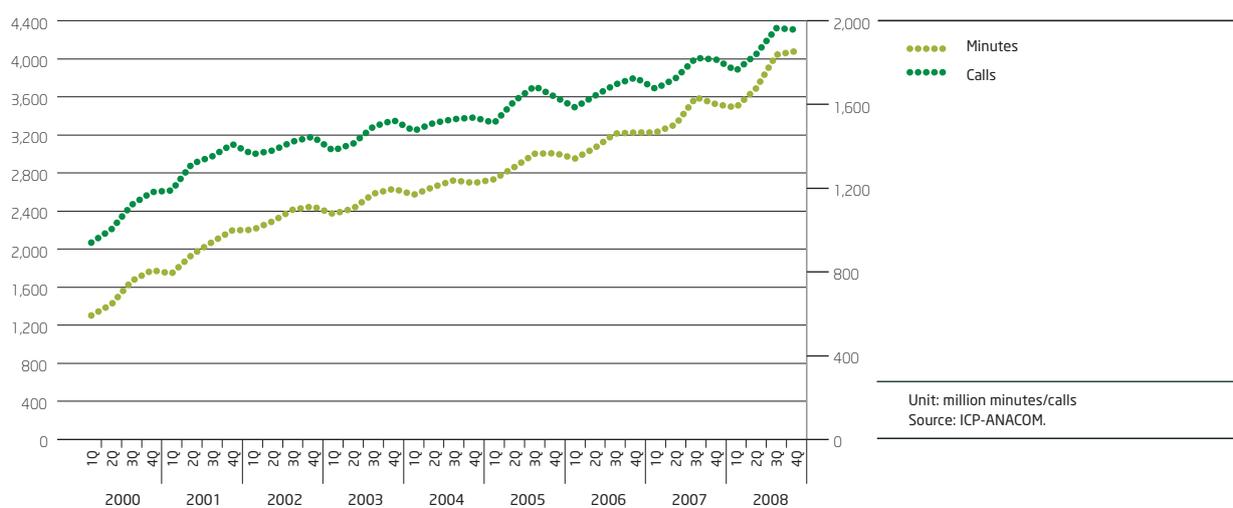
Source: ICP-ANACOM, Electronic communications consumer Survey, December 2008.

#### Voice traffic: characterization and level of usage

As can be seen in the following graphs, MTS traffic presents an upward trend. The growing trend in traffic is related to

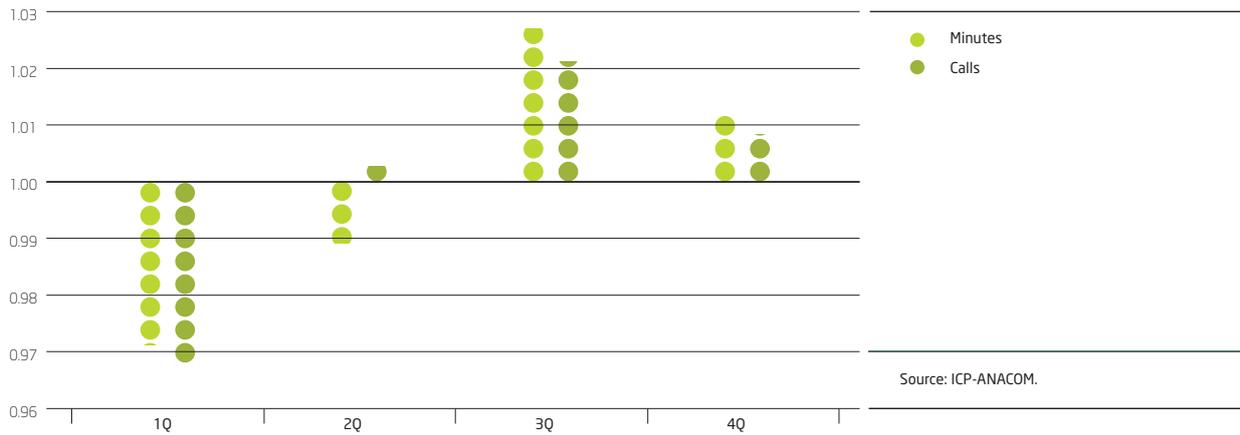
the increase in the number of subscribers, the increasingly mass use of the service and also the decline in the use of the FTS.

**Evolution of outgoing MTS traffic**  
**Graph 4.24**



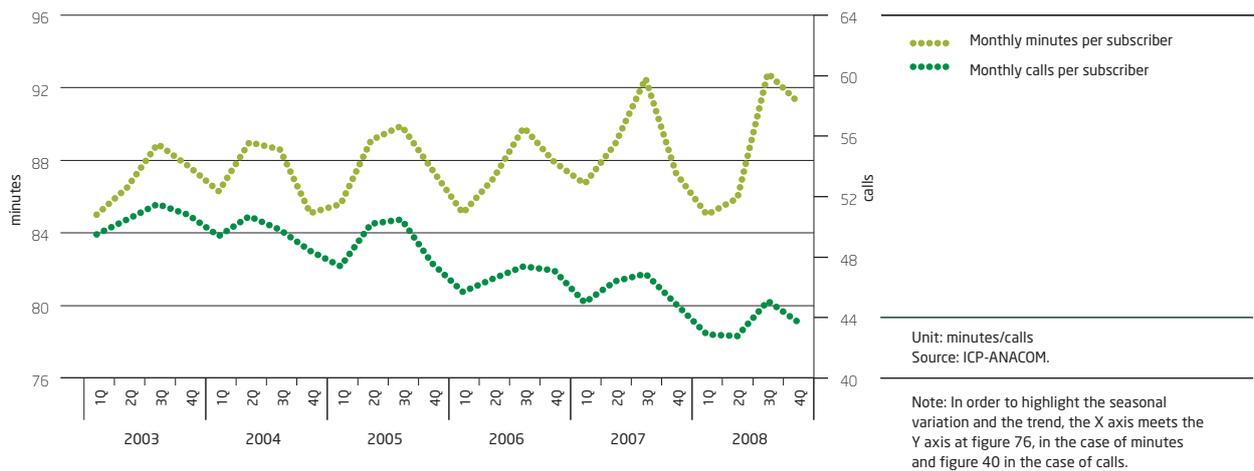
On the other hand, increases of a seasonal nature were recorded in the 3rd and 4th quarters of each year, linked to summer holidays and Christmas.

**Seasonality coefficients for outgoing traffic**  
Graph 4.25



Monthly traffic per subscriber has reached average values of almost 90 minutes and 44 calls.

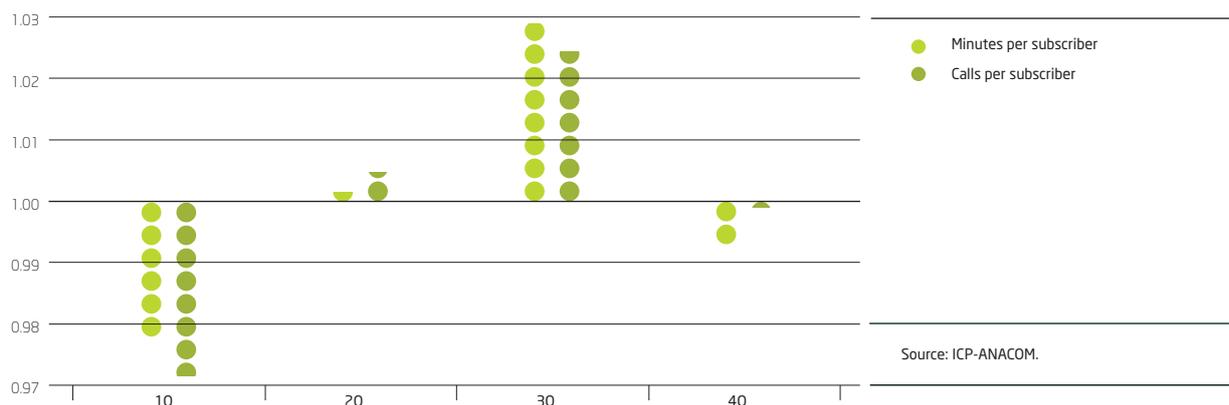
**Evolution of monthly traffic per subscriber**  
Graph 4.26



However, there has been a downward trend in the number of calls per subscriber. The average monthly number of calls per subscriber reached approximately 44 in the 4th quarter of 2008. This figure was lower than the figure for the same quarter the previous year.

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

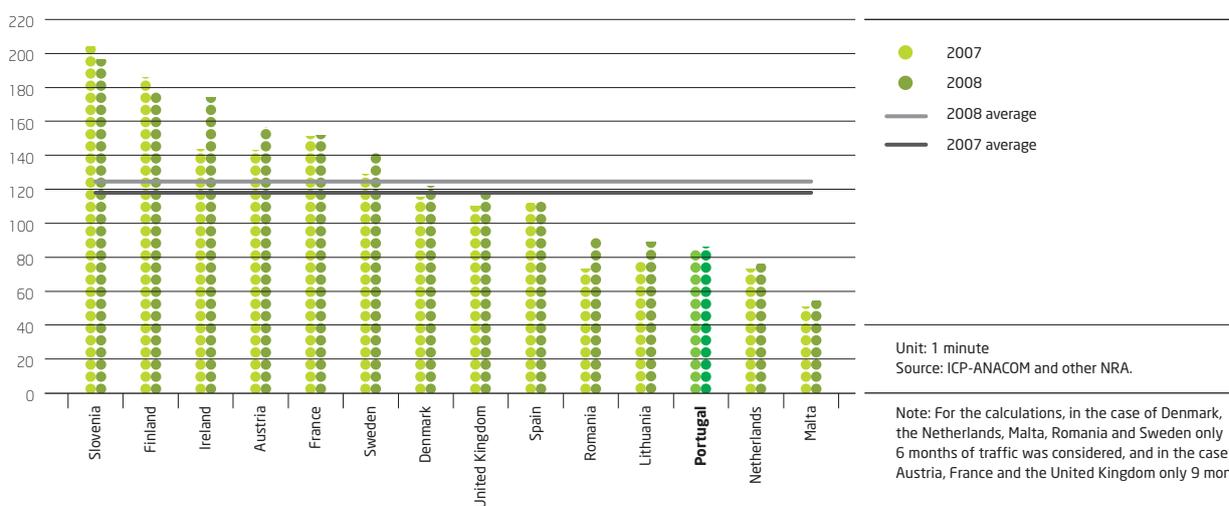
**Seasonality coefficient for monthly traffic per subscriber**  
Graph 4.27



This evolution may be explained by the growing proportion of data cards and cards associated with equipment (e.g. POS), by the fact that the new subscribers to the service have lower than average income, by cyclical macroeconomic factors that affect consumption of this service or possibly by the replacement of voice calls by SMS (following the campaigns which have been launched by the operators).

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 4.28



**Voice traffic: evolution in 2008**

In 2008 voice traffic in terms of minutes recorded the highest growth rate in the last five years. The number of

minutes of conversation originating in the mobile networks grew around 12 per cent on the previous year, totalling around 15.3 billion minutes.

The number of minutes terminating in the mobile networks totalled over 15.4 billion and recorded an increase of 10.9 per cent in relation to the previous year.

**Voice traffic in minutes**  
**Table 4.16**

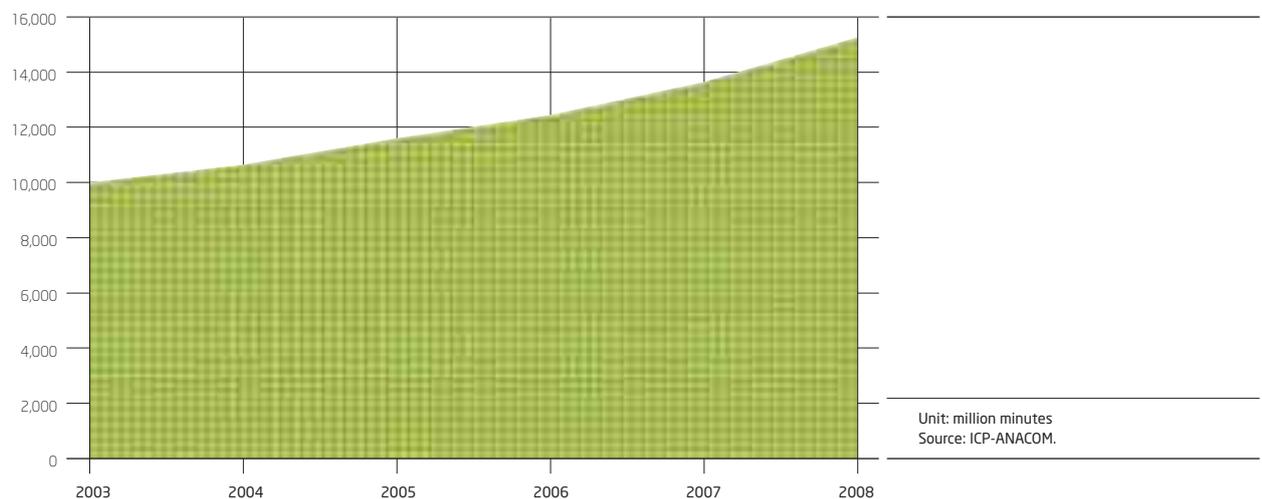
	2007	2008	2007/2008 var.	2004/2008 average annual var.	2004/2008 var.
Own network – Own network	9,362	10,762	15.0%	10.7%	50.1%
Own network – National FTS	932	958	2.7%	3.8%	16.3%
Own network – International networks	642	690	7.3%	7.8%	35.1%
Own network – Other national MTS	2,709	2,858	5.5%	7.4%	33.1%
<b>Outgoing traffic</b>	<b>13,646</b>	<b>15,267</b>	<b>11.9%</b>	<b>9.4%</b>	<b>43.4%</b>
Own network – Own network	9,362	10,762	15.0%	10.7%	50.1%
National FTS – Own network	1,177	1,135	-3.6%	-0.9%	-3.5%
International networks – Own network	669	685	2.3%	7.6%	33.8%
Other national MTS – Own network	2,705	2,850	5.3%	7.3%	32.7%
<b>Incoming traffic</b>	<b>13,021</b>	<b>15,431</b>	<b>10.9%</b>	<b>8.8%</b>	<b>40.2%</b>

Units: million minutes; %  
Source: ICP-ANACOM.

Between 2004 and 2008, there was an increase of around 43.4 per cent in outgoing traffic and around 40.2 per cent

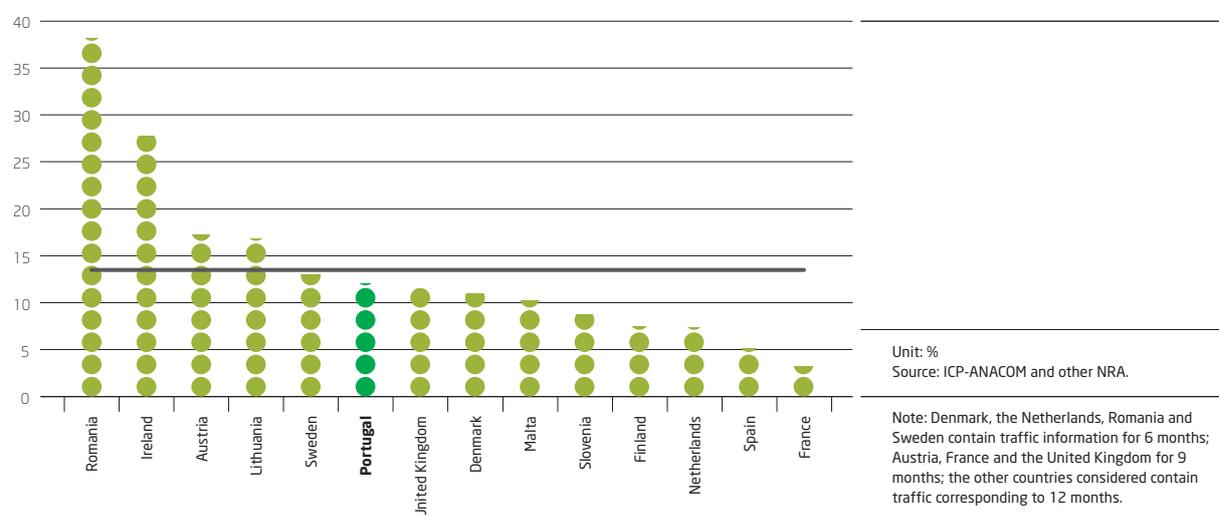
in incoming traffic, these figures being of a similar magnitude to the growth in the number of subscribers.

**Evolution of the volume of minutes 2003-2008**  
**Graph 4.29**



It can also be seen, on the other hand, that the growth in traffic in the mobile networks in 2008 was below the average of the countries considered.

#### Growth of traffic in minutes in 2008 – international comparisons Graph 4.30



Regarding the number of calls, in 2008 MTS subscribers made over 7.5 billion calls, 6.7 per cent up on the previous year.

In the same period, MTS subscribers received over 7.5 billion calls. This figure represents an increase of 6.3 per cent in relation to the previous year.

#### Voice traffic in calls Table 4.17

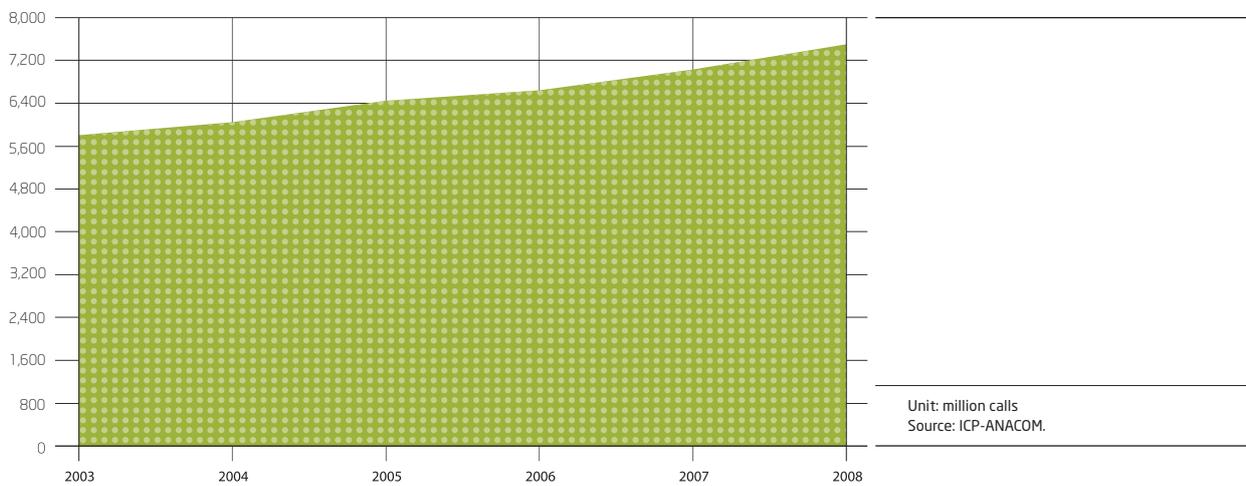
	2007	2008	2007/2008 var.	2004/2008 average annual var.	2004/2008 var.
Own network – Own network	4,693	5,104	8.7%	6.1%	26.9%
Own network – National FTS	552	525	-4.9%	0.4%	1.5%
Own network – International networks	248	265	6.9%	7.8%	35.1%
Own network – Other national MTS	1,542	1,614	4.7%	5.2%	22.6%
Own network – Own network	4693	5,104	8.7%	6.1%	26.9%
<b>Outgoing traffic</b>	<b>7,035</b>	<b>7508</b>	<b>6.7%</b>	<b>5.5%</b>	<b>24,0%</b>
National FTS – Own network	610	578	-5.3%	-3.2%	-12.2%
International networks – Own network	217	225	3.4%	6.4%	28.0%
Other national MTS – Own network	1,544	1,602	3.8%	5.0%	21.6%
<b>Incoming traffic</b>	<b>7,064</b>	<b>7,508</b>	<b>6.3%</b>	<b>5.0%</b>	<b>21.6%</b>

Units: million calls, %  
Source: ICP-ANACOM.

Between 2004 and 2008, growth of around 24.0 per cent was recorded in outgoing traffic and around 21.6 per cent in incoming traffic.

These traffic growth rates are below the growth rates of the number of subscribers.

**Evolution of the volume of calls 2003-2008**  
Graph 4.31

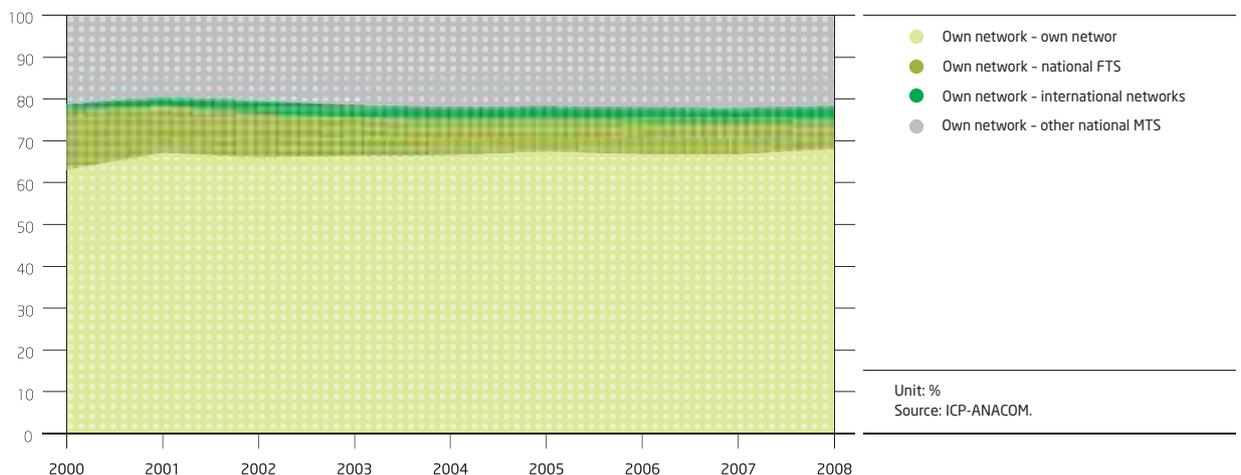


**Voice traffic: evolution in 2008 by type of calls**

Regarding the type of calls made, about 2/3 of calls are made to the same network as the one from which the call originates. Other mobile operators' networks are the destination of around 21.5 per cent of traffic, followed by the FTS. Regarding incoming traffic, the relative weight of the types of call does not change significantly.

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 decrease in the number of FTS users.

**Distribution of voice traffic in calls by type of call**  
Graph 4.32



Analyzing the evolution of the 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. Off-net and international traffic increased more than the average traffic, although neither of these categories has kept up with the rate of growth of the number of subscribers.

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

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

The trend towards a reduction in mobile-to-fixed and fixed-to-mobile traffic has been recorded for a few years now and is associated with the phenomenon of fixed-to-mobile replacement.

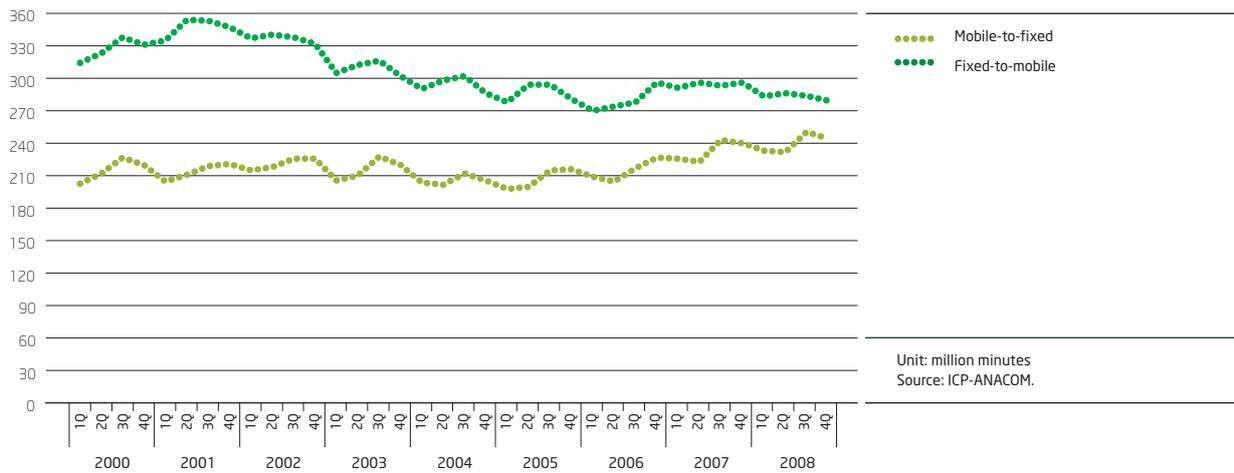
In 2008, there was even a decrease in absolute terms of this type of traffic in terms of calls (-5.3 per cent in the case of incoming traffic and -4.9 per cent in outgoing traffic).

**Evolution of the number of mobile-to-fixed and fixed-to-mobile calls**  
Graph 4.33



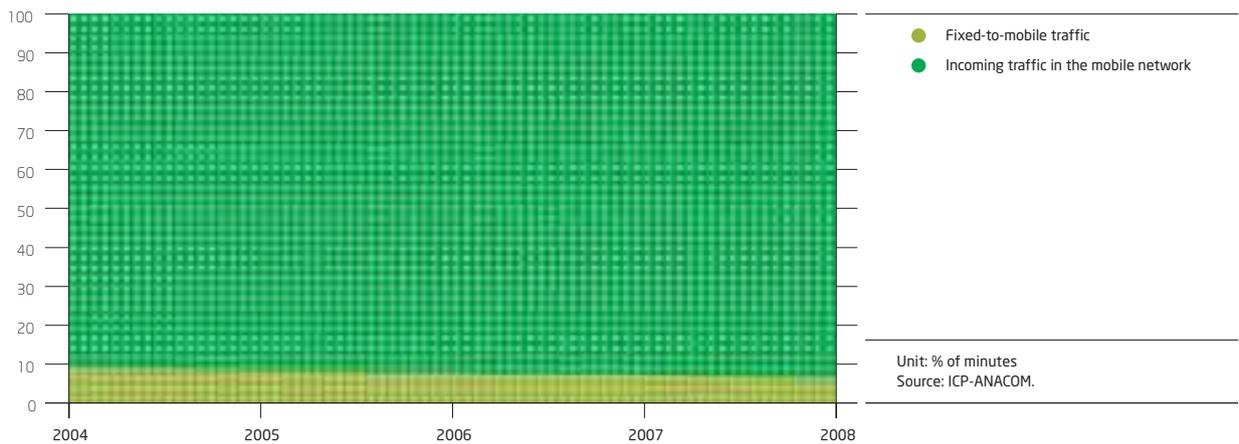
Regarding the volume of minutes, in 2008, the previous trend continued, with fixed-to-mobile traffic decreasing around 3.6 per cent in relation to the previous year.

**Evolution of the number of mobile-to-fixed and fixed-to-mobile minutes**  
Graph 4.34



This type of traffic now represents less than 7.4 per cent of minutes terminating in the mobile network.

**Weight of fixed-to-mobile traffic in the total incoming traffic (minutes)**  
Graph 4.35



It should be mentioned that, although the volume of traffic originating in the fixed network and terminating in the mobile network has historically been greater than the traffic originating in the mobile network and terminating in the fixed network, the latter has grown at a faster rate than the

former. Thus, while in 2004 mobile-to-fixed calls represented 79 per cent of fixed-to-mobile calls, in 2008 this figure had increased to 91 per cent. In terms of minutes, in the same period, the ratio between the two types of traffic grew 14 per cent, reaching 84 per cent in 2008.

### Voice traffic: average duration of calls

The average duration of outgoing calls reached 122 seconds in 2008. The duration of calls originating and terminating in the 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 present the longest duration: 155 seconds, in the case of originating traffic, and 182 seconds in the case of terminating traffic. It is of note that the average duration of calls in the mobile network is less than the duration of calls in the fixed network.

**Average duration of calls**  
**Table 4.18**

	2004	2005	2006	2007	2008
Own network – Own network	107	109	115	120	127
Own network – National FTS	96	97	96	101	109
Own network – International networks	156	155	155	155	156
Own network – Other national MTS	98	100	103	105	106
<b>Total outgoing traffic</b>	<b>106</b>	<b>108</b>	<b>112</b>	<b>116</b>	<b>122</b>
Own network – Own network	107	109	115	120	127
National FTS – Own network	107	110	113	116	118
International networks – Own network	175	174	178	185	182
Other national MTS – Own network	98	100	103	105	107
<b>Total incoming traffic</b>	<b>107</b>	<b>109</b>	<b>114</b>	<b>118</b>	<b>117</b>

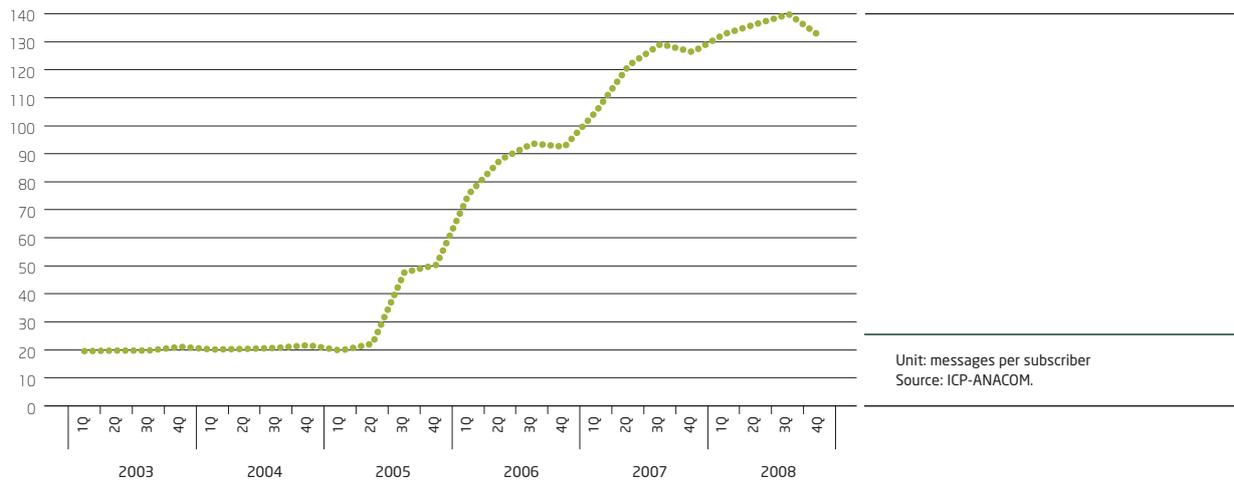
Unit: seconds  
Source: ICP-ANACOM.

The increase in the duration of national calls in 2008 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 Vodafone's Vita 91 Extreme).

### 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 for SMS per subscriber passed the 100 mark and in the 3rd quarter of 2008, the figure reached 140 SMS per month per subscriber.

**Evolution of the number of SMS per subscriber per month**  
Graph 4.36

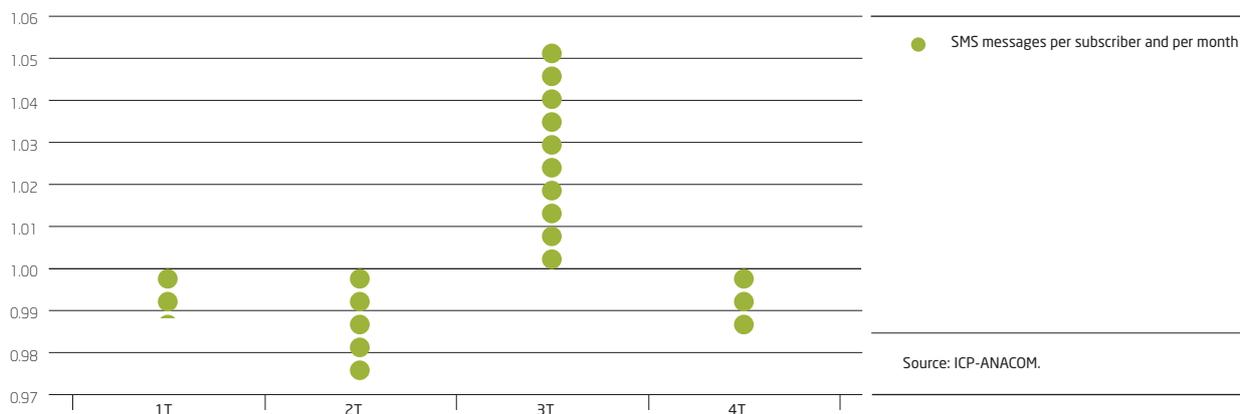


If we only consider actual users of text message services, who represent 80 per cent of total subscribers, the average number of messages per user reaches 160 messages per month.

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

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

**Seasonality coefficient for SMS per subscriber**  
Graph 4.37



It should be mentioned that Premium messages represent less than 1 per cent of total SMS.

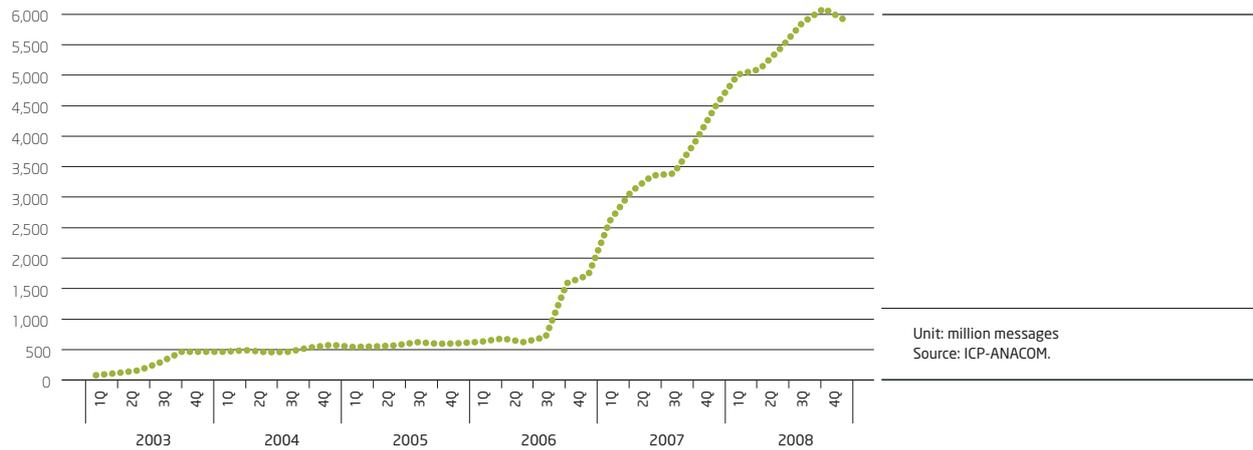
2008 once again recorded a significant increase in the number of text messages sent (25.6 per cent in relation to the previous year).

**SMS originating in own network**  
**Table 4.19**

	2007	2008	2007/2008 var.	2004/2008 average annual var.	2004/2008 var.
Number of SMS	18,555	23,299	25.6%	74.4%	825.2%

Unit: million messages, %  
Source: ICP-ANACOM.

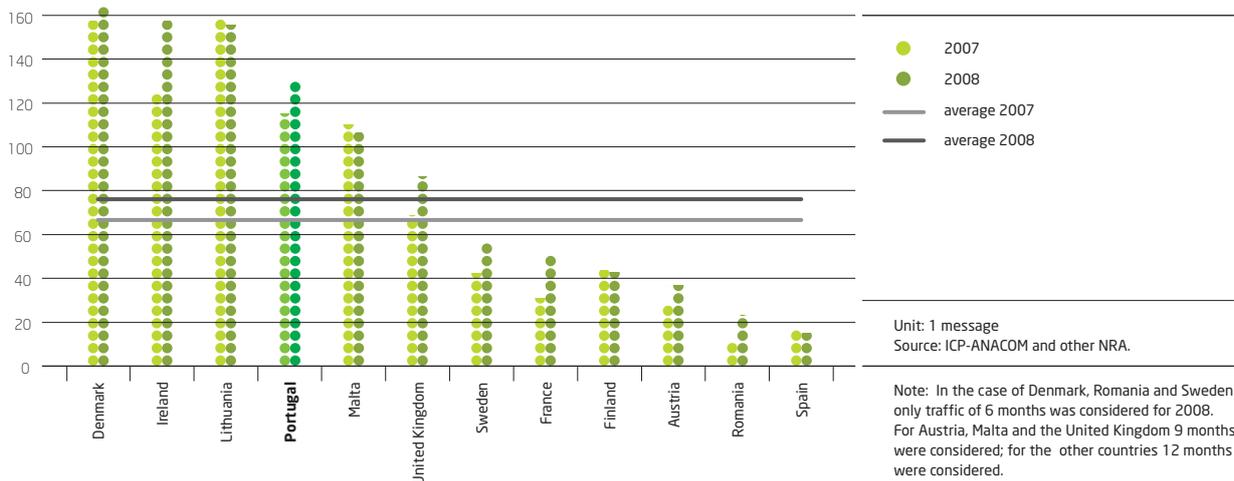
**Evolution of the number of SMS**  
**Graph 4.38**



This situation is the result of the aforementioned promotional campaigns rolled out by the mobile operators since the beginning of 2005.

According to the information available, the use of SMS in Portugal has been increasing, and is higher than the average of those countries for which it was possible to obtain information.

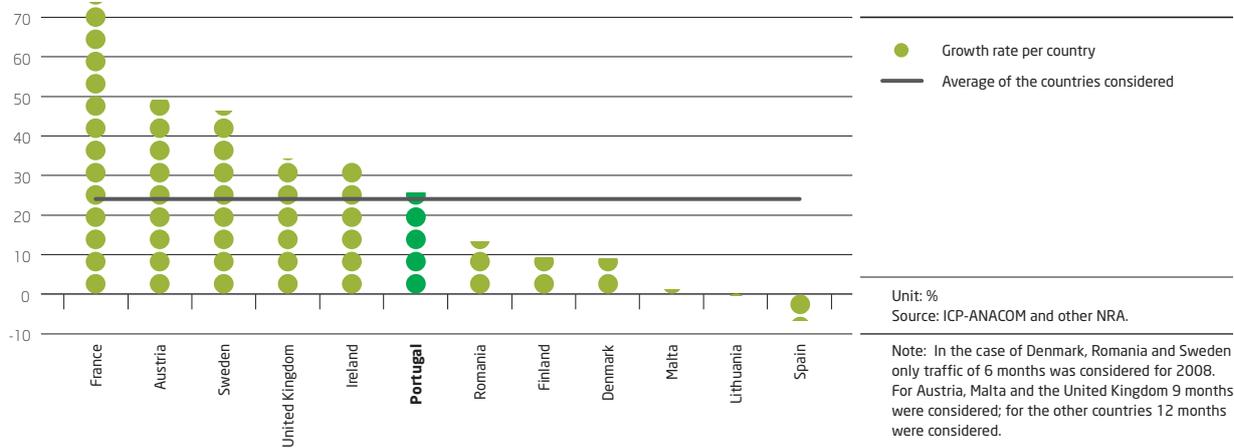
**Number of SMS per subscriber per month – international comparisons**  
**Graph 4.39**



In general terms, there has been an increase in the use of SMS in the countries considered, with the exception of Lithuania and Spain. It should be stressed that France and

Austria have the highest growth rates in the volume of SMS among the group of countries considered, although the average use is among the lowest.

**Growth of SMS traffic – international comparisons**  
Graph 4.40



**Roaming traffic: voice and SMS**

The number of users of the roaming out<sup>67</sup> service corresponds to around 14.3 per cent of total MTS subscribers.

**Roaming out users**  
Table 4.20

	2007	2008	2007/2008 var.
Roaming out users	1,966	2,131	8.4%

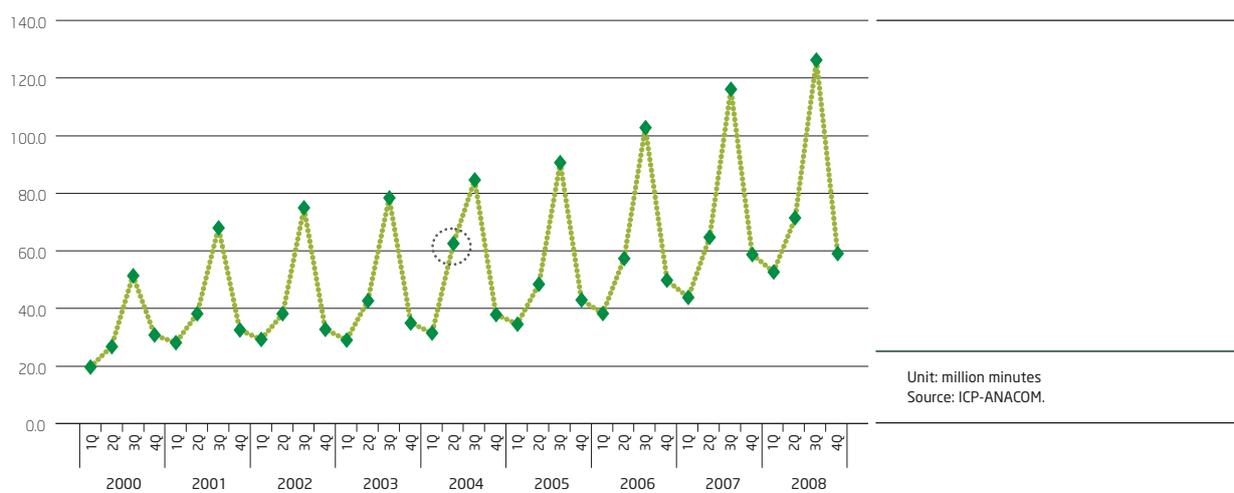
Unit: thousands users, %  
Source: ICP-ANACOM.

Roaming traffic is highly seasonal, related with the period of the summer holidays and is affected by some international events held in Portugal (in the following graph

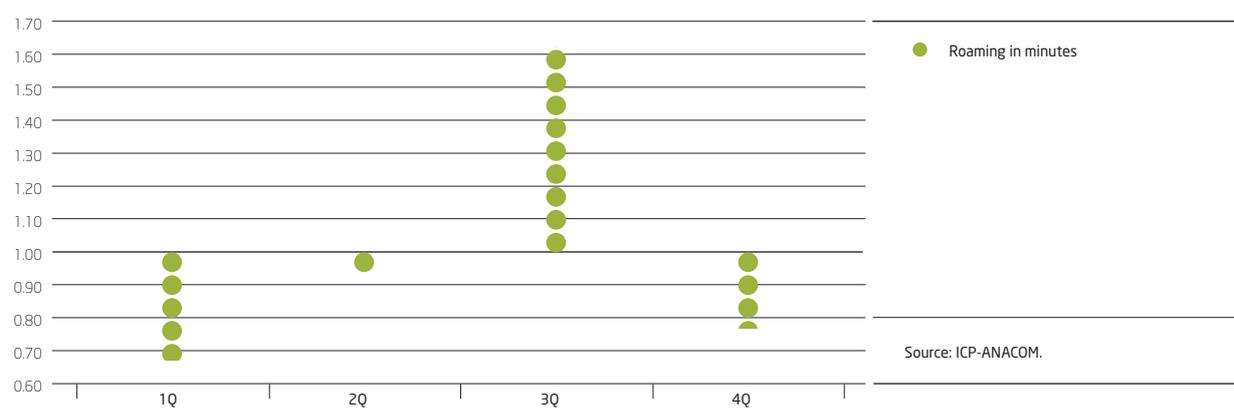
it can be seen that the “Euro 2004” phenomenon had an effect on roaming in<sup>68</sup> traffic in the 2nd quarter of 2004).

<sup>67</sup> Subscribers of national operators that use the networks of foreign operators when they are not in Portugal.  
<sup>68</sup> Traffic by subscribers of foreign operators using the national networks.

**Evolution of roaming in traffic**  
Graph 4.41



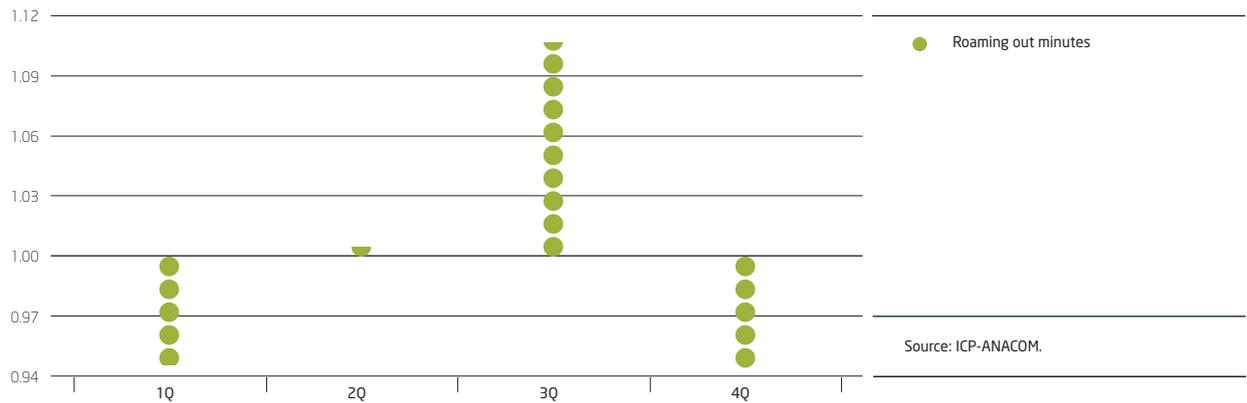
**Seasonality coefficient for roaming in traffic**  
Graph 4.42



Roaming out traffic<sup>69</sup> also shows marked seasonal changes, explained by the reasons presented above.

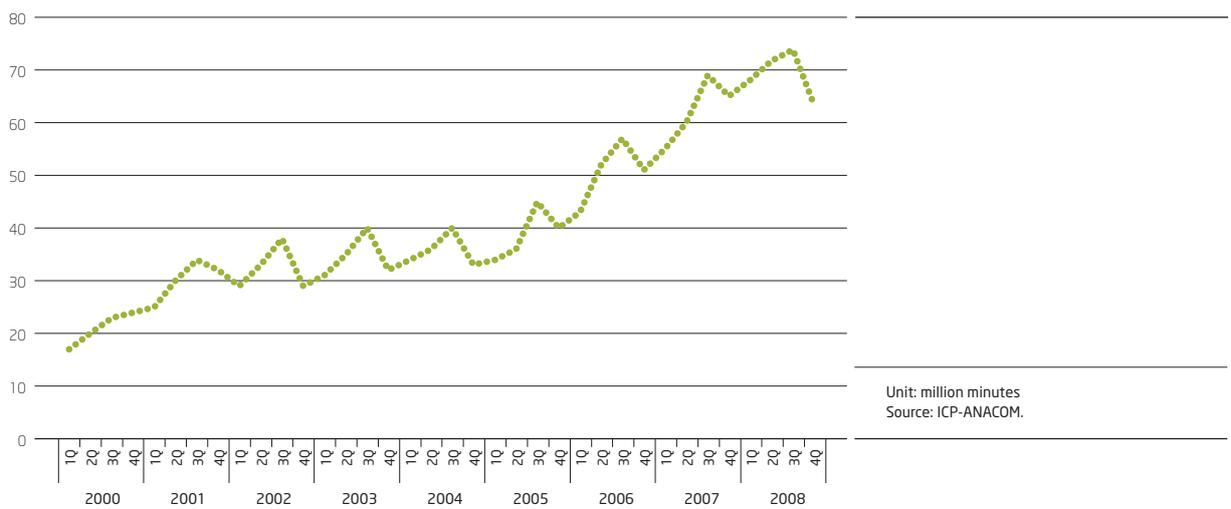
<sup>69</sup> Traffic out of the country by subscribers of national operators, using the networks of foreign operators.

**Seasonality coefficient for roaming out traffic**  
Graph 4.43



It should be highlighted, however, that in 4Q08 there was a more accentuated fall in roaming out traffic than that seen in the same period in previous years.

**Evolution of roaming out traffic**  
Graph 4.44



Regarding roaming out specifically, there has been a growing trend towards using SMS, which may be associated

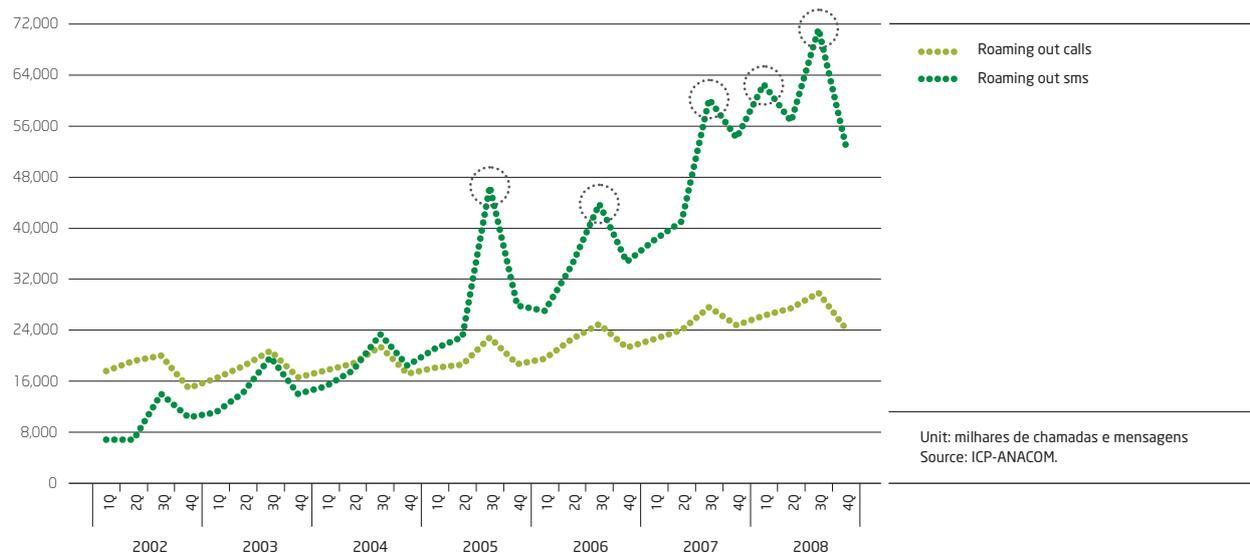
with the price level of this type of calls and with cost of terminations in these cases.

Also 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 roamed-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

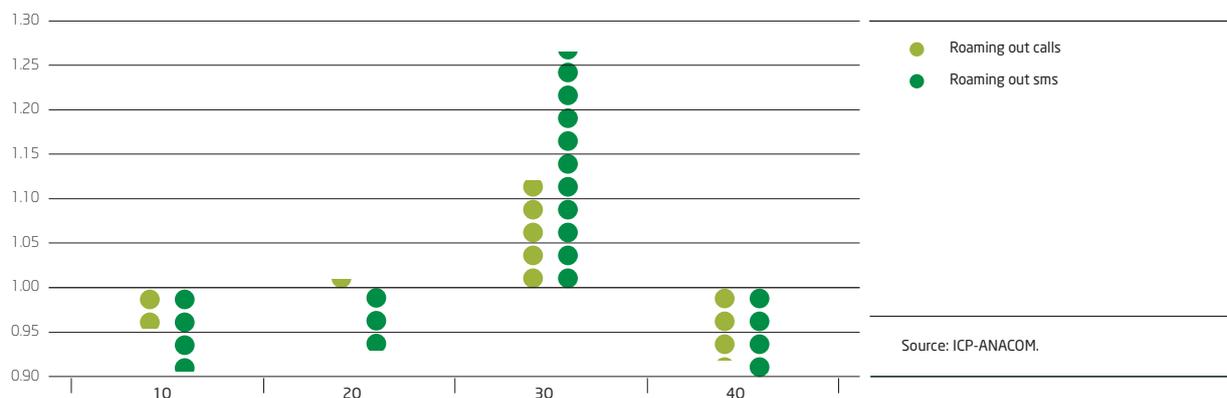
the third quarters of the years from 2005 to 2008, which coincide with the holiday periods.

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 4.45



**Seasonality coefficient for roaming out traffic**  
Graph 4.46



On average, calls made in roaming are longer than those made within the national networks.

The average duration of calls in roaming in was 126 seconds, 3.5 seconds longer than the figure recorded in the previous year.

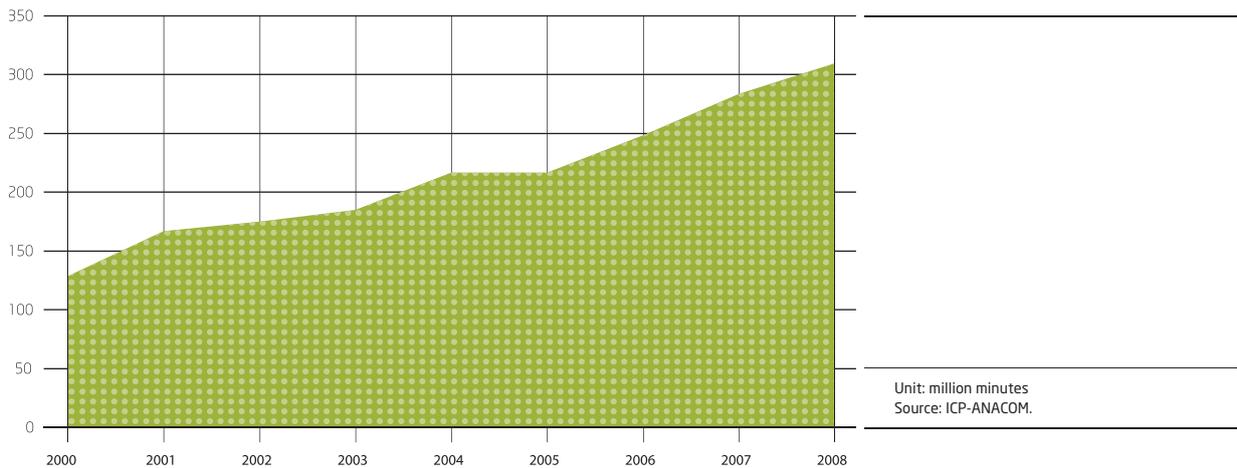
In 2008, roaming in traffic recorded significant variations, with particular emphasis on text messages (20 per cent).

**Roaming in traffic  
Table 4.21**

	2007	2008	2007/2008 var.	2004/2008 average annual var.	2004/2008 var.
Voice calls in roaming	138,772	147,337	6.2%	7.4%	32.8%
No. of minutes in roaming	283,593	309,646	9.2%	9.3%	42.9%
Text messages in roaming	242,019	290,334	20.0%	20.2%	108.9%
Average duration of calls (sec.)	122.6	126.1	3.5 seconds		

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

**Evolution of the volume of roaming in traffic  
Graph 4.47**



Unit: million minutes  
Source: ICP-ANACOM.

Roaming out traffic also showed significant increases: around 8.8 per cent for calls, 11.3 per cent for minutes and 25.7 per cent for text messages.

### Roaming out traffic Table 4.22

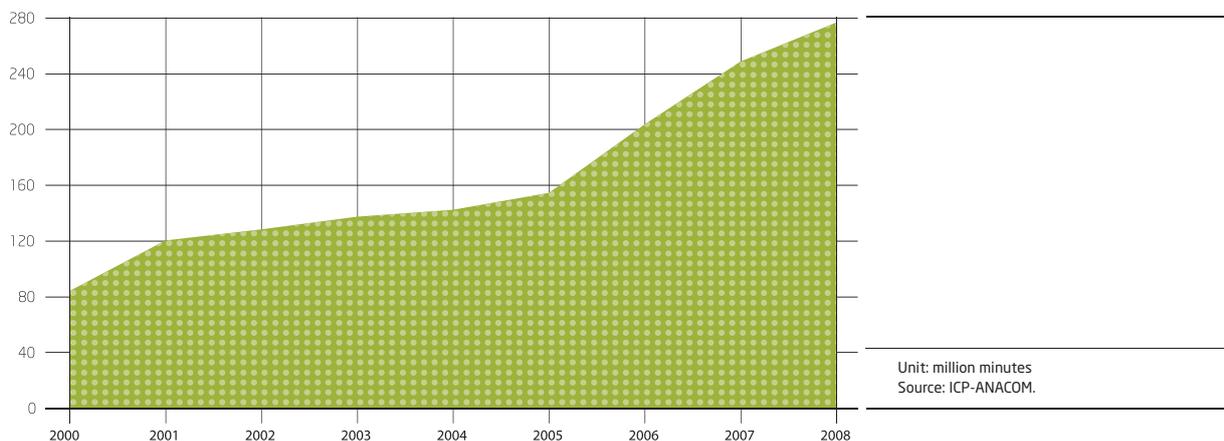
	2007	2008	2007/2008 var.	2004/2008 average annual var.	2004/2008 var.
Voice calls in roaming	99,140	107,842	8.8%	9.4%	43.3%
No. of minutes in roaming	248,917	276,943	11.3%	18.1%	94.3%
Text messages in roaming	193,441	243,145	25.7%	34.2%	224.2%
Average duration of calls (sec.)	150.6	154.1	3.4 seconds		

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

A growing trend towards the use of SMS can be seen, probably stimulated by the price level of this type of calls

and by the cost of terminations in these cases, as previously mentioned.

### Evolution of the volume of roaming out traffic Graph 4.48



During 2008 there was an increase in the average duration of calls in roaming out, which went from around 151 seconds to 154 seconds per call.

In this year, the trend towards balancing out roaming in and roaming out traffic was also strengthened. Roaming in traffic, despite being higher than roaming out traffic, has

been losing importance in relative terms, in particular regarding the volume of minutes and messages. Roaming out traffic in terms of minutes represents 89 per cent of roaming in traffic, 1 per cent more than in the previous year. The relative importance of the volume of messages in roaming out has increased 4 per cent, and now represents 84 per cent of roaming in messages.

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

It should be noted that, according to the information available, the entry into force in the 3rd quarter of 2007 of the Regulation on International Roaming (EC) no. 717/2007 of the European Parliament and the Council, of 27 June 2007, led to a statistically significant increase in the average duration of roaming out calls in the amount of around 10.8 seconds<sup>70</sup>.

**Data services**

Among the data services, sending multimedia messages (MMS) continues to be the most used 3G service, with 37.8 per cent of all responses, and its popularity has increased in relation to previous years.

**Services used with the 3G mobile phone**  
**Table 4.23**

	<b>Dec. 2008</b>
MMS	37.8
Video calls	11.4
Access to the operator's portal	7.9
Access to the internet (via mobile phone)	9.0
Access to e-mail	4.8
Music download	9.9
Video download	5.7
None of the above	52.7

Unit: %  
Source: ICP-ANACOM, Electronic communications consumer Survey, December 2008.  
Note: Multiple responses.

However, as seen in previous surveys, 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, demonstrated a significant increase in 2008, although the number of MMS per subscriber was very small.

**MMS originating in own network**  
**Table 4.24**

	<b>2007</b>	<b>2008</b>	<b>2007/2008 var.</b>	<b>2004/2008 average annual var.</b>	<b>2004/2008 var.</b>
Número de mensagens multimédia	48 734	76 846	57.7%	40.3%	286.9%

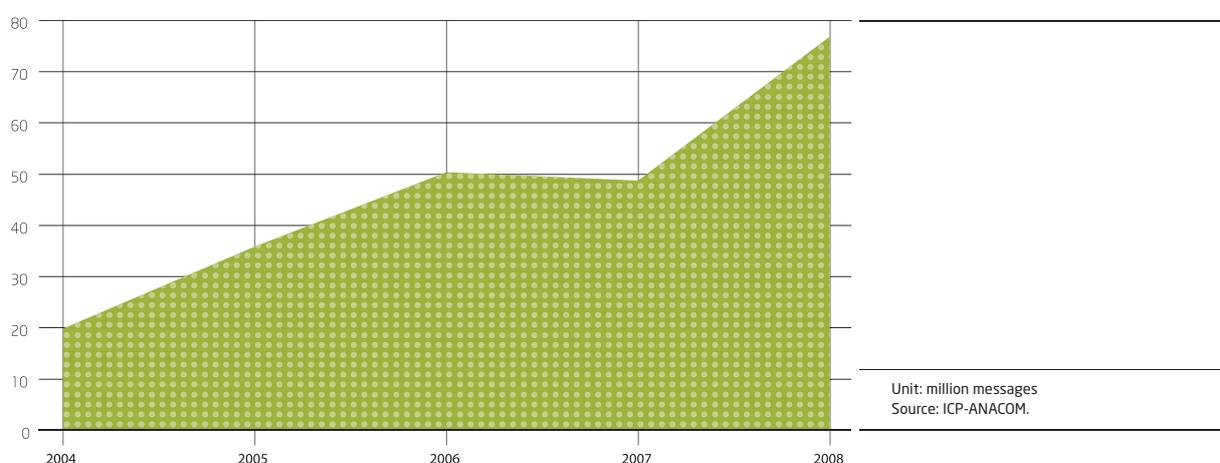
Unit: thousand messages, %  
Source: ICP-ANACOM.

<sup>70</sup> The equation [Average duration of roaming out calls = a + b\*trend + c\*REG + e] was estimated, where REG is a dummy variable which has the value 1 in periods in which the Regulation is in force, using the OLS method. This model has an R<sup>2</sup> of 87 per cent and the individual coefficients and the model as a whole are statistically significant to a level of significance of 95 per cent. (The seasonality variables were eliminated from the model since they were not statistically significant).

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

user, it is also possible to consult the message on the operator's site.

#### Evolution of the number of MMS sent Graph 4.49



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

#### Video telephony

The video telephony service demonstrates a level of traffic which is still in the early stages, although significant variation was recorded in 2008.

#### Video calls traffic Table 4.25

	2007	2008	2007/2008 var.
Number of video calls	3,569	4,942	38.5%
Volume of video calls traffic	5,842	14,352	145.7%

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 agglomerations and on the major roads of Mainland Portugal, carried out by ICP-ANACOM in December 2008, the performance of the video telephony

service is still lower than that recorded for the voice service, despite the significant improvements that have been seen over time, in particular in the indicator "Service Accessibility". Regarding the indicator "Call Termination Rate", this shows better levels than the "Service Accessibility" indicator, and the differences between the urban agglomerations and the major roads are less accentuated.

**Mobile TV**

The Mobile TV service was introduced in 2006.

of this service count for 2.8 per cent of the total subscribers and 33 per cent of active users of 3G services.

This service demonstrated a 102.5 per cent increase in the number of users last year. The roughly 423 thousand users

**Mobile TV users**  
**Table 4.26**

	<b>2007</b>	<b>2008</b>	<b>2007/2008 var.</b>
Number of Mobile TV users	209	423	102.5%

Unit: thousand users, %  
Source: ICP-ANACOM.

**WAP**

Although it grew significantly in 2008, data services traffic via the WAP protocol is relatively low. This evolution may be connected with the development of the 3G services (dealt with in the chapter internet Access Service).

**Data services accesses**  
**Table 4.27**

	<b>2007</b>	<b>2008</b>	<b>2007/2008 var.</b>
APN WAP sessions	130,445	174,386	33.7%
Volume of APN WAP sessions (MB)	15,917	26,971	69.5%

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

**Service revenue and average revenue per subscriber<sup>71</sup>**

The volume of revenue from the service to clients reached around 2.7 billion Euros, representing an increase of 4.7 per cent on the previous year.

<sup>71</sup> The figures presented are calculated based on information gathered from the operators.

**Revenue from the provision of the service to clients**  
**Table 4.28**

	2007		2008		2007/2008 var.
	Absolute value	%	Absolute value	%	
<b>Revenue from monthly fees (subscriptions and additional services)</b>	<b>159,958</b>	<b>6.2%</b>	<b>160,188</b>	<b>6.2%</b>	0.1%
<b>Revenue from voice communications</b>	<b>1,899,130</b>	<b>73.2%</b>	<b>1,864,721</b>	<b>71.9%</b>	-1.8%
of which revenue from roaming out	156,691	6.0%	140,315	5.4%	-10.5%
<b>Revenue from message services</b>	<b>260,115</b>	<b>10.0%</b>	<b>256,701</b>	<b>9.9%</b>	-1.3%
of which revenue from MMS	12,842	0.5%	13,350	0.5%	4.0%
<b>Revenue from mobile data services</b>	<b>200,014</b>	<b>7.7%</b>	<b>341,333</b>	<b>13.2%</b>	70.7%
Mobile broadband internet	130,134	5.0%	259,377	10.0%	99.3%
of which access via cards/modem	64,720	2.5%	207,551	8.0%	220.7%
video calls	1,290	0.0%	1,717	0.1%	33.1%
Mobile TV	3,162	0.1%	4,648	0.2%	47.0%
roaming-out excluding voice communications	15,022	0.6%	21,788	0.8%	45.0%
other revenue from mobile data services	50,405	1.9%	53,803	2.1%	6.7%
<b>Other revenue</b>	<b>75,936</b>	<b>2.9%</b>	<b>94,915</b>	<b>3.7%</b>	25.0%
<b>Revenue from the provision of the service to clients</b>	<b>2,595,153</b>		<b>2,717,857</b>		4.7%

Unit: thousand Euros, %.

Source: ICP-ANACOM.

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

The growth in revenue was fuelled by data services, particularly by internet access. Data services now count for around 23 per cent of the total revenue, 5 per cent more than the previous year. If the amount of revenue from the mobile broadband internet service was not considered, the volume of revenue would present a decrease of 0.27 per cent.

The reduction in roaming tariffs imposed by the EU (See the section on roaming traffic) may have affected the revenue

from this traffic, which decreased 10.5 per cent in relation to the previous year. This occurred in spite of the increase in traffic (+8.4 per cent in the case of calls, +11.2 per cent in minutes and +25 per cent in messages).

According to the data available, it is estimated that the average monthly revenue per subscriber fell around 5.2 per cent in 2008 and 13.6 per cent since 2004.

**Average monthly revenue per subscriber**  
Table 4.29

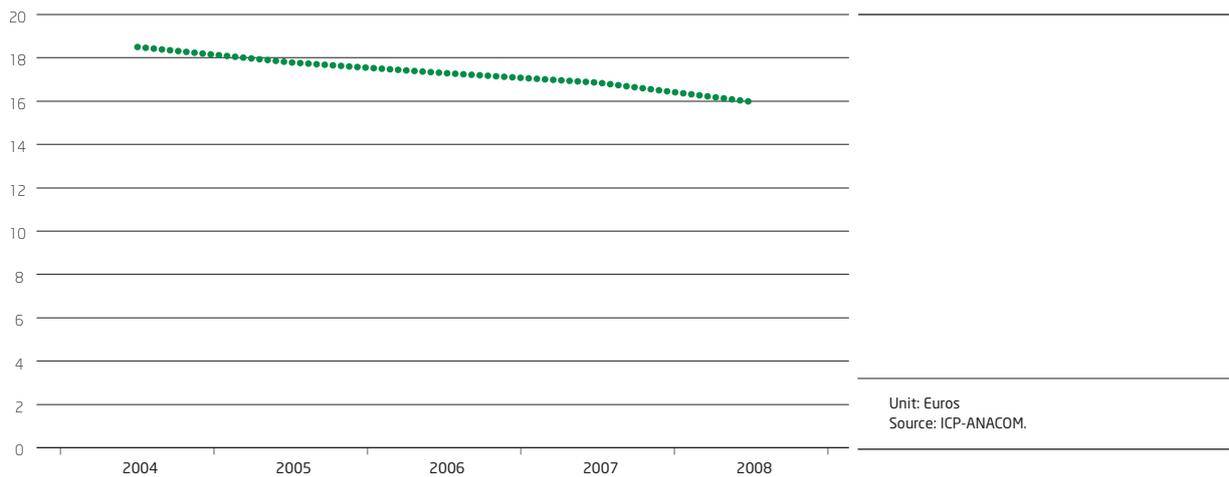
	2004	2005	2006	2007	2008	2007/2008 var.
Average monthly revenue per average subscriber	€18.49	€17.79	€17.30	€16.84	€15.97	-5.2%

Unit: Euros, %.

Source: ICP-ANACOM

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

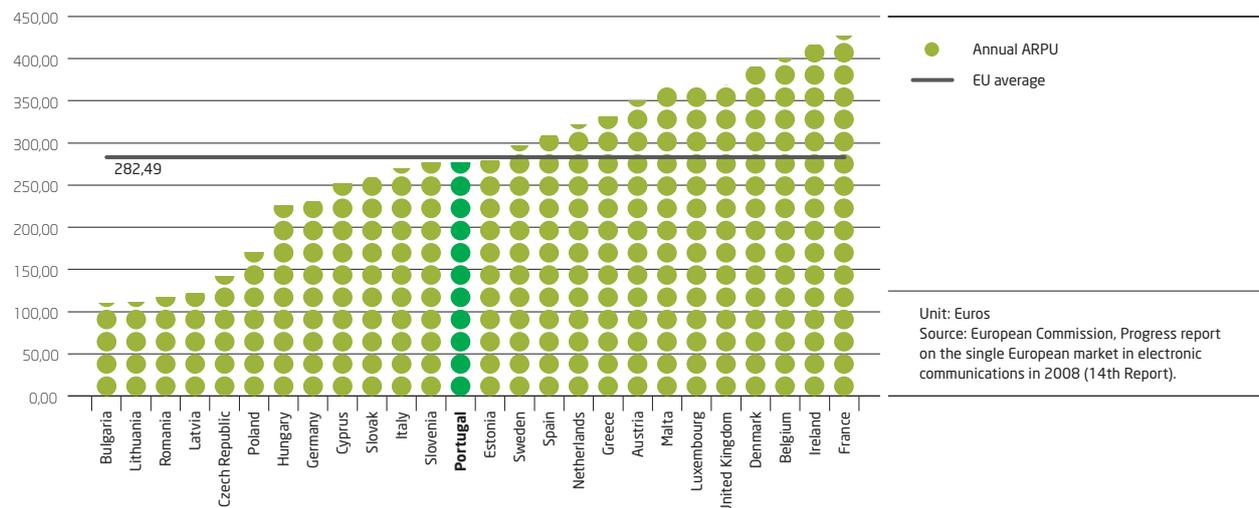
**Evolution of the average monthly revenue per subscriber**  
Graph 4.50



Unit: Euros  
Source: ICP-ANACOM.

In relation to the other EU countries, in 2007 the average revenue per subscriber calculated in Portugal was very similar to the average.

**Average annual revenue per user in the EU 2007**  
Graph 4.51



Unit: Euros  
Source: European Commission, Progress report on the single European market in electronic communications in 2008 (14th Report).

### Consumer evaluation

In order to evaluate consumers' perceptions of the quality of the MTS, some items from the electronic communications consumer Survey are presented below.

In general terms, and as has been the case in previous years, MTS consumers are satisfied with the service provided by their provider. 81 per cent of respondents were satisfied or very satisfied with this service.

### Level of satisfaction with the service provided by their operator Table 4.30

	Dec. 2008
Very dissatisfied	0.4
Dissatisfied	14.7
Satisfied	70.9
Very satisfied	10.4
Na	3.6

Unit: %

Source: ICP-ANACOM, Electronic communications consumer Survey, December 2008.

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

complained to the mobile operators since they became their clients.

### Complaints to the main operator (in the last 12 months) Table 4.31

	Dec. 2008
Yes	3.6
No	96.3
Na	0.01

Unit: %

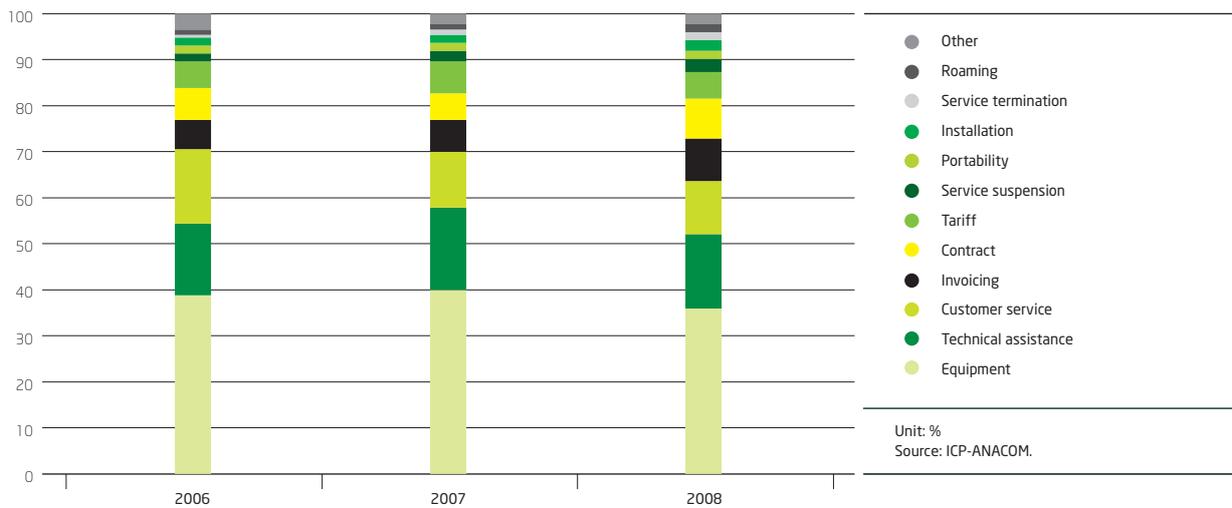
Source: ICP-ANACOM, Electronic communications consumer Survey, December 2008.

In 2008 ICP-ANACOM received around 6,236 complaints in writing regarding the mobile telephone service and respective providers. It should be mentioned that the MTS counted for around 18.4 per cent of the total complaints regarding electronic communications services received by ICP-ANACOM<sup>72</sup>, down 7 per cent on the previous year.

Around half of these requests were connected to issues concerning the terminal equipment and technical assistance, which for the most part does not depend on the service providers. In addition, a reduction in the number of complaints regarding the operators' customer services was recorded.

<sup>72</sup> Includes complaints made directly to ANACOM and those made via the Complaints Book.

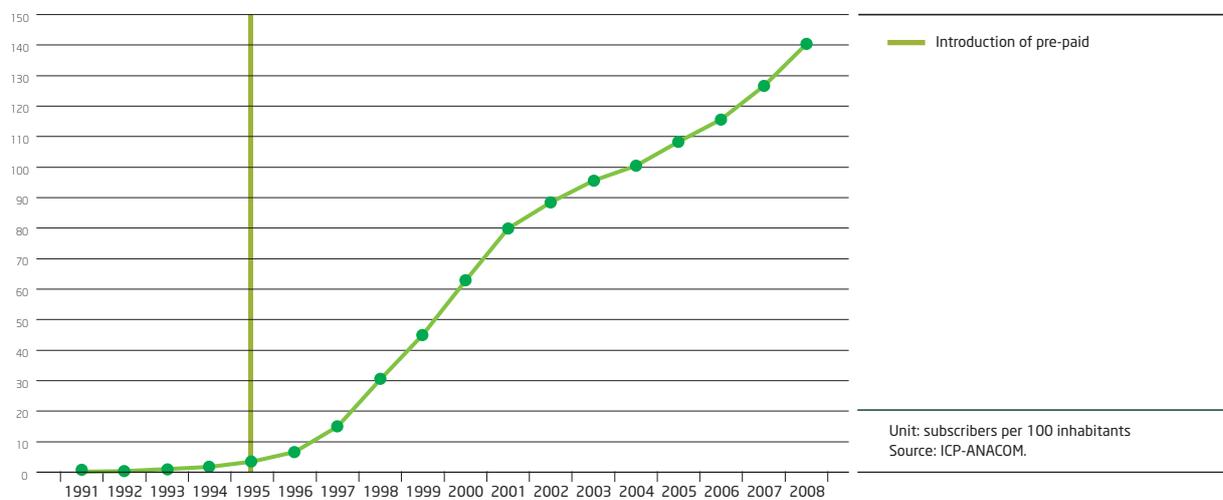
**Complaints about the MTS received by ICP-ANACOM in writing**  
Graph 4.52



### Service penetration

MTS penetration in Portugal once again reached very high figures this year. By the end of 2008, the rate of penetration of the service had increased to 140.4.

**MTS penetration in Portugal**  
Graph 4.53



It should be stressed that, according to the December 2008 electronic communications consumer Survey, around 75.8 per cent of those residing in Portugal were clients of the MTS (this figure cannot be compared with the previous year since, as previously mentioned, the method for gathering the data was changed).

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

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

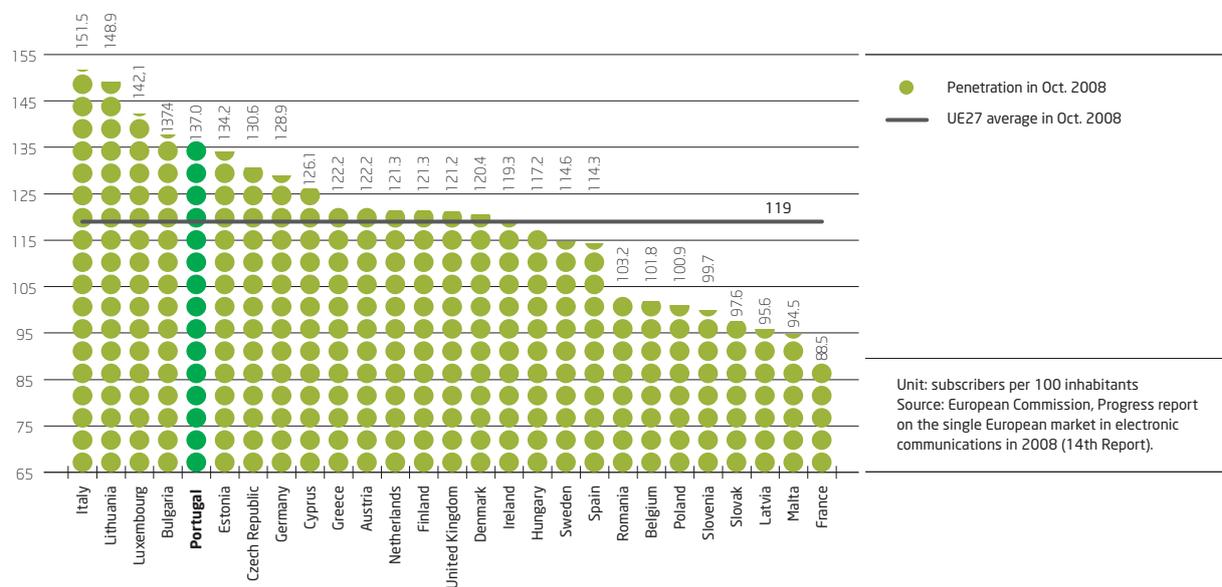
### Number of active cards Table 4.32

	Dec. 2008
1 card	90.6
2 cards	8.5
3 cards	0.6
More than 3 cards	0.2

Unit: %  
Source: ICP-ANACOM, Electronic communications consumer Survey, December 2008.

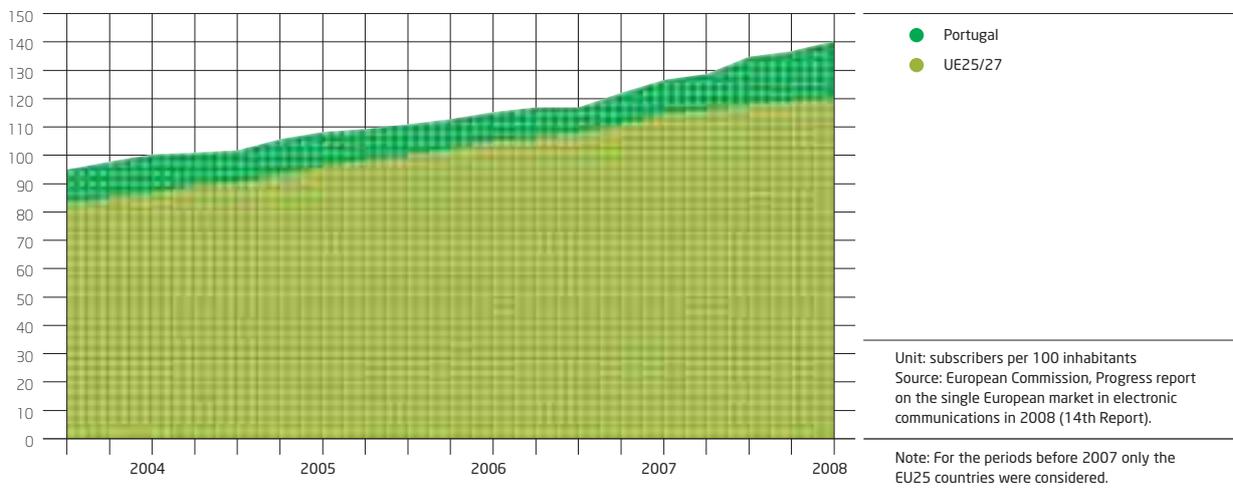
- The activation of new SIM cards for the exclusive use of data services and access to the internet;
- The fact that there are active cards connected to machines, equipment and vehicles (automatic payment terminals using the mobile network, alarm, security, telemetry and telemetric equipment, etc.);
- The fact that there are cards connected to companies.
- The MTS penetration recorded in 2008 is still above the EU average, ranking 7th among the 27 EU countries.

### MTS penetration in the EU Graph 4.54



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

**Evolution of MTS penetration in Portugal and in the EU**  
Graph 4.55

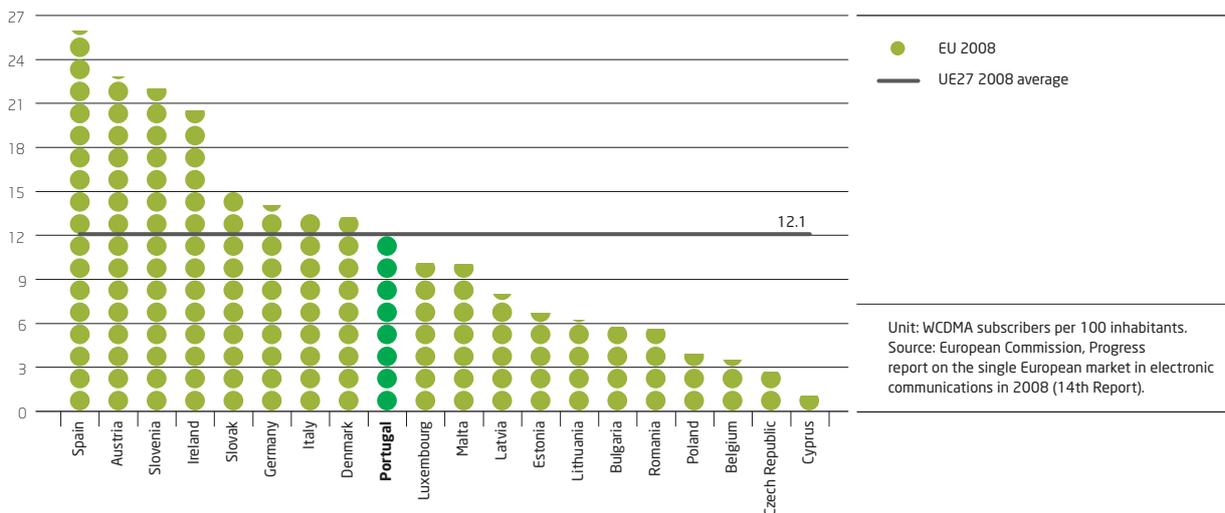


The growth in MTS penetration and the evolution in relation to the European average have been influenced, namely, by the rapid introduction of the GSM services in Portugal, by the low penetration of the FTS, by the investment in terms of marketing and by the introduction of innovations by the operators who are present in the market (namely, innovations regarding the tariff scheme). 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 mass use of the service and “democratization” of the use of the mobile phone, which has changed from a status symbol into a regular commodity available to all.

At the end of 2008 Portugal ranked 9th among the EU27 countries in terms of penetration of WCDMA users.

**UMTS penetration in the EU27 – 2008**  
Graph 4.56

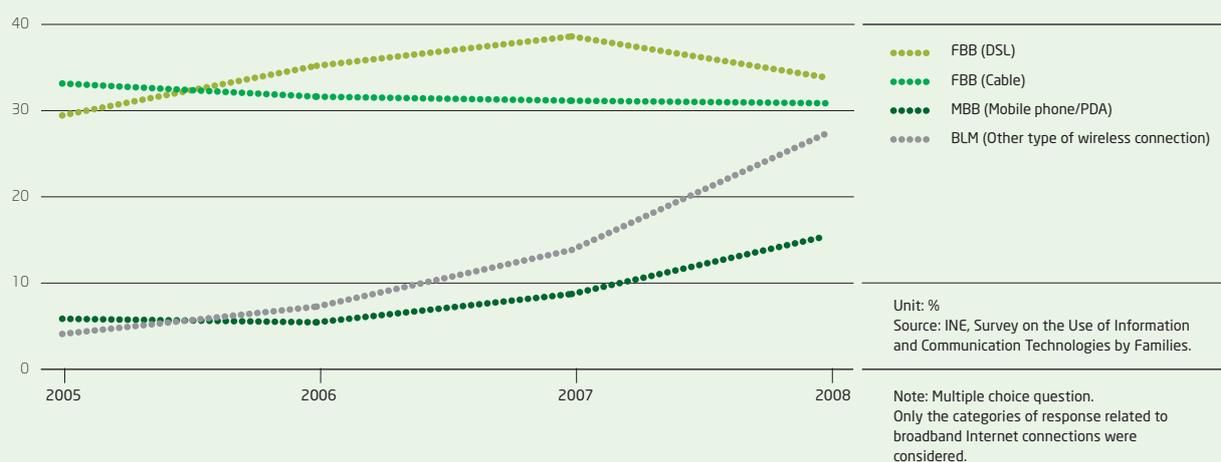


### III – Users of fixed broadband vs. users of mobile broadband

The most dynamic segment in the consumption of broadband is mobile broadband. In 2008, according to the INE, 15 per cent of households with access to the internet had mobile broadband via mobile phone and 27 per cent via another type of wireless connection.

Mobile broadband has become increasingly important among the modes of access to the internet.

**Evolution of the consumption of fixed broadband (FBB) and mobile broadband (MBB) in households with access to the Internet**  
Graph III.1



On the other hand, the information available does not seem to suggest the existence of a complementary relationship between fixed broadband and mobile broadband. In fact, the percentage of households that simultaneously have fixed broadband and mobile broadband is very low. According to

the Electronic Communications Services Consumer Survey carried out by ICP-ANACOM in December 2008<sup>73</sup>, only 1.7 per cent of households have the two types of access – fixed and mobile. The exclusive use of mobile broadband is seen in 24 per cent of the households in this group.

<sup>73</sup> 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 I having been composed of 2040 interviews on the Mainland and 780 interviews in each of the Autonomous Regions. 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 the National Institute of Statistics (INE). The gathering of information was by CAPI - Computer Assisted Personal Interviewing which took place between 5 November and 29 December 2008. 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 per cent). 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 3 p.p. (with a level of reliability of 95 per cent). The company TNS-Euroteste was responsible for the fieldwork and data handling.

**Broadband Internet service via fixed and/or mobile connection**  
**Graph III.2**



Unit: %

Source: ICP-ANACOM, Survey on the Consumption of Electronic Communications, December 2008.

It is also significant that there are differences between the characteristics of the households that consume fixed broadband and the characteristics of households that use mobile broadband.

Although broadband penetration is more accentuated in the Lisbon region, it is in the Centre Region that there are proportionately more users of mobile broadband than fixed broadband. Almost 35 per cent of the households in the

Centre region which use broadband use mobile access. In Lisbon and the Autonomous Regions the proportion of mobile connections among users of broadband is lower.

Broadband internet access is more common among households of a smaller size, which include children and in the higher social classes. However, in these groups, the relative weight of mobile broadband is not significantly different from the average.

**Broadband penetration and distribution by connection type (fixed or mobile) by NUTS II region, family structure and social class**  
**Table III.1**

		Broadband Penetration	Distribution by connection type	
			Fixed Broadband	Mobile Broadband
NUTS II region	North	26	71	30
	Centre	25	66	34
	Lisbon	42	86	15
	Alentejo	38	73	36
	Algarve	15	26	74
	Azores	36	90	11
	Madeira	34	91	11
Family size	1 individual	12	56	47
	2 individuals	18	79	22
	3 individuals	43	78	23
	4 individuals	47	76	27
	5 or more individuals	39	78	25
Children in the household		49	74	28
Elderly persons in the household		16	85	17
Social class	A\B	63	78	24
	C1	44	75	28
	C2	37	73	29
	D	13	78	22
<b>Total</b>		<b>31</b>	<b>76</b>	<b>26</b>

Unit: %

Source: ICP-ANACOM, Electronic Communications Consumer Survey, December 2008.

Note 1: The proportions highlighted in yellow are the result of a reduced number of sample observations ( $n < 30$ ), and therefore some caution should be taken when interpreting them.

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 averages highlighted in blue indicate those which are significantly different (in the column) according to the test of equality between averages. Light blue shows the higher averages and dark blue the lower ones.

Note 4: The fact that the sum of the totals of the last two columns is greater than 100 results from the fact that there are households with the two types of broadband internet connection.

Considering some of the individual characteristics of the respondent of the household, it is apparent that there is greater consumption of broadband among the working population, students, those with higher levels of education and those in the younger age groups. This profile is visible both for the consumer of mobile broadband and the consumer of fixed broadband.

However, a greater weight of mobile broadband users is highlighted in the group of broadband users with the 9th grade and among those who are aged between 15 and 24. In these two groups, the proportion of mobile connections is over 30 per cent.

**Broadband penetration and distribution by connection type (fixed or mobile) by the characteristics of the individual respondent**  
**Table III.2**

		Broadband Penetration	Distribution by connection type	
			FBB	MBB
Employment status	Employed	38	74	27
	Student	51	72	30
	Unemployed	45	78	32
	Retired	11	87	15
	Other inactive	16	90	10
Level of education	Higher education	51	73	28
	Secondary education	61	79	23
	9th grade	49	72	31
	6th grade	33	78	22
	4th grade	13	87	14
Age group	Lower than 4th grade	4	69	31
	15-24 years	49	68	34
	25-44 years	40	77	24
	45-64 years	25	83	19
	65 or more years	6	91	9
<b>Total</b>		<b>31</b>	<b>76</b>	<b>26</b>

Unit: %

Source: ICP-ANACOM, Electronic Communications Consumer Survey, December 2008.

Note 1: The proportions highlighted in grey are the result of a reduced number of sample observations (n<30), and therefore some caution should be taken when interpreting them.

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.

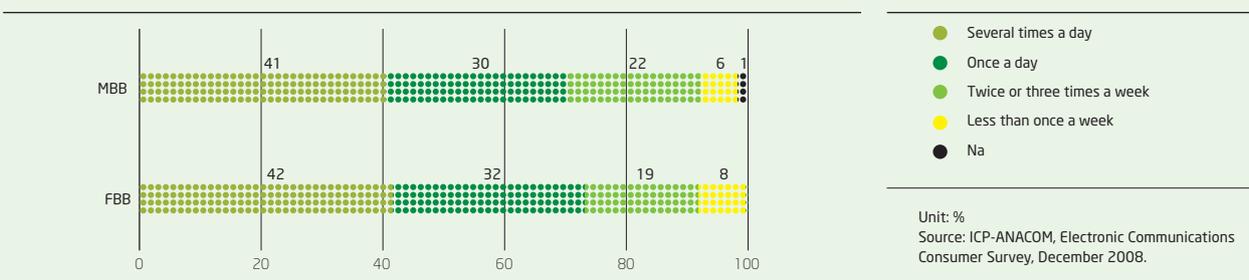
Note 3: The averages highlighted in blue indicate those which are significantly different (in the column) according to the test of equality between averages. Light blue shows the higher averages and dark blue the lower ones.

Note 4: The fact that the sum of the totals of the last two columns is greater than 100 results from the fact that there are households with the two types of broadband internet connection

The frequency of use of the internet service does not differ substantially between fixed broadband and mobile

broadband users. In both services, over 70 per cent of the users access the service at least once a day.

**Frequency of use of Internet among fixed broadband and mobile broadband customers**  
Graph III.3



Households with fixed broadband present an average level of satisfaction with the service, which is virtually identical to that of users of mobile broadband<sup>74</sup>. Regarding

satisfaction with the speed of the internet statistically significant differences can be seen. In this area, consumers of mobile broadband are less satisfied, on average.

**Satisfaction of the FBB and MBB consumer**  
Graph III.4



Note 1: Assessment scale used: 1 (Very dissatisfied) to 10 (Very satisfied).  
Note 2: Considering the test of equality between averages to assess the equality of average satisfaction (regarding the service and the velocity) of FBB and MBB users, it can be concluded that statistically significant differences only exist in the average satisfaction regarding velocity of access to the Internet.

<sup>74</sup> The assessment of satisfaction considers the main type of internet connection in the household.