

# The Communications Market 2007

## 4 Telecommunications

# Contents

<b>4.1 The year in telecoms</b>	<b>255</b>
4.1.1 UK telecoms industry key metrics	255
4.1.2 Overall costs for residential consumers fell by 13% in 2006	255
4.1.3 Local loop unbundling accelerates	256
4.1.4 BT's share of voice call volumes falls below 50%	258
4.1.5 Majority of UK households have broadband	259
4.1.6 Broadband headline speeds double in 2006	260
4.1.7 Cable broadband accounts for less than 25% of all connections	261
4.1.8 Service bundling proliferates as LLU availability increases	262
4.1.9 Operators focus on retention	265
4.1.10 Operators focus on direct sales rather than those through third-parties	265
4.1.11 Substitution of fixed calls as mobile increases market share	266
4.1.12 'Digital mums' and 'silver surfers' change landscape of internet	267
4.1.13 Different technologies deliver mobile broadband	267
4.1.14 Conditions in place for take-off of internet on mobile phones	268
4.1.15 New life in mobile advertising business models	269
<b>4.2 The telecoms industry</b>	<b>271</b>
4.2.1 Introduction	271
4.2.2 Revenue	271
4.2.3 Industry structure	274
4.2.4 Fixed line access	276
4.2.5 Fixed-line revenues	278
4.2.6 Fixed-line volumes	281
4.2.7 Mobile connections	282
4.2.8 Mobile revenue	284
4.2.9 Internet connections	287
4.2.10 Internet access revenues	290
4.2.11 Business markets	290
<b>4.3 The Telecoms User</b>	<b>293</b>
4.3.1 Introduction	293
4.3.2 Household spend and pricing	293
4.3.3 Fixed-line and mobile penetration	298
4.3.4 Fixed-line and mobile usage	300
4.3.5 Customer satisfaction	303
4.3.6 Switching	304
4.3.7 Internet access	305
4.3.8 Internet usage	308
4.3.9 Voice over internet protocol (VoIP)	311
4.3.10 Children	313
4.3.11 SMEs	315

## 4.1 The year in telecoms

### 4.1.1 UK telecoms industry key metrics

UK telecoms industry	2002	2003	2004	2005	2006
Total telecoms retail revenue (£bn)	32.3	34.4	36.3	37.9	38.5
Total telecoms wholesale revenue (£bn)	8.6	8.8	8.6	8.3	8.5
Telecoms service revenues (£bn)	40.9	43.1	44.8	46.2	47.0
Average weekly household spend on telecoms services (£)	60.7	64.2	66.7	65.7	64.7
Fixed access and call revenues (£bn)	11.8	11.4	10.7	10.0	9.6
BT share of fixed revenues (%)	71.6	71.1	68.9	66.6	63.0
Proportion of unbundled exchanges (%)				12.4	23.3
Fixed lines (millions)	35.2	35.0	34.6	34.1	33.6
Mobile retail revenues (£bn)	9.0	10.5	12.0	13.0	13.9
Active mobile connections per 100 population	82.6	88.0	99.5	109.1	116.6
Active 3G mobile connections per 100 population		0.4	4.3	7.7	13.0
Internet connections per 100 population	18.9	22.2	25.1	26.0	27.6
Broadband connections per 100 population	2.3	5.2	10.2	16.5	21.7

### 4.1.2 Overall costs for residential consumers fell by 13% in 2006

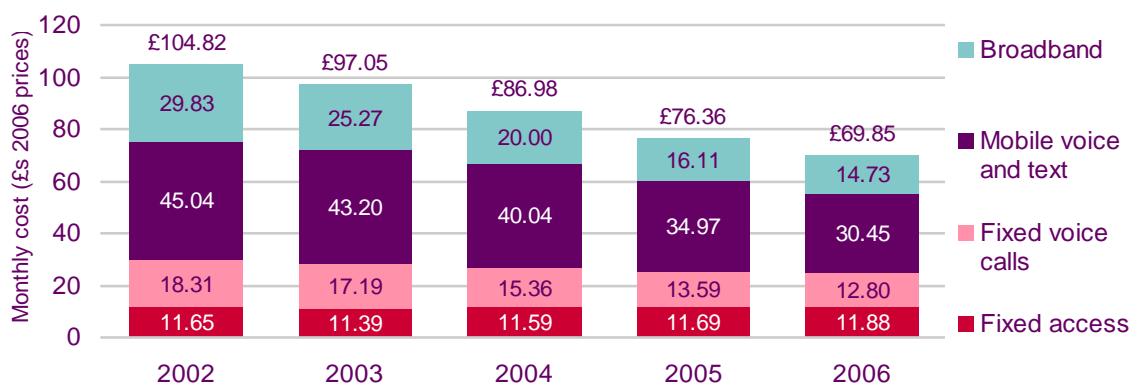
Increasing competition in the markets for fixed, mobile and broadband customers led to continued price falls for UK residential telecoms customers during 2006. Our analysis of the cost of a typical basket of residential telecoms services (consisting of a fixed line with average call volumes fixed at 2006 levels, two mobile phones also with 2006 usage levels and a broadband connection at average cost) shows that consumers would have paid £6.51 (9%) more for the same bundle of services in 2005 than in 2006 (Figure 4.1). In the five years to 2006 the cost saving on the same bundle of services was 38% in real terms.

The largest like-for-like cost saving in 2006 was for mobile services, down 13%. Although retail revenues from residential customers rose by 2% (mobile business revenues increased by 15%), this fall reflects lower prices per minute. This was driven by operators increasing the numbers of inclusive minutes in contracts (and usage has risen accordingly), while pre-pay prices have also fallen as competition heightens in a market where growth is slowing. The average cost of a residential broadband connection fell by around 9% during 2006, despite a doubling of the average blended headline speed to 3.6Mbit/s (rising to 4.6Mbit/s by June 2007). The cost of fixed access charges and calls at 2006 volumes fell by 2% per residential line, with average access charges going up (as rental packages increasingly include a bundle of calls) and call spend falling.

Rising take-up of bundled communications services has contributed to the falling costs of all services. (In this analysis the costs of individual services within a bundle have been

allocated using the revenue splits in the raw data provided to Ofcom by communications providers).

**Figure 4.1 Real cost of a basket of residential telecoms services**



Source: Ofcom

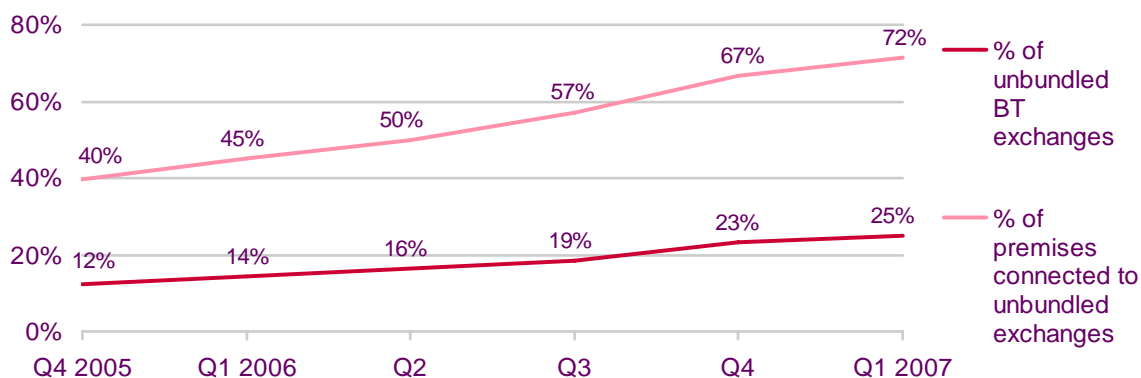
Note: Figures include VAT; figures have been restated from the 2006 Communications Market Report to reflect more accurate data.

### 4.1.3 Local loop unbundling accelerates

A major driver of recent falls in the cost of telecoms services has been the accelerated rate of exchange unbundling. During 2006 the proportion of UK premises able to receive fixed-line and DSL broadband services based on local loop unbundling (LLU) increased from 40% to 67% and by the end of March 2007 this figure had further increased to 72% (Figure 4.2).

This level of availability was achieved through the unbundling of just 25% of BT's 5,600 local exchanges. The high upfront cost of unbundling an exchange (related to the purchase and installation of equipment in an exchange) along with the relatively low cost associated with connecting each additional customer means that LLU operators have tended to locate equipment in exchanges connected to a large number of premises.

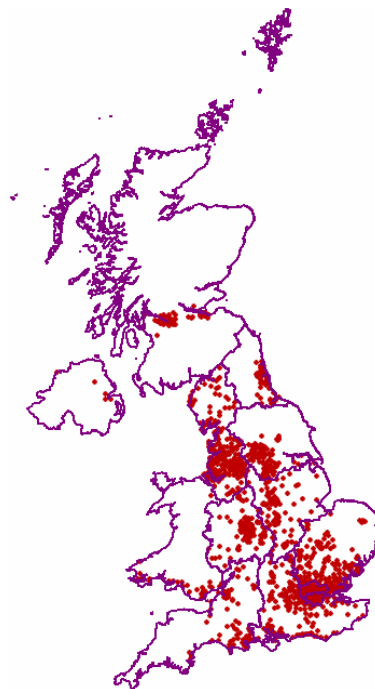
**Figure 4.2 Proportion of unbundled exchanges and connected premises**



Source: Ofcom / operators

As exchanges covering a larger number of delivery points tend to be found in more densely populated areas (Figure 4.3), LLU availability is usually higher in urban than in rural areas. This can result in lower-priced fixed telecoms services being more widely available in urban areas; unbundling exchanges gives operators control over more of the value chain and access to economies of scale not available when using BT wholesale tariffs. They are then able to pass these savings on to consumers.

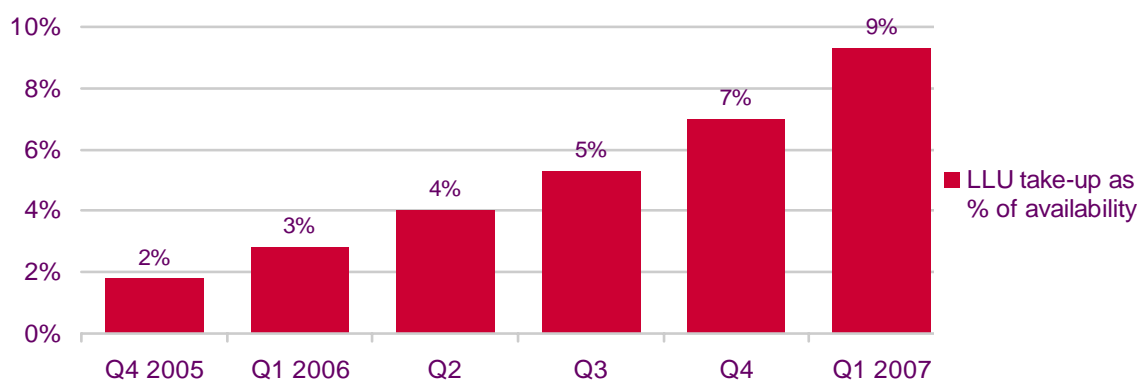
**Figure 4.3** Map of unbundled BT exchanges



Source: Ofcom / BT data; December 2006

Similarly, people living in areas without cable or an unbundled exchange (around 6.2m households at the end of March 2007) do not have access to broadband services with higher headline speeds than BT's standard up to 8Mbit/s DSL offering (such as Be's up to 24Mbit/s and BSkyB's upto 16Mbit/s services). Around 4% of total UK fixed lines took LLU-based fixed-line or DSL services at the end of 2006, equating to 7% of premises in areas where LLU services were available (Figure 4.4). This was an increase of five percentage points on the previous year and more recent data show that LLU penetration in unbundled areas had further increased to 9% by the end of March 2007.

**Figure 4.4** Proportion of premises in unbundled areas taking LLU services



Source: Ofcom / operators

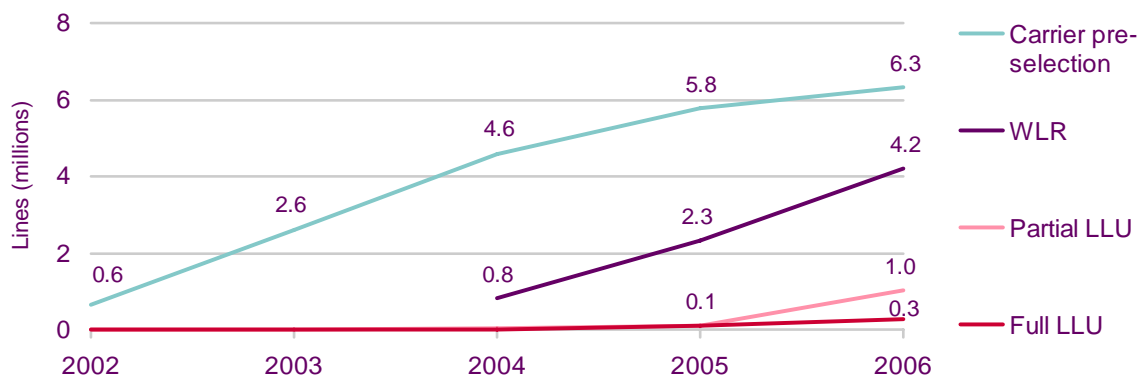
The success of LLU fixed-line services in the UK has been partly driven by 'free' broadband offers. The launch of 'free' broadband by TalkTalk in April 2006 for those taking fixed-line services was a significant escalation in the industry battle for LLU customers. TalkTalk struggled to cope with the response to its offer and some customers have experienced connection delays, although there is evidence of improvements. In May 2006 Orange started to offer 'free' broadband to all customers committing to a minimum £35-a-month mobile

contract. BSkyB followed with the introduction of a similar optional ‘free broadband’ proposition for customers taking its digital satellite services in July 2006.

Although LLU has opened up the retail market by allowing operators to offer differentiated services by installing their own equipment in exchanges, the wholesale market provides opportunities for an entrant to gain scale before deploying costly infrastructure of its own. Vodafone and the Post Office have agreed major wholesale deals with BT in the past year, while in May 2007 Cable & Wireless agreed terms to supply unbundled services to Virgin Media customers in parts of the country not served by Virgin’s cable network. By the end of 2006, 4.2 million lines were using BT wholesale line rental services, compared to 2.3 million a year previously (Figure 4.5). WLR growth has since slowed, and there were 4.3m WLR BT lines at the end of June 2007.

The launch of bundled voice and broadband services also prompted a large increase in carrier pre-selection (CPS) lines, whereby customers use another operator for voice calls but continue to pay a line rental to BT. CPS lines peaked at 6.3 million in 2006. However, the number has now begun to decline as CPS operators roll-out full LLU and migrate customers to LLU-based services: at the end of June 2007 there were 6.1m CPS lines.

**Figure 4.5 Carrier pre-selection, wholesale line rental and LLU lines**

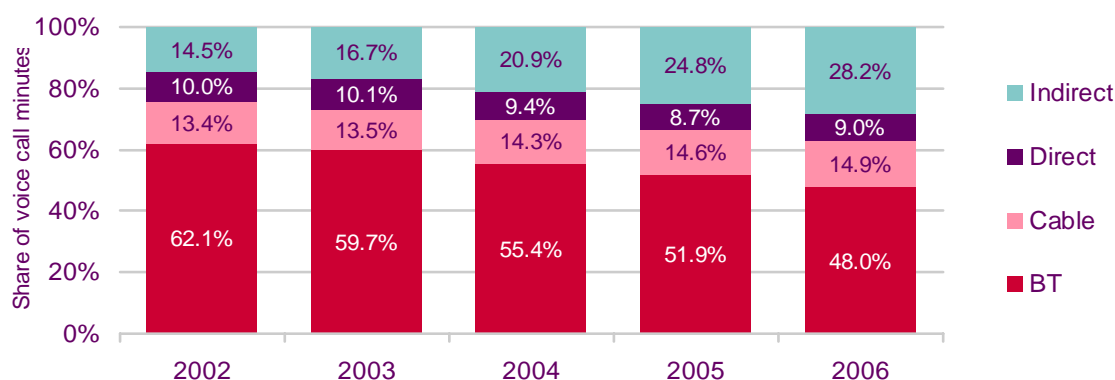


Source: Ofcom / operators

#### 4.1.4 BT’s share of voice call volumes falls below 50%

Growing take-up of wholesale line rental and LLU services has intensified competition in the UK fixed-line market, and in 2006 BT’s retail share of fixed voice call volumes (excluding NTS voice calls) fell to under 50% for the first time (Figure 4.6). Indirect operators (those offering services over another provider’s infrastructure such as CPS and WLR) were the main beneficiaries as their share of voice calls increased from 25% in 2005 to 28%. Virgin Media’s share of voice call volumes was unchanged at 15%, as was that of other direct network operators (9%).

**Figure 4.6 Market share of fixed voice call volumes**

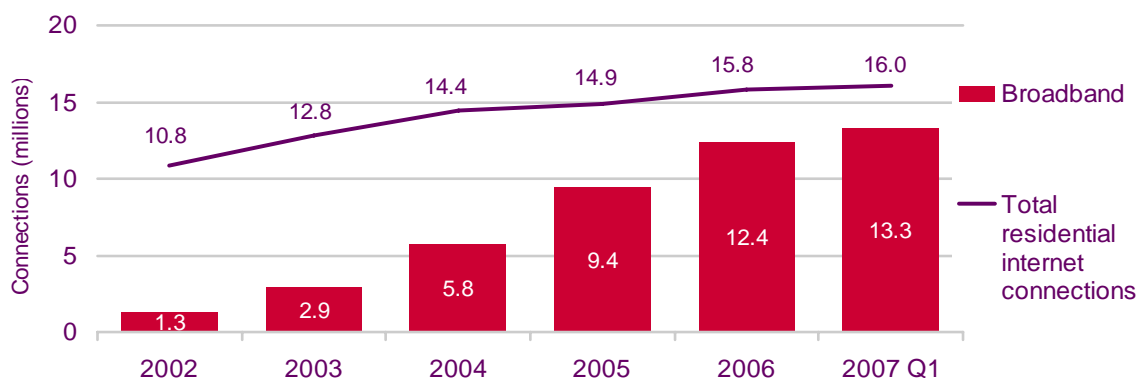


Source: Ofcom / operators  
 Note: Excludes NTS voice calls

### 4.1.5 Majority of UK households have broadband

Ofcom data indicated that by March 2006, 13.3 million, or around 53% of UK households had a broadband internet connection. During 2006 we estimate that the number of residential broadband connections increased by 3.0 million, a slow-down from the 3.7 million increase in 2005, as household broadband penetration approaches that of all internet connections and PCs/laptops (64% and 71% respectively in Q1 2007).

**Figure 4.7 UK residential internet connections**



Source: Ofcom / operators  
 Note: Figures have been restated from the 2006 Communications Market Report to reflect more accurate data

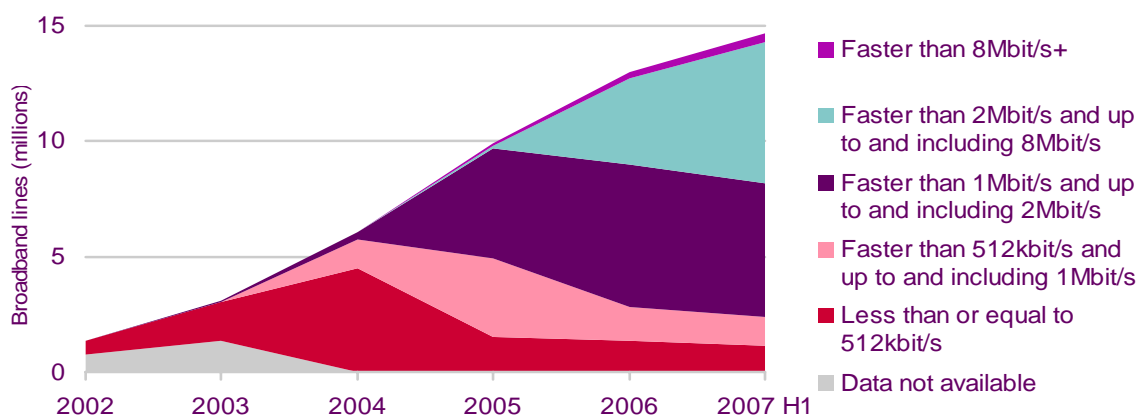
Broadband is becoming embedded in the daily lives of many consumers, making it vital to be able to switch provider quickly, efficiently and without disruption to service. In December 2006 Ofcom published a statement on the broadband migration process which contained a new general condition regarding Migrations Authorisation Codes (MACs), the codes required to switch DSL broadband provider<sup>7</sup>. Under the new condition ISPs are obliged to provide customers who are out of contract and request a MAC with the code within five working days. This has made it easier for consumers to switch between DSL broadband services, including to LLU providers.

<sup>7</sup> Ofcom, *Broadband Migrations: Enabling Customer Choice* (December 2006), <http://www.ofcom.org.uk/consult/condocs/migration/statement/statement.pdf>

### 4.1.6 Broadband headline speeds double in 2006

While broadband prices continued to fall during 2006, headline connection speeds continued to increase. At the end of 2006 the average blended headline broadband speed across all residential and SME connections was 3.6Mbit/s, more than twice the figure of 1.6Mbit/s at the end of 2005, and by the end of June 2007 this had risen to 4.6Mbit/s (Figure 4.8).

**Figure 4.8 UK broadband connections by headline connection speed**



Source: Ofcom / operators

Headline speeds will continue to rise during the next year (although as discussed below, actual speeds experienced are often significantly lower). BT is upgrading the speed of its basic broadband connection to upto 8Mbit/s, and some LLU operators, like Be with its up to 24Mbit/s core proposition, are using speed as a point of differentiation. Virgin Media is in the process of upgrading its cable network and is offering broadband download speeds of up to 20Mbit/s. From 2008, BT's 21CN will use ADSL2+ technology to potentially provide speeds of up to 24Mbit/s. The table below shows how these speeds translate into the time taken to accomplish various common online tasks.

**Figure 4.9 Theoretical time taken to perform online activities**

	Headline connection speed				
	56kbit/s	512kbit/s	2Mbit/s	8Mbit/s	24Mbit/s
Download 250kB webpage	36 seconds	4 seconds	1 second	0.3 seconds	0.1 seconds
Download 5MB music track	12 minutes	1 minute 18 seconds	20 seconds	5 seconds	2 seconds
Download 25MB video clip	1 hour	6 minutes 31 seconds	1 minute 40 seconds	25 seconds	8 seconds
Download low quality movie (750MB)	29+hours	3 hours 15 minutes	50 minutes	12 minutes 30 seconds	4 minutes 10 seconds
Download DVD quality movie (4GB)	6+ days	17 hours 22 minutes	4 hours 27 minutes	1 hour 7 minutes	22 minutes

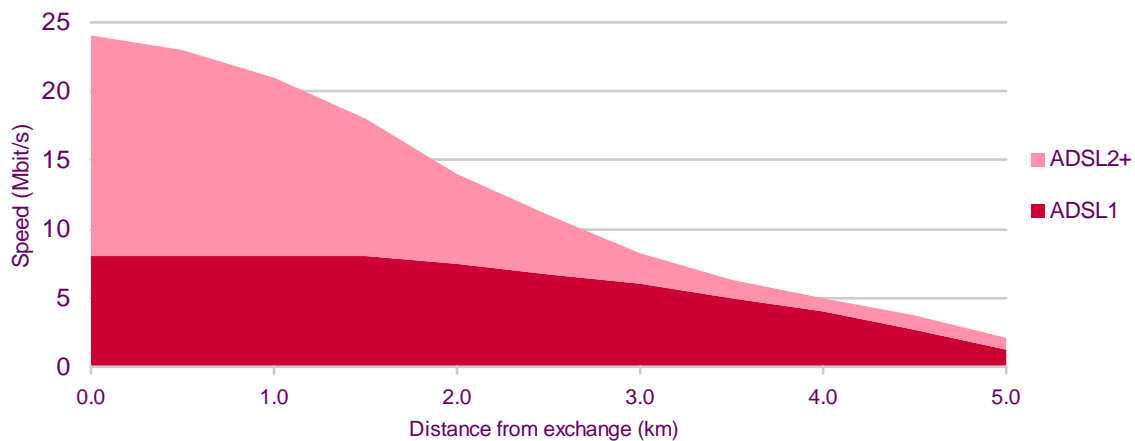
Source: Ofcom

UK broadband customers are therefore, on average, getting a better deal in terms of the cost and the headline 'up to xMbit/s' speed of their service. However, the actual speeds received by broadband users are often much lower than the headline speed of the connection and are affected by various factors including the quality and length of the physical line from the

exchange to the customer's premises, and connections being 'contended', meaning that during busy periods speeds will slow as multiple premises share the same bandwidth.

The level of take-up of ADSL for broadband access, which uses existing copper wires from exchange to the customer premises, places a constraint both on maximum broadband speeds and also on actual speeds experienced, which decline rapidly with distance from the exchange (Figure 4.10). These issues are discussed in detail in the Broadband Digital Progress report<sup>8</sup> published by Ofcom in April 2007. The speed of cable broadband connections also varies with the number of simultaneous users.

**Figure 4.10 Maximum DSL speeds by distance from BT exchange**



Source: <http://www.tpg.com.au/dslam/faq.php>

UK operators do not currently seem to see a business case for rapid investment in access networks which can deliver higher speed residential services, such as fibre to the home (FTTH) or fibre to the cabinet. However, BT's announcement that it plans to deploy FTTH to offer speeds of up to 70Mbit/s in greenfield sites in the future is the first sign that highly localised high-speed fibre access will become available to some residential consumers.

#### 4.1.7 Cable broadband accounts for less than 25% of all connections

At the end of 2006 cable modem broadband accounted for 23.5% of all UK residential and SME broadband connections, a considerable drop from its 57.4% share in 2002 (Figure 4.11), although over time the number of cable broadband connections has increased from under 800,000 to over 3 million. Cable's share of broadband connections has declined as a result of higher availability of DSL (nearly all premises are connected to a DSL-enabled exchange while cable broadband is only available to around 55% of households) and, more recently, increased competition from LLU operators.

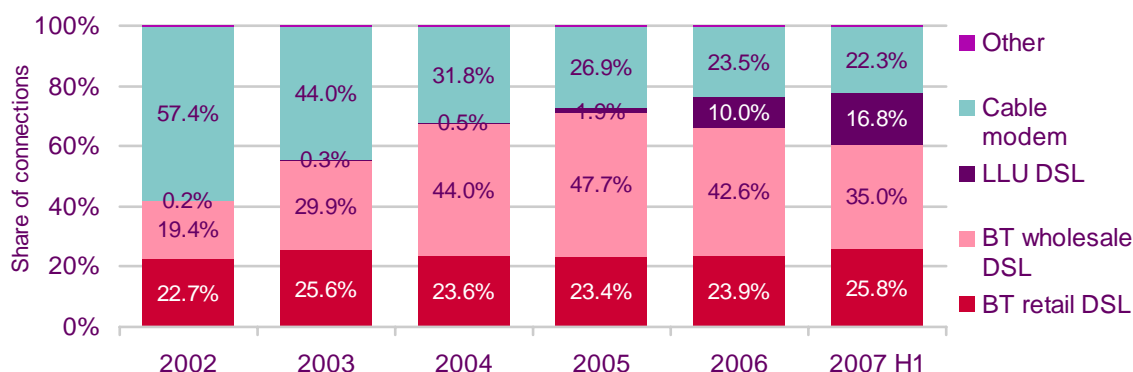
The approach of Virgin Media, the UK's largest cable provider, has been to promote its broadband offering bundled with TV, fixed-line and, more recently, mobile telephone services to consumers in its cabled areas. It has not sought to increase the footprint of its cable network, but has looked to increase the availability of its services by utilising wholesale LLU services. An agreement with Cable & Wireless (C&W) in May 2007 gained Virgin Media access to an additional 4 million UK households by the purchase of wholesale LLU services. Virgin Media was already providing broadband to over 250,000 off-net DSL customers via its Virgin.Net ISP, whose customers are currently being switched to C&W's LLU network. It

<sup>8</sup> Ofcom Communications Market: Broadband 2006 Digital Progress report: [http://www.ofcom.org.uk/research/cm/broadband\\_rpt/broadband\\_rpt.pdf](http://www.ofcom.org.uk/research/cm/broadband_rpt/broadband_rpt.pdf)

intends to launch a video on-demand IPTV service, combined with a Freeview digital terrestrial television (DTT) box, for its off-net customers.

Cable's share was squeezed by LLU operators during 2006. Of particular note was BSkyB's entry into the broadband market in June 2006, which put the company in direct competition with Virgin Media for triple-play (digital TV, fixed-line and broadband) customers. At the end of June 2007 BSkyB had 716,000 broadband customers.

**Figure 4.11 Share of residential and SME broadband connections**



Source: Ofcom / operators

#### 4.1.8 Service bundling proliferates as LLU availability increases

A key benefit of LLU is that allowing operators to locate their own equipment in a BT exchange enables greater service differentiation as unbundlers are no longer tied to BT's wholesale products. One outcome of this has been the proliferation of multiple communications service product bundling in the last 18 months (Figure 4.12), much of which is provided over unbundled local loops.

**Figure 4.12 Bundled service offers from major suppliers, June 2007**

	AOL	Be (O2)	BSkyB	BT	Orange	Pipex	PlusNet	TalkTalk	Tesco	Tiscali	Toucan	Virgin Media	Vodafone
Standalone broadband	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fixed and broadband	Y		Y	Y		Y	Y	Y	Y	Y	Y	Y	Y
Broadband, fixed and TV			Y	Y						Y		Y	
Broadband, fixed, TV and mobile				Y								Y	
Broadband and mobile				Y	Y				Y		Y	Y	Y
Broadband, mobile and TV				Y								Y	
Broadband, fixed and mobile				Y					Y		Y	Y	Y
Fixed and mobile				Y					Y		Y	Y	Y
Fixed and TV			Y	Y						Y		Y	
Fixed, TV and mobile				Y								Y	
Converged offers				Y	Y								

Source: Pure Pricing

Note: Highlighted box denotes that the combination of services requires the purchase of additional services

Service bundling is popular with operators as it offers the potential to reduce churn in a market characterised by rising acquisition costs; it can also increase average revenue per user even though the prices of individual services are falling. Consumers typically benefit

from discounts when buying a selection of communications services from a single operator and in many cases receive a single bill and point of contact for customer services.

IPTV services are slowly being introduced by LLU operators and in August 2006 Tiscali acquired Video Networks, operators of the London and Stevenage IPTV service *HomeChoice*. The service is being re-branded *Tiscali TV* and is being rolled out in a number of UK cities including Birmingham, Edinburgh and Newcastle, to be followed by parts of Leeds, Sheffield and Liverpool. Tiscali plans to launch its 'triple-play' service combining fixed-line, broadband and TV services in September 2007, and in July 2007 announced the purchase of Pipex's broadband and voice divisions for £210m.

In December 2006 BT launched its hybrid IPTV service *BT Vision*, which combines a Freeview box with the ability to access additional video-on-demand films, TV programmes, and music videos over a DSL broadband connection. Orange also plans to launch an IPTV service (Orange TV) and BSkyB's premium channels are already available to HomeChoice customers via BSkyB's *Sky by Wire* service.

## **The complexities of quantifying broadband prices**

Ofcom research in Q1 2007 indicated that 52% of people in the UK with broadband purchased it in conjunction with another communications service, thereby often receiving heavy discounts on the price of stand-alone broadband. Some suppliers provide free broadband when customers buy additional communications services, the cost of the broadband being subsidised by other services in the bundle.

A recent OECD report compared the lowest prices for broadband, on a cost per Mbit/s basis, across 30 countries, of which the UK ranked 16th. The UK data came from three ISPs (BT, HomeChoice and Telewest). As such it excluded pricing data from several leading LLU operators which are gaining market share as a result of their low-priced offerings. The report also looked at broadband prices in isolation, despite the fact that so many UK consumers now buy broadband as part of a bundle of services, and some of the largest broadband providers, like BSkyB, TalkTalk and Vodafone, do not supply stand-alone broadband products.

In the OECD's analysis, Japan, which has implemented fibre to the home (FTTH) offering speeds of up to 100Mbit/s, had the lowest cost per Mbit/s. However, it is difficult to make a direct comparison of broadband packages between countries; differing topographies and population distributions mean that a service which is economically viable in one country may not be in another, due to the level of infrastructure investment required. UK broadband providers have not yet seen a rationale for the rollout of FTTH, meaning it is unlikely that the UK will be able to challenge the cost per minute of those nations with FTTH in the near-to-mid term.

There are also problems with using cost per Mbit/s as it fails to take into account that many consumers have yet to see the need for broadband speeds in excess of those already available in the UK. Recent Ofcom consumer research showed that broadband speeds were not the main barrier to the use of bandwidth-hungry services like video streaming in the UK (lack of interest was the key constraint).

Although international comparisons of broadband offerings and prices, such as the OECD report, can be useful, more complex analysis, taking into account service bundling and other points of service differentiation (such as data caps) is required. The 2007 edition of Ofcom's International Communications Market Report (scheduled for publication around Christmas 2007) will explore this issue further and place UK broadband pricing in an international context.

#### 4.1.9 Operators focus on retention

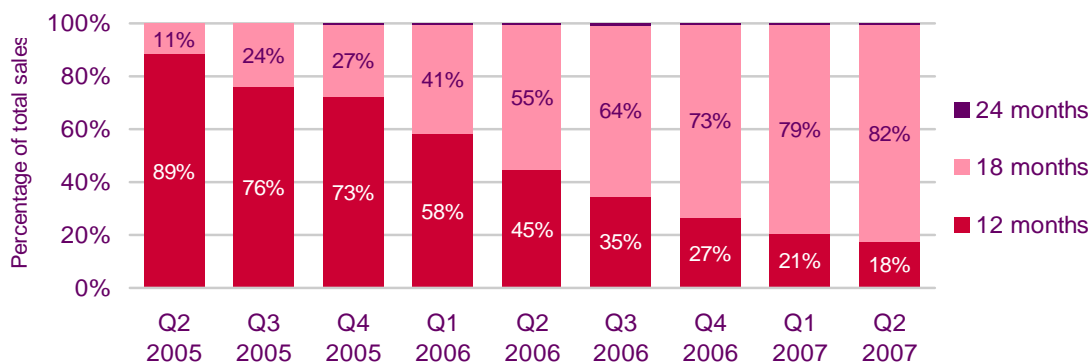
In a market characterised by high acquisition costs and falling growth, operators have focused strongly on customer retention over the last 18 months. The proliferation of bundled offers can be seen as a manifestation of this, with operators looking to tie customers in to multiple services with a longer contract term.

The migration to longer contracts is a key trend across the telecoms industry. Examples include AOL increasing the contract length on its 2Mbit/s and 8Mbit/s offers from 12 to 18 months in June 2007 and the accompaniment of BT's fixed-line price reductions in June 2007 with minimum contract lengths of 18 months on Options 2 and 3. Orange Home is currently offering £300 off/a free laptop to anyone signing up for three years to their £14.99 a month DSL service.

However, it is in the mobile sector where the migration to longer-term contracts has been most pronounced. Until 2005, the maximum contract length available was 12 months; in the first three months of 2007, 79% of new contracts were for 18 months or longer (see Figure 4.13). In July 2007 the launch of a 24-month contract by O2 meant that all five network operators were offering customers two-year contracts.

In the USA, AT&T signed an exclusivity contract with Apple to supply the iPhone, and subscribers wishing to obtain the handset were only able to do so by signing up for a two-year contract, even though it was not subsidised. It is not clear whether this even longer-term approach to contracts will be repeated when the iPhone is launched in Europe later this year, although Apple is apparently seeking similar exclusivity deals with European carriers.

**Figure 4.13** Lengths of new mobile contract connections



Source: GfK

Twelve-month contracts are still available on all networks, but the migration to longer contracts is a reflection of the lower prices offered to customers willing to commit for longer periods, as operators pass on the benefits of lower acquisition costs. One consequence of this is seen in the greater usage levels associated with lower prices and higher levels of inclusive voice and messaging. A second, longer-term consequence is likely to be a reduction in switching, while a third could be a longer handset replacement cycle which may place a constraint on the adoption of converged services by delaying take-up of new handset technologies.

#### 4.1.10 Operators focus on direct sales rather than those through third-parties

During the last 18 months, motivated by their focus on customer retention and a desire to reduce acquisition costs, mobile operators have sought to increase sales through their own direct channels rather than through third-parties. O2's purchase of The Link in June 2006

resulted in over 250 more operator-owned stores on the high-street, with O2 retaining around 100, 95 being sold on to 3UK and the remainder to other operators. Vodafone's announcement in October 2006 that it was withdrawing from Carphone Warehouse was in part also motivated by a new focus on direct sales. And 3UK's roll-out of over 100 new stores since October 2006 has resulted in the proportion of direct sales increasing from a claimed 33% to over 60% in May 2007.<sup>9</sup>

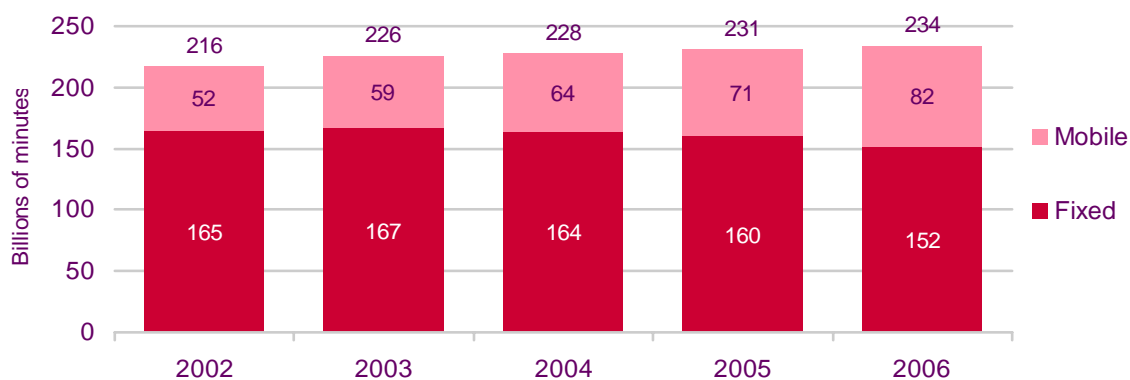
Operators have also made some of their special offer tariffs available only through their own channels; for example, in July 2007, T-Mobile promoted free handsets with free cross-network calls 'only when you buy direct from us'. Similarly, all operators have focused on their own internet sales; for example, Orange's web-exclusive offer in July 2007 offered free Orange-to-Orange texts on its Speak Easy tariff.

#### 4.1.11 Substitution of fixed calls as mobile increases market share

Ofcom research indicates that by the end of 2006 there were as many mobile-only households as fixed-only households (10%). The vast majority of households have both mobile and fixed lines and the requirement to have a fixed line for DSL broadband access, combined with falling prices for fixed and broadband service combinations, constrains further decreases in fixed-line numbers. Research by Analysys in 2007 found that the UK had the second lowest proportion of mobile-only households in Europe (Sweden had the lowest).

However, there is evidence of accelerating substitution of fixed calls by mobile calls (Figure 4.14), driven by falling mobile prices and an increasing number of mobile contracts with a large number of inclusive minutes. This trend is likely to continue - GfK reports that in the first six months of 2007 sales of standard mobile tariffs with an attached package of over 300 minutes remained consistent at around 70%.

**Figure 4.14 UK total outbound call volumes**



Source: Ofcom / operators

Note: Figures include non-geographic voice; figures have been restated from the 2006 Communications Market Report to reflect more accurate data

Despite further growth in the number of mobile phone connections coming primarily from ownership of multiple handsets (at the end of 2006 there were 69.7 million active mobile connections, compared to the UK population of around 60 million), average outbound calls per mobile connection rose to over 100 minutes for the first time in 2006, with average calls per fixed line falling below 300 minutes.

Increasing use of voice over internet protocol (VoIP), which uses the internet to route voice calls, and can either be in the form of a computer software application (often instant messenger based) or a service which looks like a standard phone service, may also be

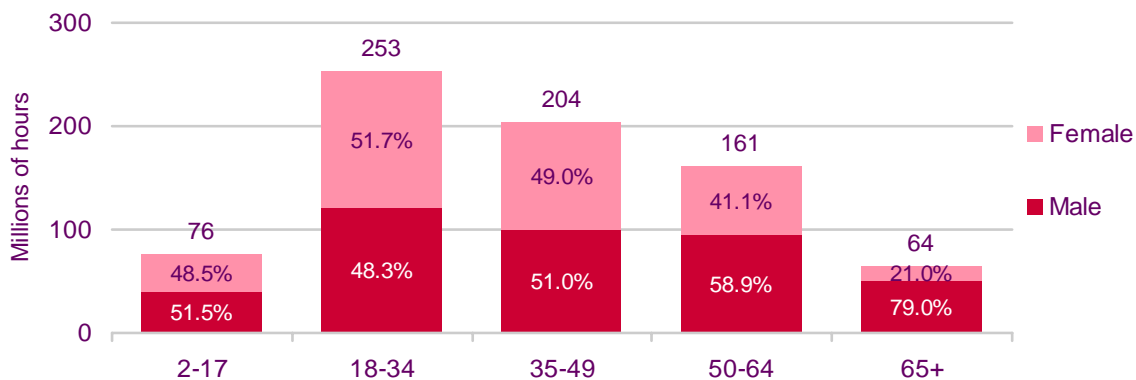
<sup>9</sup> *Mobile Today*, 16 May 2007

having an impact on fixed-line voice volumes. However, Ofcom research finds that although use of VoIP is increasing (17% of adults with broadband have used VoIP at least once), in general the technology is still in the early-adopter phase. Only 14% of VoIP users claim to use it every day, and VoIP users are more likely to have the use of a mobile and a fixed line than UK adults as a whole.

#### 4.1.12 'Digital mums' and 'silver surfers' change landscape of internet

As internet penetration has grown (to around two-thirds of UK households by the end of 2006), the demographic centre of gravity has shifted towards women and older users. Nielsen//NetRatings data from April 2007 show that women in the 18-34 age range are the most active internet users by time spent (Figure 4.15). Use falls with age, but over 50s (who make up 41% of the UK population) now account for nearly 30% of all time spent on the internet. As section 4.3.8 details, over 65 'silver surfers' spend more time online per active user, at nearly 42 hours per month, than any other age group.

**Figure 4.15 Total internet use by age, April 2007**



Source: Nielsen//NetRatings, April 2007 – 'At home' data including internet applications

Analysis of surfing time shows that the average internet user spends one hour online each day and that Britain is a nation of shoppers and social networkers. eBay is a very clear leader in terms of total time spent on its web site, with in total, twice as much as second placed Bebo. Other social networking sites populate the top ten sites by time spent, including MySpace, Facebook, YouTube and Runescape (see for more details).

#### 4.1.13 Different technologies deliver mobile broadband

With consumers increasingly using home wireless networks to access broadband internet in the home, and 3G mobile phones to access the internet elsewhere, the past 18 months have seen fixed and mobile operators invest in infrastructure, handsets and propositions designed to provide data services outside the home, and bridge the consumer experience inside and outside the home.

High-Speed Downlink Packet Access (HSDPA) is an upgrade to a WCDMA 3G network that enables an increase in peak download speeds from 384kbit/s to between 1.6Mbit/s or 3.6Mbit/s (and up to 14.4Mbit/s in the future), thereby enabling mobile operators to offer download speeds comparable to those typically experienced by residential broadband consumers. T-Mobile was the first UK operator to launch HSDPA services over its 3G network in August 2006, with the four other operators all having followed by July 2007. With limited availability of compatible handsets, HSDPA is currently primarily targeted at business users using PC data cards.

Meanwhile, a number of initiatives by fixed-line operators (e.g. BT), mobile providers (T-Mobile) and start-up WiFi network operators (e.g. The Cloud), sometimes with municipal support, have increased the number of public WiFi access points to 11,447 (at the end of March 2007, compared to 10,339 a year previously), according to Informa. This maintains the UK's position as the European country with the most wireless 'hotspots' and 12 UK cities now have sizeable 'joined up' wireless zones.

WiFi networks potentially provide an alternative to fixed-line broadband access in highly populated areas, but the limited range of WiFi networks makes them impractical for wide geographical coverage. WiMAX technology offers longer-range coverage and in the long term represents a potential alternative to cellular networks for geographically-spread wireless broadband.

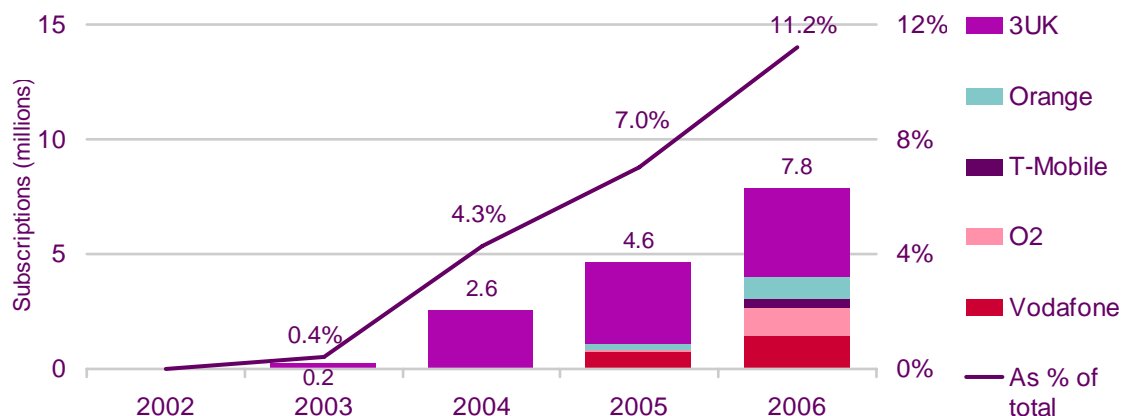
Pipex Wireless began the UK's first commercial WiMAX trial in Milton Keynes in December 2006 and plans to launch in Manchester in late 2007 and then roll-out services to 50 UK towns and cities by 2009. However, because its licence (for the use of 3.6-4.2GHz spectrum) does not support mobility, in the absence of any future investments in mobile spectrum, Pipex will use WiMAX for fixed applications. It has stated plans to focus on providing backhaul for municipal WiFi deployments, while also offering a wireless local loop equivalent to consumers and businesses which require faster uplink services than those typically provided by basic DSL services.

WiFi-enabled cellular handsets represent a way of integrating home and public wireless networks with cellular networks, enabling customers to make VoIP calls when in range of a compatible WiFi router and mobile calls over a cellular network when out-of-range. Two UK companies are now offering 'converged' fixed and mobile services in this manner: BT (which launched *BT Fusion* in June 2005, initially over Bluetooth, but now uses WiFi technology) and Orange (which launched *Orange Unique* in September 2006).

#### 4.1.14 Conditions in place for take-off of internet on mobile phones

Although non-SMS data revenue still only accounted for around 5% of mobile operators' retail revenue in 2006, there are indications that the mobile internet may finally begin to deliver on some of its promises in the near future. In the past year, four key pre-conditions for the take-off of the mobile internet have been met. First, 3G use has become more widespread, with 7.8 million connections by the end of 2006, and penetration is expanding well beyond the base of 3G-only operator 3UK as other MNOs migrate their subscribers onto their 3G networks (Figure 4.16).

**Figure 4.16 UK 3G subscriptions**



Source: Ofcom/operators/Informa; includes estimates where Ofcom does not receive data from the operators

Second, the large majority of mobile handsets now have internet capability, with data from GfK showing that nearly 80% of the handsets sold in the first three months of 2006 had XHTML capability, which is required to enable internet pages to be correctly rendered on mobile phones. Third, the cost of browsing the mobile internet has reduced, with four of the five network operators offering 'unlimited' data tariffs (subject to a fair use policy) for £5 a month.

And finally, the services available are beginning to offer a customer experience approaching that available to users of the fixed-line internet, as internet site providers increasingly provide mobile-enhanced versions of their services, and mobile operators partner with the leading internet brands. All of the main five operators now promote search from Google, Yahoo or MSN and within the social networking category MySpace has partnered with Vodafone and Bebo with Orange.

#### **4.1.15 New life in mobile advertising business models**

Like the mobile internet, mobile advertising and the power of the 'brand in the hand' has been much-hyped for many years with little end result. However, with the development of the mobile internet, there is a new focus on mobile advertising and the development of new business models.

Two factors can be identified behind this. First, operators have largely failed to drive significant revenue from customer-paid content. Second, the introduction of flat-rate tariffs for open internet access has highlighted the imperative to use the intelligence they have about their customer base to prevent them from being reduced to the dumb pipe status of an ISP.

The most common new business model is a partnership between operators and online advertising service providers for search-based advertising. For example, Vodafone uses Google for internet search in return for a share of revenue from the 'sponsored links', while 3UK has a similar deal with Yahoo!.

In another model, operators are beginning to see opportunities to offer advertiser-funded content. In partnership with technology provider Rhythm, 3UK offers a large part of its video content free of charge to customers, who in return provide demographic data. This information is then used to serve highly-targeted adverts which are incorporated within the video.

Perhaps even more ambitious is a business model which proposes offering free calls and texts to customers in return for permission to serve adverts. This is the approach of new virtual network operator Blyk, which at the time of writing is scheduled for a UK launch in October 2007.



## 4.2 The telecoms industry

### 4.2.1 Introduction

In this section of the report we look at the major trends in the UK telecommunications market from an industry and operator perspective. The next section (4.3) will complete the picture by examining the same trends from the point of view of the user.

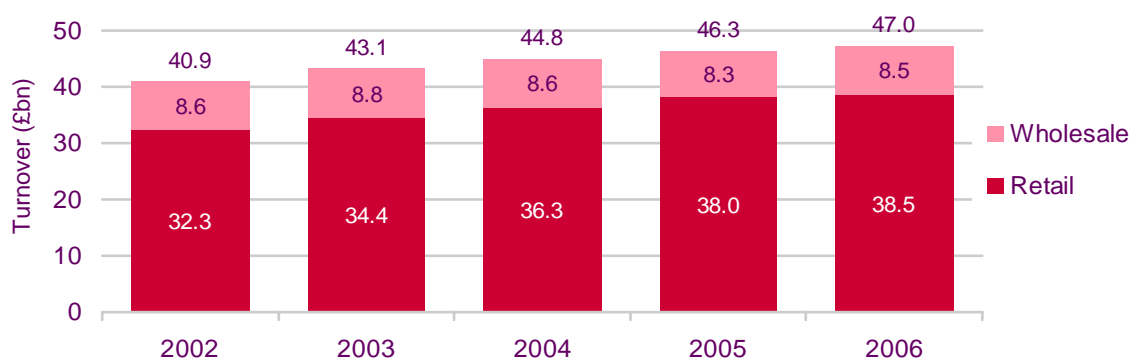
When reporting market size data we have focused on the retail market rather than on operator-to-operator (wholesale) transactions. For most of the more granular analysis in this section we concentrate on the residential and small/medium business end-user markets as only limited data are available on the corporate telecoms sector.

### 4.2.2 Revenue

#### Turnover increases to £47bn but growth slows

Ofcom collects 'relevant turnover' data from all providers of telecoms networks and services which generate more than £5m in revenue per year. From these data we estimate that the UK telecoms sector generated revenue of £47.0bn in 2006 (Figure 4.17).

**Figure 4.17 UK telecoms industry revenue**



Source: Ofcom / operators

Note: Includes estimates where Ofcom does not receive data from operators; figures have been restated from the 2006 Communications Market Report to reflect more accurate data

Ascertaining the overall size of the telecoms industry is difficult as a result of the level of network competition in the market, which has led to increases in interconnection payments and as a consequence a large amount of intra-industry revenue transfer. BT, together with other network operators like Cable & Wireless, offers wholesale voice and data carrier services which provide capacity for pure service providers. From the available data we estimate that in 2006 the value of wholesale telecoms activities was £8.5bn or 18% of total turnover, a similar proportion to that in 2005.

Retail revenue provides a measure of total end-user spend on UK telecoms services. We estimate that total telecoms industry retail revenues in 2006 were £38.5bn, an increase of 1.4% from 2005, representing a significant slow-down from 4.7% growth in the previous year as fixed-line revenues declined, growth in mobile and broadband slowed, and prices fell.

The UK telecoms industry continues to make a significant contribution to the UK economy, and the most recently available Office for National Statistics (ONS) estimates show that the

sector contributed £21.3bn in Gross Value Added in 2004<sup>10</sup>, equating to 2.0% of total gross value added, broadly defined as revenue minus cost of goods brought in. By way of comparison ONS data put Gross Value Added from agriculture at £9.6bn and that from oil and gas extraction at £19.8bn in the same year.

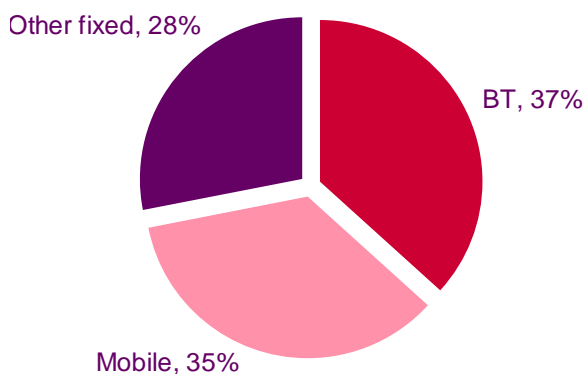
ONS figures also estimate telecoms industry turnover at £56.7bn<sup>11</sup> in 2006. This figure is higher than ours as it includes revenues from telecoms services which Ofcom does not regulate, such as network hardware provision and maintenance. To give an idea of the size of the telecoms market relative to other sectors, the same ONS dataset puts UK revenue from the retail sale of automotive fuel at £19.6bn and that from bars and restaurants at £48.4bn.

### **BT remains the largest telecoms provider in terms of UK revenue**

In 2006 BT continued to be the largest UK telecoms provider, with its estimated overall UK turnover of £17.2bn accounting for 37% of total telecoms turnover (Figure 4.18). This share was 0.2% higher than in 2005, following strong growth in BT's so-called 'new-wave' revenues, i.e. mobility, broadband, LLU and IT services, which offset falls in revenues from traditional voice services. BT's revenues are lower than those of comparable European incumbents in part because it does not own a mobile network business; in 2006 BT's global turnover was £20.1bn while Deutsche Telecom and France Telecom reported revenues of £42bn and £36bn respectively.

The five mobile network operators, together with independent service providers and mobile virtual network operators (MVNOs) such as Virgin Mobile and Tesco Mobile, contributed 35% of total UK telecoms turnover, an increase of two percentage points on 2005, following continuing growth in the number of subscriptions and higher use per subscriber. Turnover share for other fixed operators fell from 30% to 28% as growth in LLU services was offset by the continued decline in fixed telecoms connections and prices.

**Figure 4.18 Share of retail and wholesale telecoms industry revenue in 2006**  
**Total = £47.0bn**



Source: Ofcom / operators

Note: Includes estimates where Ofcom does not receive data from operators; basis of calculation of BT share now excludes international revenue which we have included in previous years.

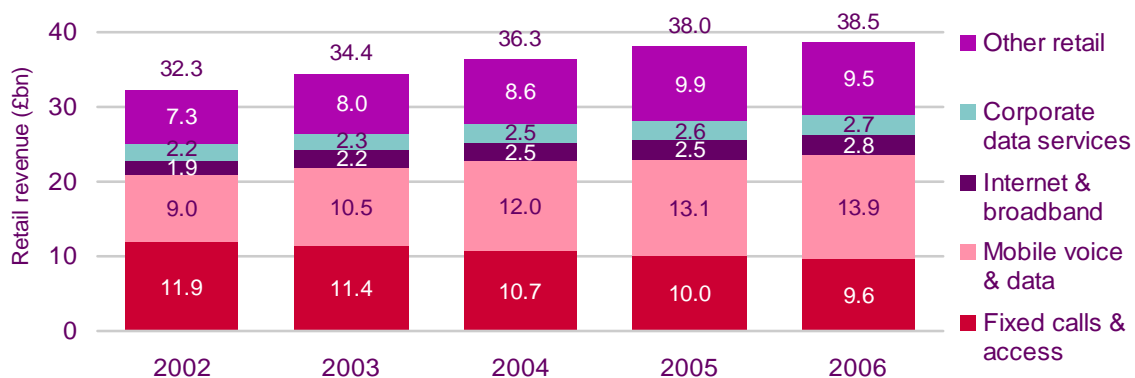
<sup>10</sup> [http://www.statistics.gov.uk/downloads/theme\\_economy/Input\\_Output\\_Analyses\\_2006\\_edition.pdf](http://www.statistics.gov.uk/downloads/theme_economy/Input_Output_Analyses_2006_edition.pdf)  
P142

<sup>11</sup> <http://www.statistics.gov.uk/STATBASE/tsdataset.asp?vlnk=4702&More=Y>

## Mobile revenues higher than fixed line and internet combined

Mobile revenue accounts for an increasing share of the total telecoms sector. This trend is driven by the retail market, where revenue from mobile voice and data services in 2006 was 45.6% higher than that from fixed voice services (Figure 4.19). The mobile market contributed £13.9bn of retail revenue in 2006 (36.2% of the total and two percentage points higher than in 2005) while retail revenue from fixed voice services continued to decline. Between 2005 and 2006 fixed calls and access revenue fell by almost £400m to £9.6bn; fixed-line revenue accounted for less than a quarter (24.9%) of total telecoms retail revenue in 2006 compared to 26.3% in 2005. This is partly due to falling numbers of fixed lines, along with increasing substitution of mobile for fixed voice calls; in 2006 the proportion of all UK voice call minutes made from mobile phones increased from 29.0% to 33.7%.

**Figure 4.19 UK telecoms industry retail revenue**



Source: Ofcom / operators

Note: Figures have been restated from the 2006 Communications Market Report to reflect more accurate data.

## Internet is fastest growing sector by revenue

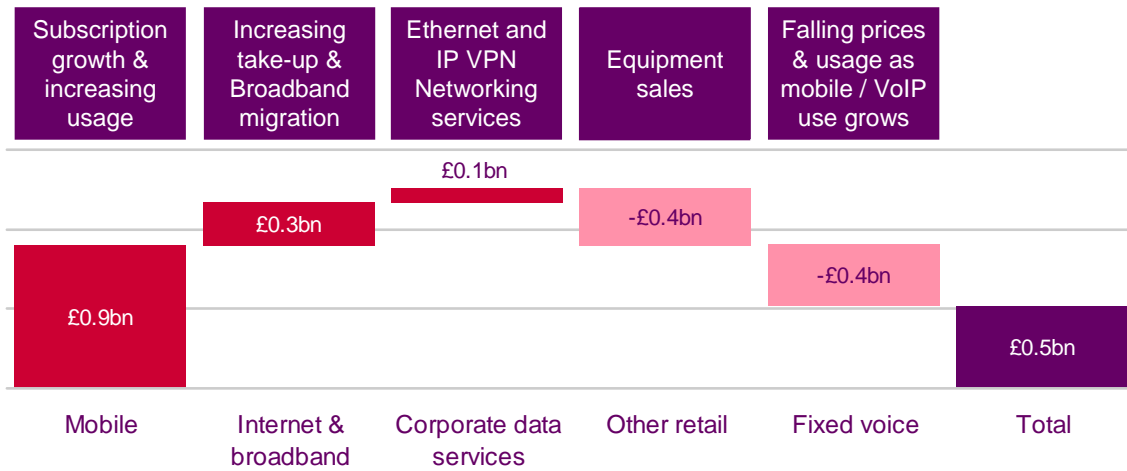
The highest retail telecoms revenue growth was in broadband and narrowband internet services (excluding corporate connections) which rose by 10.9% from £2.5bn in 2005 to £2.8bn in 2006, driven by increasing take-up and migration of narrowband internet subscribers onto broadband services. However, falling prices are limiting internet revenue growth, and during 2006 internet and broadband only accounted for only 7.2% of total retail telecoms revenues. Revenues from mobile voice and data increased by 6.9% during 2006, with growth in revenues from business customers (14.6%) being higher than that from residential users (2.0%). Fixed-line voice calls and access revenues declined by 3.9% during the year.

In this and the following analysis 'other retail' includes estimates of some elements of the wider telecoms value chain such as mobile handsets and a range of value-added services.

The contribution of each sector to the total £0.5bn growth in retail telecoms revenue in 2006 is shown below in Figure 4.20. The box above each sector gives a brief description of the main drivers of revenue growth or decline.

**Figure 4.20 Telecoms revenue growth between 2005 and 2006**

**Key drivers**



Source: Ofcom / operators

**4.2.3 Industry structure**

**Two mobile subscriptions to every UK fixed line**

Despite penetration of more than 100%, the number of active UK mobile subscriptions continued to grow during 2006 as more people started to use secondary mobile devices, either for business purposes (e.g. a personal digital assistant (PDA) or BlackBerry), or to take advantage of different tariffs from competing operators (Figure 4.21). At the end of 2006 there were 69.7 million active mobile connections in the UK compared to a population of around 60 million people (a mobile subscription is usually defined as being active when it has been used during the previous 90 days). Ofcom consumer research in Q1 2007 indicated that 93% of adults lived in a household with at least one mobile phone and that 84% personally used a mobile, although penetration levels vary according to socio-demographic profile.

Continued growth in the number of mobile subscriptions, coupled with falling numbers of fixed lines, meant that the number of mobile subscriptions in the UK outnumbered that of fixed lines by more than two-to-one for the first time in 2006.

**Figure 4.21 Total UK fixed lines and mobile subscriptions**



Source: Ofcom / operators

Note: Figures have been restated from the 2006 Communications Market Report to reflect more accurate data

## Growth in mobile connections continues while fixed lines fall

Although the number of fixed lines continued to fall in 2006, the rate of decline (1.4%) was slightly lower than in the previous year. The number of internet connections grew during 2006, and at the end of the year there were 16.6 million residential and SME internet connections in the UK, an increase of 1.0 million on 2005. In addition to overall growth in internet penetration, there was large-scale migration from narrowband to broadband access, with the number of total residential and SME broadband connections growing by 31% to 13.0 million during 2006 and broadband household penetration hitting 50%.

**Figure 4.22 Total telecoms connections**



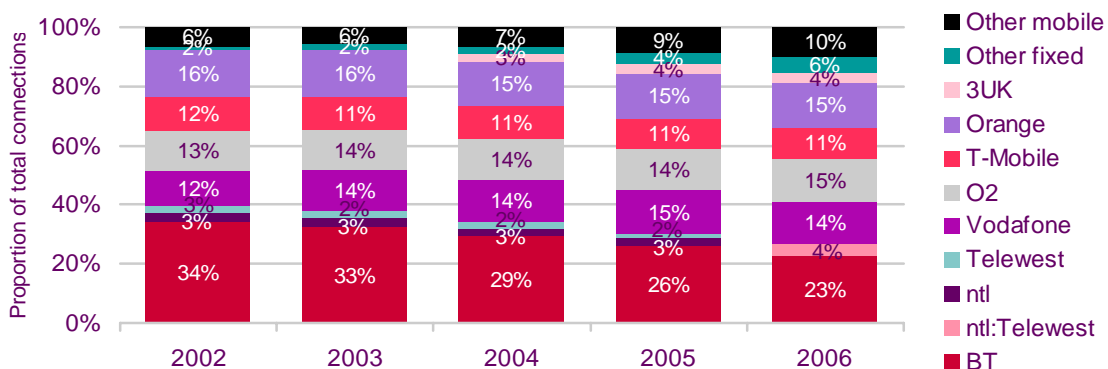
Source: Ofcom / operators

Note: Includes estimates where Ofcom does not receive data from operators; broadband excludes corporate connections

The market share of total fixed and mobile telecoms connections gives an indication of how competition in the voice telecoms market is changing over time (Figure 4.23). Between 2002 and 2006 BT's share of total connections fell from 34% to 23%, while the mobile operators' share (including MVNOs) increased from 58% to 67%.

More recently, growth in the take-up of LLU and wholesale line rental (WLR) services has stimulated an increase in the share of alternative fixed network operators, and this contributed to an increase in the share of 'other fixed' operators of two percentage points in 2006 to 6%. With low levels of fixed network infrastructure investment among providers other than BT (which is currently rolling out its £10bn 21CN next-generation network), it is likely that competition in the fixed-line market will be driven by the continuing take-up of LLU.

**Figure 4.23 Share of total UK fixed and mobile telecoms connections**



Source: Ofcom / operators

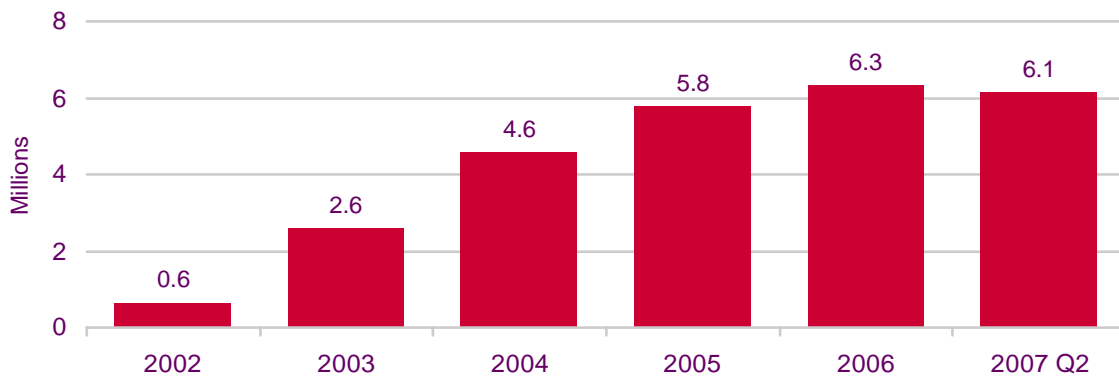
Note: Includes estimates where Ofcom does not receive data from operators; ntl and Telewest merged during 2006; other includes CPS, WLR Mobile ISP and MVNO subscribers in addition to fixed OLOs.

## 4.2.4 Fixed line access

### Carrier pre-selection starts to decline as operators switch to full LLU

Carrier pre-selection (CPS) allows a BT customer to route all of their calls via another operator while continuing to pay line rental to BT. Growth in the number of CPS-enabled lines slowed during 2006 before starting to fall in Q4, a trend that has continued into 2007. At the end of 2006 there were 6.3 million CPS lines, 9% more than at the end of 2005, but this had fallen to 6.1 million by the end of June 2007 (Figure 4.24). This decline is as a result of operators such as TalkTalk migrating their CPS customers onto full LLU-based services.

**Figure 4.24 Carrier pre-selection (CPS) enabled lines**

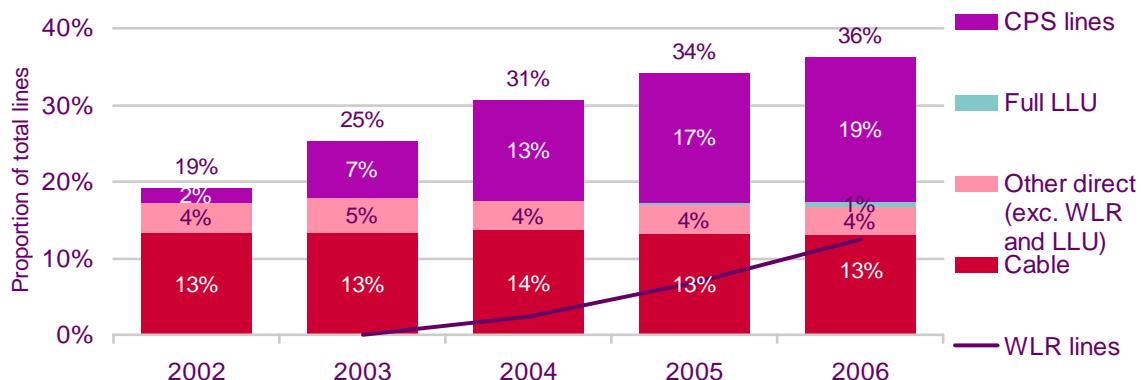


Source: Ofcom / operators

### Strong competition in fixed line services

At the end of 2006 the number of lines using wholesale line rental (WLR) services stood at 4.2 million, an increase of 1.9 million on a year previously. By combining data on the use of full LLU and CPS services with data on the number of cable operator and alternative network operator lines we can see that at the end of 2006 36% of UK fixed lines were taking a fixed access or call service from an operator other than BT, an increase of two percentage points since 2005 (Figure 4.25). This calculation excludes WLR lines to avoid double-counting, as these will use a CPS service to route calls.

**Figure 4.25 Share of lines taking non-BT voice services**



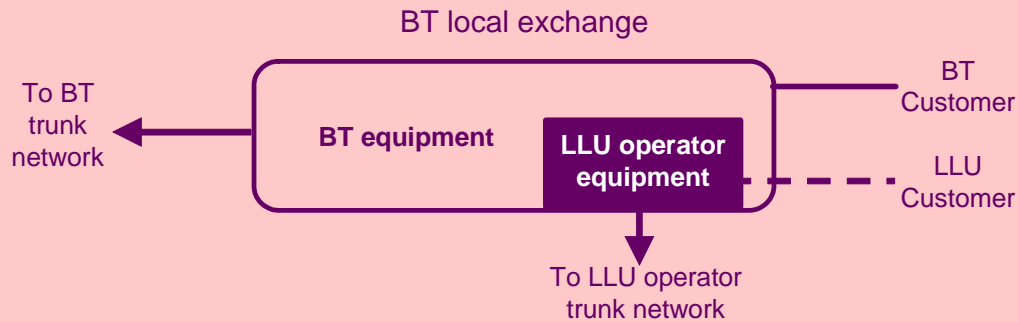
Source: Ofcom / operators

Note: Includes estimates where Ofcom does not receive data from operators; figures have been restated from the 2006 Communications Market Report to reflect more accurate data

## Local loop unbundling (LLU)

Local loop unbundling is the process by which an alternative operator is able to provide fixed line and DSL broadband services over the twisted copper pair 'local loop' which connects a customer's premises to a BT local exchange.

When an operator 'unbundles' a local exchange, it sites its own network equipment in the exchange and connects it to the customer premises using BT's (or Kingston Communications') local loop. The LLU operator's equipment is then connected to its own trunk network to route customer voice and data traffic to its destination.



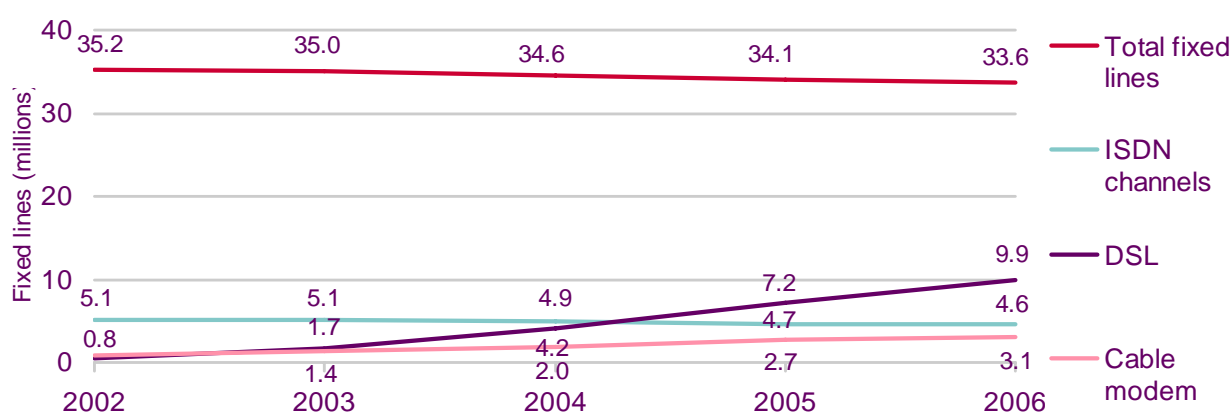
## ISDN suffers at the hands of cheap broadband

ISDN (Integrated Services Digital Network) is a digital dial-up service which uses existing BT lines to offer download and upload speeds at least twice as fast as ordinary dial-up. There are two types of ISDN connection, ISDN2 (which consists of two 64Kbit/s channels) and ISDN30 (up to 30 64kbit/s channels). Unlike most broadband technologies, ISDN is uncontended and has equal upstream and downstream capabilities.

As broadband take-up grew during 2006, the number of ISDN channels continued to fall, although the rate of decline has slowed (Figure 4.26). Broadband data speeds are faster than the 128kbit/s of ISDN, and services are cheaper, so many ISDN customers have switched to broadband, although the more reliable upstream speeds of ISDN mean that the service remains more suitable for some consumers, particularly business users.

In April 2007 BT announced the withdrawal of its *Home Highway* residential ISDN product as the availability of cheap, fast broadband services had reduced demand for the service. *Home Highway* has been unavailable to new customers since September 2005 and ISDN access has now virtually disappeared from the residential market. There is the potential for a small number of consumers who currently use ISDN to be disadvantaged when the service ceases, but with broadband available to over 99.6% of premises, the large majority will be able to access an equivalent or better internet service in terms of price and speed.

**Figure 4.26 Fixed telecoms lines**



Source: Ofcom / operators

Note: Includes estimates where Ofcom does not receive data from operators; broadband excludes corporate connections; figures have been restated from the 2006 Communications Market Report to reflect more accurate data

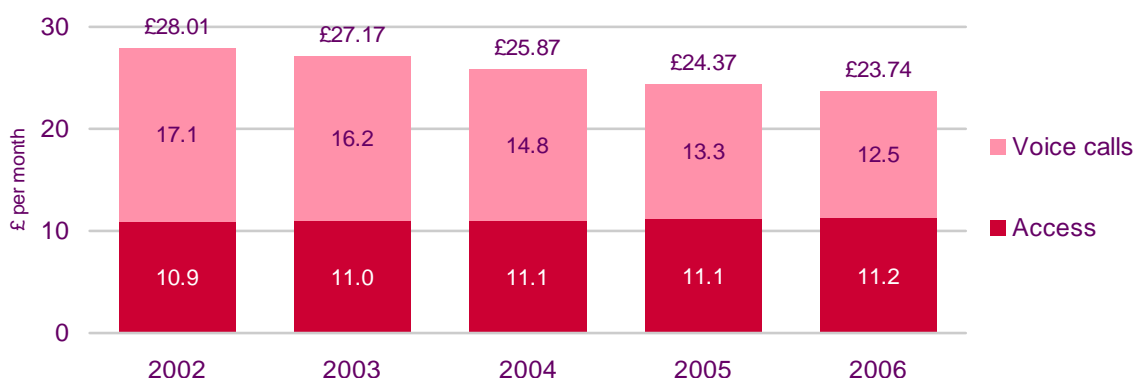
### 4.2.5 Fixed-line revenues

#### Fixed-line voice revenues decline as number of lines and prices fall

The average monthly voice revenue per fixed line fell by £0.63 to £23.74 during 2006 (Figure 4.27) driven by a decline in voice call volumes per line and by falling fixed-line prices fuelled by growing competition. Fixed voice volumes per line are falling as a result of the increasing substitution of mobile calls, along with growing use of email and instant messaging, while use of voice over internet protocol (VoIP) may also be beginning to have an impact. Revenues from fixed access increased slightly, despite an overall fall in the number of lines.

Although average voice revenue per line continued to fall in 2006, the rate of decline slowed significantly, from 6% in 2005 to 3%. This could be because some consumers are not taking full advantage of the bundles of calls included with their monthly fixed access charges, and also because the figures do not take into account the fact that some customers are prepared to pay more for fixed voice access in order to get additional bundled non-voice services such as 'free' broadband.

**Figure 4.27 Average monthly voice revenue per fixed line**



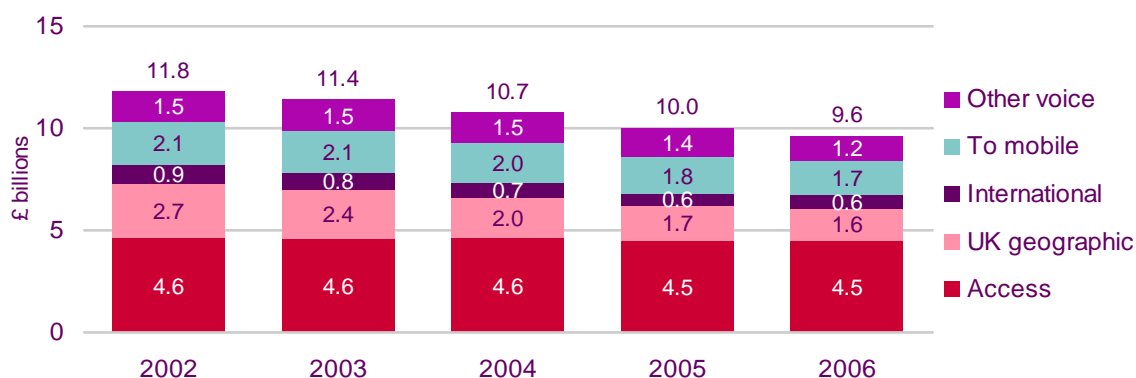
Source: Ofcom / operators

Note: Includes spend on NTS voice calls; figures have been restated from the 2006 Communications Market Report to reflect more accurate data

## Access revenues unchanged as call revenues fall

Falling fixed voice call volumes and prices in 2006 led to continued drops in fixed voice revenues during the year. While access revenue was unchanged at £4.5bn in 2006, revenue from all calls (excluding dial-up internet calls) was down 7% from £5.4bn in 2005 to £5.0bn in 2006 (Figure 4.28). This change in the profile of access and call revenues is a result of continued tariff re-balancing, with the increasing inclusion of bundled calls in fixed rental tariffs.

**Figure 4.28 Fixed voice telecoms revenue**



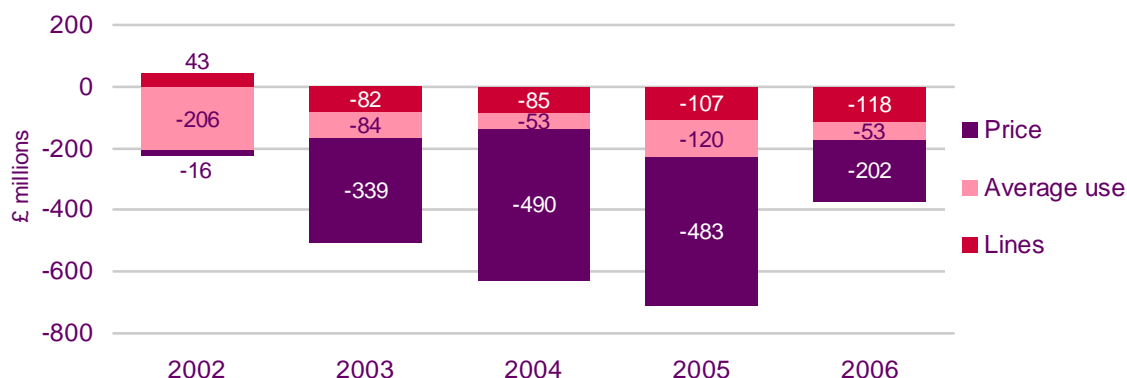
Source: Ofcom / operators

Note: Includes spend on NTS voice calls; figures have been restated from the 2006 Communications Market Report to reflect more accurate data

## Falling fixed-line numbers drive down revenues

Although falling prices continued to have a downward effect on overall fixed voice revenues in 2006, the decline was smaller than in any of the previous three years at £202m (Figure 4.29). While prices remain the biggest factor in the fall in fixed voice revenues, in 2006 the decline in the number of fixed lines (almost 500,000) had a growing downward effect on revenue (a fall of £118m). Falling average voice call usage per line also continued to have a downward effect on total revenues in 2006.

**Figure 4.29 Factors affecting the reduction in fixed voice revenue**



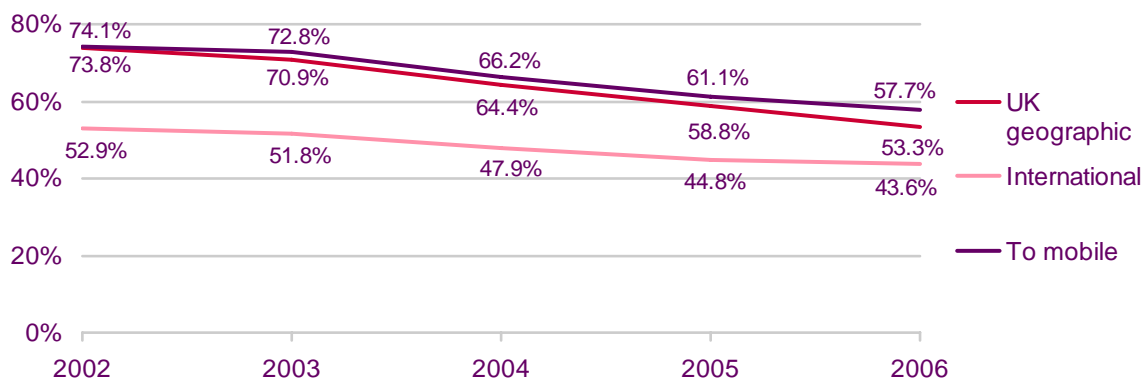
Source: Ofcom / operators

Note: Calculation excludes NTS voice calls; figures have been restated from the 2006 Communications Market Report to reflect more accurate data

## BT's market share continues to fall as fixed competition intensifies

Increasing competition from LLU and WLR operators further eroded BT's share of residential fixed call volumes during 2006, with the steepest decline being a drop of over five percentage points for UK geographic calls, compared to three and one percentage point falls for calls to mobiles and international calls respectively (Figure 4.30). The drop in UK geographic calls is not surprising, as CPS and LLU operators often include these call types in their tariff bundles, making them more attractive to people making large volumes of calls to UK fixed phones.

**Figure 4.30 BT share of residential voice call volumes by type**



Source: Ofcom / operators

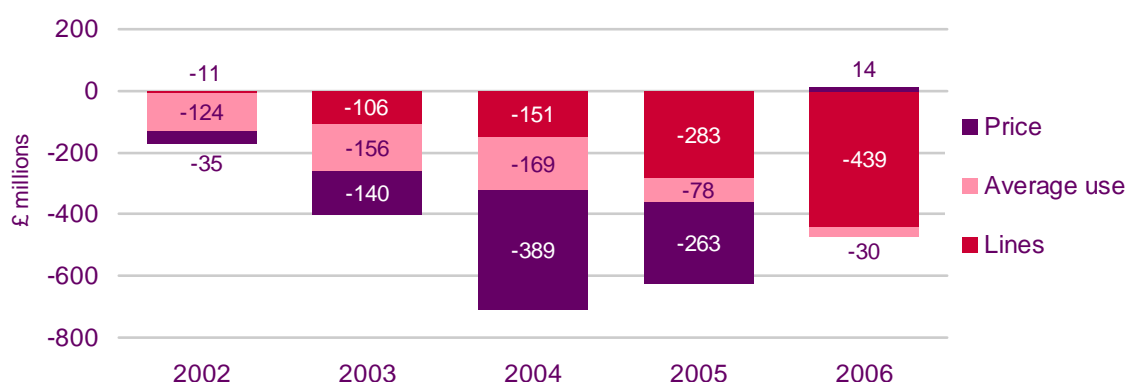
Note: Figures have been restated from the 2006 Communications Market Report to reflect more accurate data

## BT cuts prices to maintain competitiveness of call packages

The falling number of BT fixed lines is now by far the largest factor contributing to BT's declining retail fixed voice revenues (Figure 4.31). BT lowered the prices of its Option 2 and Option 3 call packages in August 2006 and June 2007 as a result of increasing competition from both WLR and LLU operators, and is continuing to promote special offers on these packages. Shortly after BT's announcement in June 2007 TalkTalk responded by reducing the cost of its own call packages. From August 2007 BT is simplifying its pricing structure for calls to mobile and Number Translation Services (NTS) calls, with lower pence-per-minute rates.

The downward trend in prices has been offset by shifts in calling patterns, with lower use of inclusive call minutes, and with UK geographic call volumes declining faster than the more expensive international calls or calls to mobiles. In January 2006 BT increased its line rental charge for residential customers not on Option 2 or 3; in April it increased the residential minimum call charge from 5p to 5.5p, and then replaced this with a 'call set up fee' of 3p in October.

**Figure 4.31 Factors affecting the reduction in BT retail fixed voice revenue**



Source: Ofcom / operators

Note: Calculation excludes NTS voice calls; figures have been restated from the 2006 Communications Market Report to reflect more accurate data

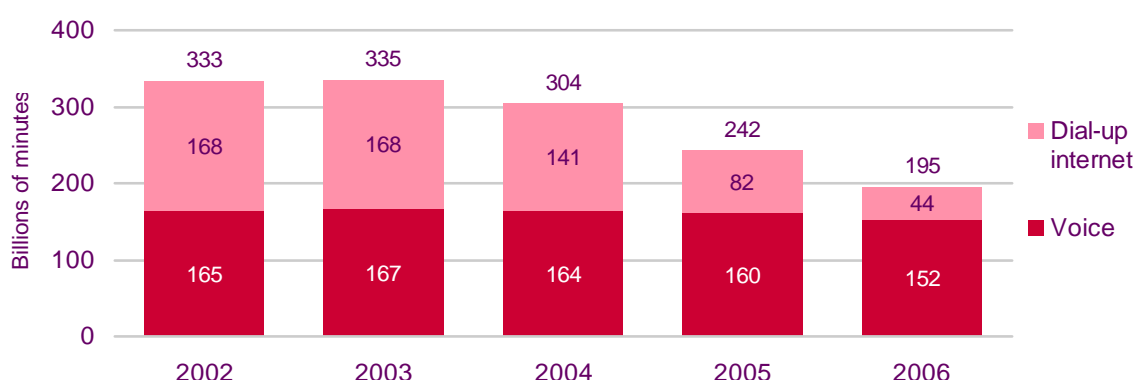
## 4.2.6 Fixed-line volumes

### Voice call volumes fall by 5% during 2006

The total volume of calls from UK fixed lines fell by 19% between 2005 and 2006 (Figure 4.32). Most of this drop came from a reduction in the number of dial-up internet calls as users continued to migrate to broadband internet packages. During 2006 dial-up internet call volumes fell by 47% to 44 billion minutes, and accounted for 22% of total call volumes; in 2002 dial-up internet calls had made up over half (51%) of all call volumes.

Fixed voice call volumes also declined during 2006, and although the rate at which they fell (5%) was much lower than that of dial-up internet calls it was higher than in 2005 when voice volumes fell by 2%. Continued fixed-to-mobile migration is the primary cause of this, while VoIP may also be starting to have an effect.

**Figure 4.32 Fixed telecoms call volumes**



Source: Ofcom / operators

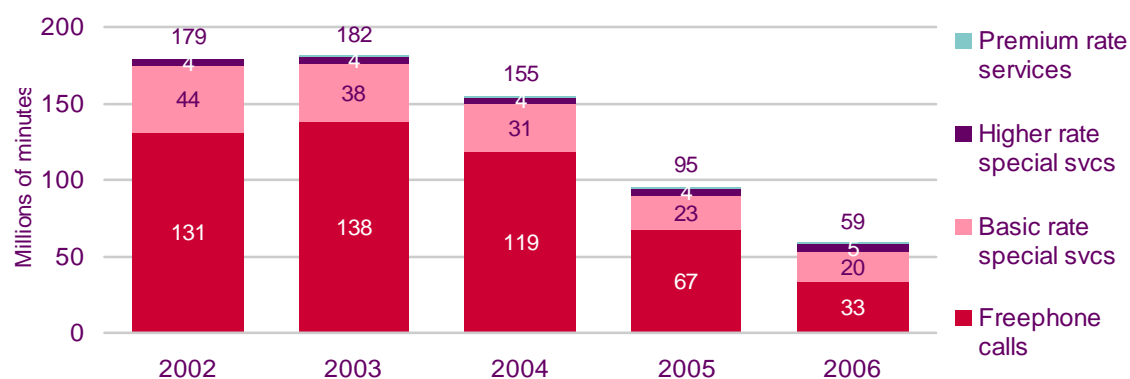
Note: Figures have been restated from the 2006 Communications Market Report to reflect more accurate data.

BT's retail market share of fixed voice call volumes (excluding NTS voice calls) fell from 52% in 2005 to 48% in 2006. Indirect operators (including CPS and LLU) were the main beneficiaries as their share of voice calls increased from 25% in 2005 to 28% in 2006. Cable's share of voice call volumes was unchanged at 15%, as was that of other direct network operators (9%).

## Decline in fixed non-geographic call volumes continues

Fixed NTS call volumes fell by 38% to 59 billion minutes in 2006 (Figure 4.33). The largest drop was in call volumes to freephone services (which include unmetered internet volumes) where volumes fell by 51% during the year, as narrowband customers switched to broadband services. Migration to broadband from narrowband also contributed to a 12% decline in calls to basic rate special services numbers. Calls to premium rate numbers made up only 1% of NTS call volumes from fixed phones in 2006, but contributed an estimated 23% of revenues owing to their higher call charges, which averaged 44 pence per minute during the year, an increase from 41 pence per minute in 2005.

**Figure 4.33 Non-geographic fixed call volumes**



Source: Ofcom / operators

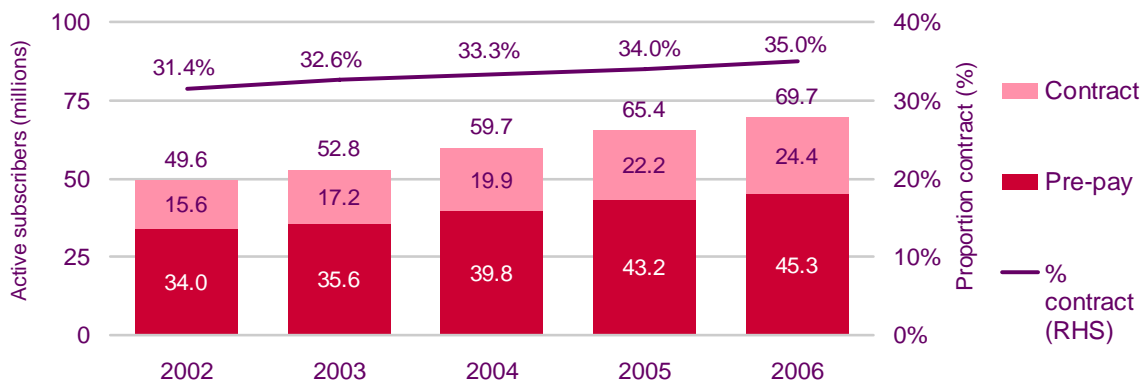
Note: Basic rate special services and freephone calls include dial-up internet calls; figures have been restated from the 2006 Communications Market Report to reflect more accurate data

## 4.2.7 Mobile connections

### Mobile subscriptions approach 70 million

Growth in the number of active mobile subscriptions continued in 2006, largely driven by individuals' use of multiple handsets or multiple SIMs (either to take advantage of tariffs from different operators, or for business purposes, for example by combining use of a mobile for personal calls with a PDA or BlackBerry). At the end of the year there were 69.7 million active UK mobile subscriptions, 4.2 million (6%) more than a year previously. With mobile penetration already high (84% of adults reported personally using a mobile phone in Q1 2007) operators are focusing less on acquisition and more on attempting to increase revenue per user and reduce churn. An example of this is the networks' efforts to move pre-pay customers (who on average spend much less than post-pay customers) onto monthly contracts, which typically results in higher monthly spend and a minimum contract length of at least 12 months. At the end of 2006 the proportion of mobile subscribers on monthly contracts was 35.0%, one percentage point higher than in 2005 (Figure 4.34).

**Figure 4.34 Pre-pay and contract mobile subscriptions**



Source: Ofcom / operators

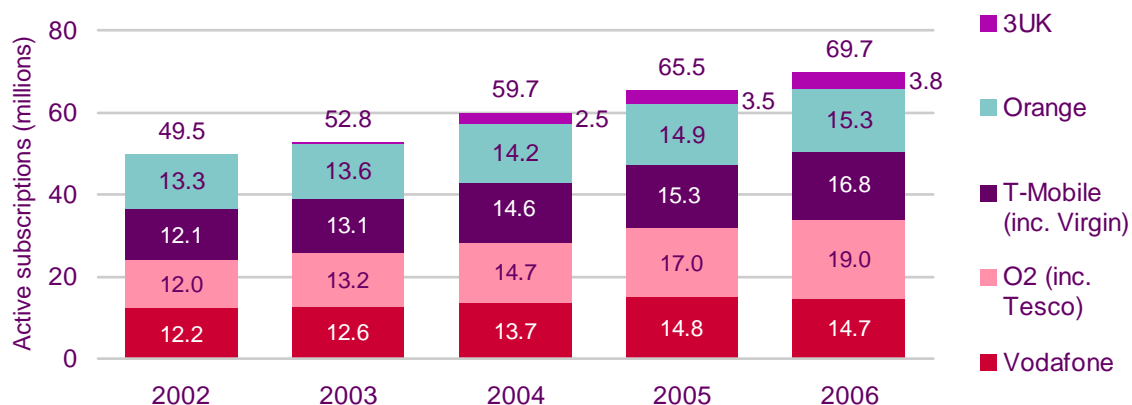
Notes: based on network operator reported figures; likely to overstate activity in reference quarter; includes estimates where Ofcom does not receive data from the operators

Similarly, in order to boost customer loyalty, operators have been offering incentives (either cheaper line rental or larger call and text bundles or greater handset subsidies) for users who sign up for contracts longer than the standard 12 months, typically 18 or 24 months. This approach appears to be working, and GfK reported that in March 2007, less than two years after the availability of contracts longer than a year in duration became commonplace, more than four in five new mobile contracts sold were for 18 months or more.

**O2 remains largest network in terms of subscribers**

O2 remained the largest network during 2006 with 19.0 million subscribers (including Tesco Mobile), a 12% increase on a year previously (Figure 4.35). This was the fastest growth rate among the five operators, the lowest being Vodafone's, whose customer base shrank by 1% in 2006. 3UK's subscriber base continued to grow during 2006, and at the end of the year it had around 3.8 million subscribers, a 5% market share. At the service provision level, Virgin Mobile (which uses T-Mobile's network) reported approximately 4.5 million subscribers at the end of 2006, while Tesco Mobile (which uses O2's network) reported 1.4 million.

**Figure 4.35 Mobile subscriptions by network operator**



Source: Ofcom / operators

Note: Includes estimates where Ofcom does not receive data from operators; figures have been restated from the 2006 Communications Market Report to reflect more accurate data.

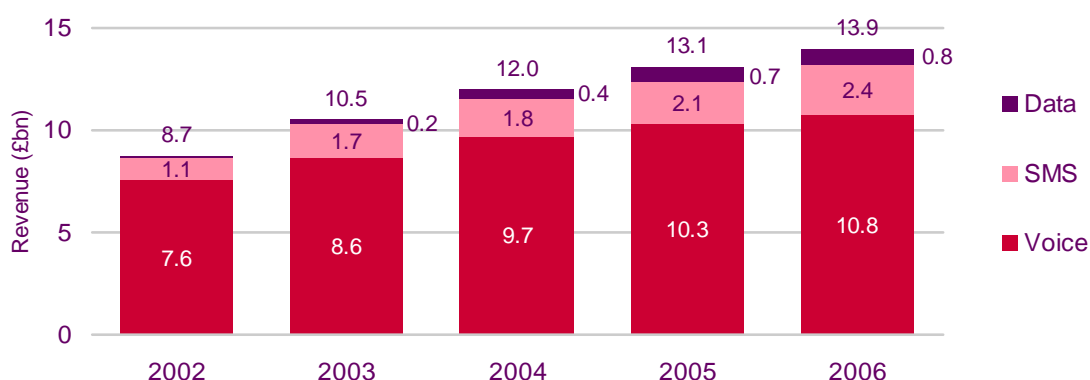
## 4.2.8 Mobile revenue

### Voice and SMS account for 95% of mobile revenue

Mobile telephony continues to make up the largest proportion of the UK telecoms industry, in revenue generation as well as number of subscriptions. In 2006 total UK retail revenue from mobile telephony was £13.9bn, an increase of £0.8bn (6%) on the previous year (Figure 4.36). Voice calls and rental continued to make up the large majority of mobile retail revenue in 2006 (77%) although this represented a decline of two percentage points from 2005.

The proportion of revenue from SMS messaging increased by one percentage point during the year to 17%, while revenue from non-SMS data applications was unchanged at 5%. The proliferation of web-based mobile applications and services, along with 'all-you-can-eat' mobile data tariffs, should ensure further growth in the use of non-SMS data services in the future.

**Figure 4.36** Estimated mobile retail revenue by service



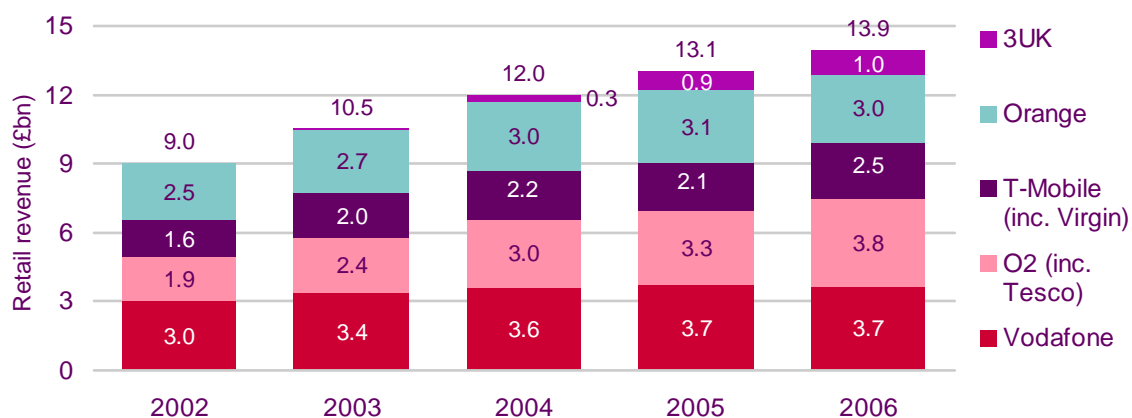
Source: Ofcom / operators

Note: Includes estimates where Ofcom does not receive data from operators; figures have been restated from the 2006 Communications Market Report to reflect more accurate data

### Vodafone no longer biggest network in terms of revenues

According to our estimates, in 2006 O2 overtook Vodafone to become the UK's largest mobile network in terms of retail revenue (including that from Tesco Mobile) (Figure 4.37). Although O2 has been larger than Vodafone in subscriber terms since 2003, Vodafone had continued to generate higher revenues due to its large subscriber base of business users and also because of its higher proportion of contract customers (45% of its total base). O2, T-Mobile and 3UK all enjoyed revenue growth of over 15% in the year, while Vodafone and Orange's revenues both fell slightly during the year.

**Figure 4.37 Estimated mobile retail revenue by network operator**



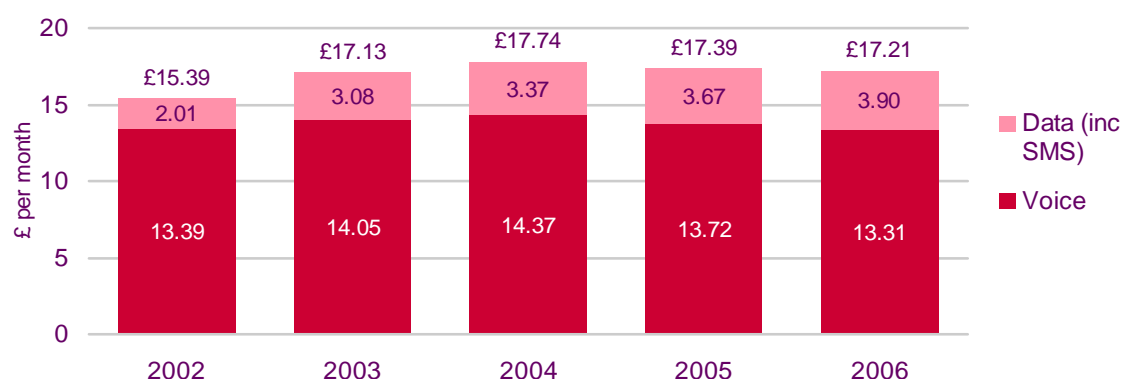
Source: Ofcom / operators

Note: Includes estimates where Ofcom does not receive data from operators; figures have been restated from the 2006 Communications Market Report to reflect more accurate data.

### Average retail revenue per mobile subscription declining

During 2006 average mobile retail revenue per subscription declined slightly to £17.21 a month, a 1% decrease on the previous year (Figure 4.38). During the same period revenues from access and voice calls fell by 3% to £13.31 while increasing revenue from SMS messaging contributed to an increase in average data spend per user of 6%, to £3.90 a month.

**Figure 4.38 Average retail revenue per mobile subscription**



Source: Ofcom / operators

Note: Includes estimates where Ofcom does not receive data from operators; figures have been restated from the 2006 Communications Market Report to reflect more accurate data.

### Average contract revenue nearly four times pre-pay

Analysis of average retail revenue per mobile subscription, by subscription type, shows that, on average, a monthly contract connection generates almost four times as much revenue as a pre-pay connection (£32.96 for contract against £8.92 for pre-pay). Given that UK mobile penetration may be approaching saturation, it is unsurprising that the mobile operators see converting their existing pre-pay subscriber base onto monthly contracts as a way to protect their customer base and ensure continued revenue increases in the face of slowing subscriber growth.

**Figure 4.39 Average retail revenue per mobile subscription by subscription type**



Source: Ofcom / operators

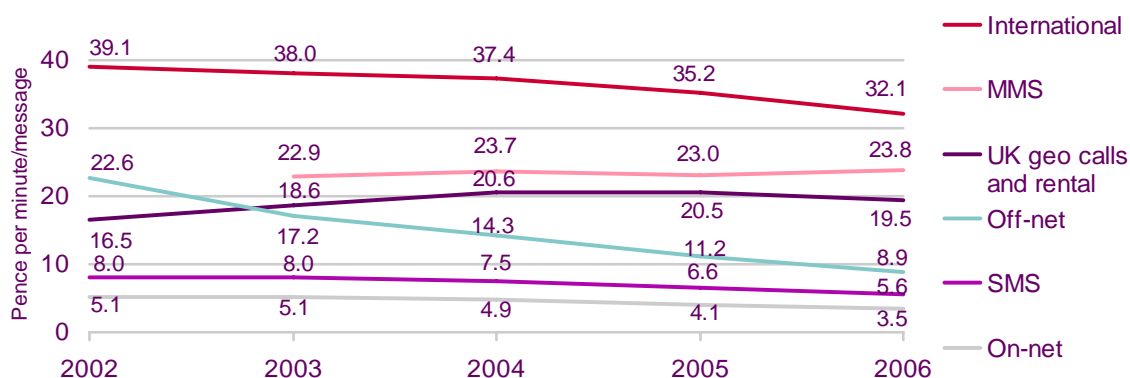
Note: Includes estimates where Ofcom does not receive data from operators; figures have been restated from the 2006 Communications Market Report to reflect more accurate data.

### Average mobile call charges per minute: trend is downwards

From operator revenue and usage data it is possible to calculate average call charges per minute and charges per message; these are illustrated in Figure 4.40 below. However, it is not possible to use these data as an exact proxy for prices because the increasing inclusion of calls and messaging in post-pay tariffs makes it difficult to calculate exact charges per call and per message, as a proportion of the costs of calls and messages will be included in monthly access payments.

Ofcom's mobile data on UK geographical call charges includes an element of monthly access charges, so the cost per minute of UK fixed calls in this analysis will be overstated due to the inclusion of a large element of these charges. Similarly, the cost of other call types and messages are likely to be understated as an element of the revenues from these will be included in the rental revenues included with UK geographic calls, due to bundled tariffs. However, the downward trend in cost per minute/message for all call and message types (except MMS) indicates that overall UK mobile prices declined during 2006.

**Figure 4.40 Average mobile retail call and messaging revenues**



Source: Ofcom / operators

Note: Includes estimates where Ofcom does not receive data from operators

### Average pre-pay cost per minute falls below contract cost for the first time

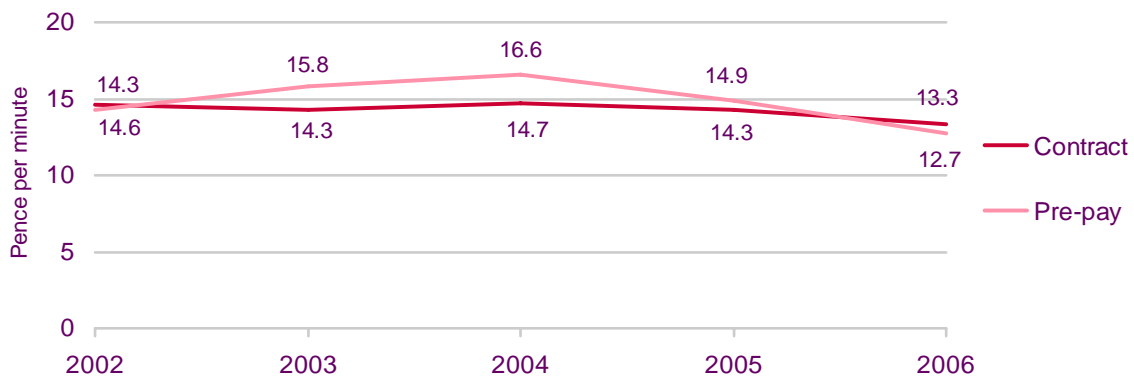
Analysis of the average cost per voice minute by subscriber type shows that during 2006 the average per minute cost of voice calls for pre-pay users fell below that for contract subscribers for the first time (Figure 4.41). Pre-pay was introduced in the mid-to-late-1990s to enable consumers who did not want to sign up to annual contracts to use mobile services. Initially, the cost of pre-pay calls was often in excess of £1 a minute and as competition has increased over time, pre-pay prices have fallen significantly and now offer parity with contract services.

However, this analysis excludes the subsidisation of mobile handsets; many contract customers receive a free or heavily discounted handset in return for their commitment. Although basic pre-pay handsets can be bought for around £20, mid-range handsets frequently cost more than £100, and more feature-rich devices in excess of £300.

An additional issue raised by the higher cost per minute for contract customers is the under-utilisation of bundled minutes. It appears that many customers are not using the minutes included in their bundles, and are prepared to pay more for a more expensive tariff with a large number of inclusive minutes even though they do not use them.

There are a number of possible explanations for this, including users over-estimating their potential use, or paying for more minutes than they will need most months in order to have certainty in monthly costs, or upgrading their monthly commitment in order to gain a higher-specification handset, or paying more for a mobile tariff in order to get a free or discounted additional service (such as bundled broadband). Additionally, some contract customers will be on inappropriate tariffs based on lack of awareness or insufficient information at the time of initial purchase, or are yet to change to a contract that more closely matches their usage.

**Figure 4.41 Average mobile cost per voice minute by customer type**



Source: Ofcom / operators

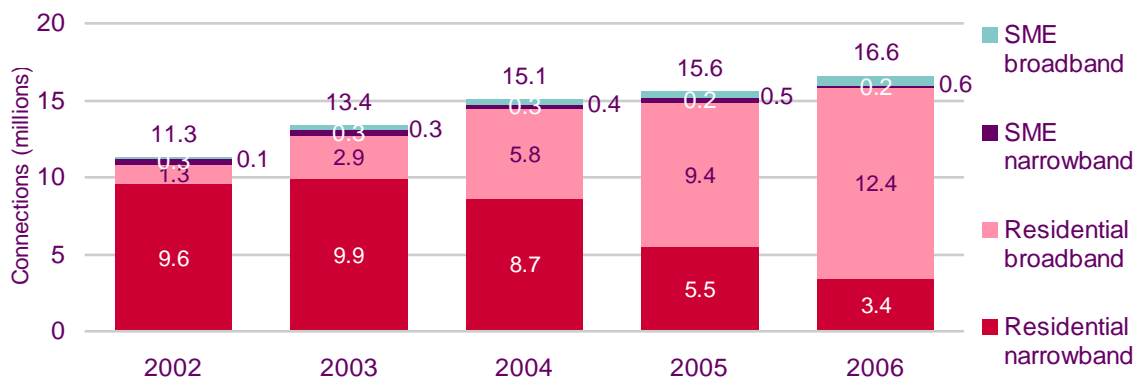
Note: Includes estimates where Ofcom does not receive data from operators; contract includes rental element; figures have been restated from the 2006 Communications Market Report to reflect more accurate data.

## 4.2.9 Internet connections

### Internet connections continue to grow

Ofcom estimates that there were 16.6 million residential and SME UK internet connections at the end of 2006 (Figure 4.42). Of these, 78% (13.0 million) were broadband connections, compared to 64% at the end of 2005. Absolute growth in the number of broadband connections slowed from 3.8 million during 2005 to 3.1 million in 2006, and this trend is likely to continue; Ofcom research indicates that at the end of 2006 50% of UK households had a broadband connection while home computer / laptop penetration stood at 69%.

**Figure 4.42 UK residential and small business internet connections**



Source: Ofcom / operators

Note: Figures have been restated from the 2006 Communications Market Report to reflect more accurate data; SME broadband includes some connections over leased lines

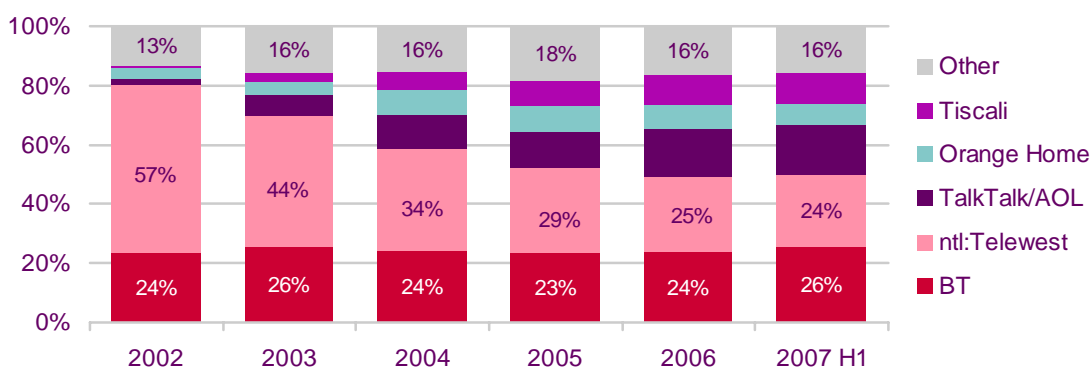
### Higher availability favours DSL and LLU broadband operators

Ofcom data showing the market share of broadband subscribers by service provider shows that BT's retail share increased by one percentage point during 2006 to 24%, while the share of ntl:Telewest (Britain's largest cable provider which has now rebranded as Virgin Media) fell from 29% to 25% in 2006 (Figure 4.43). Two factors can be identified here. Firstly, the lower availability of cable broadband services; 46% of UK households were able to access cable broadband services at the end of 2006 compared to the 99.6% able to receive DSL broadband. At the same time, 67% of premises were connected to an unbundled local exchange, and so should be able to receive LLU-based DSL broadband services (72% by the end of March 2007).

A second contributing factor is that broadband is now a mass-market service. A few years ago people taking up broadband services were 'early adopters' – and more likely to use alternative internet service providers (ISPs) to their fixed-line supplier. With household broadband penetration now in excess of 50%, new broadband connections are being made by the 'late majority' who may be less interested in shopping around and instead go for an 'all-in' service from a known provider.

At the end of 2006 ntl:Telewest (including Virgin.Net) was the largest broadband provider with a market share of 25%, although in 2007 BT has overtaken Virgin Media (the re-branded ntl:Telewest) in terms of retail subscribers. BT reported that it had 38% of new broadband connections in Q2 2007 to take its total retail customer base to 3.8 million (compared to around 3.4 million for Virgin). Carphone Warehouse's TalkTalk/AOL is the UK's third largest supplier of broadband, reporting 2.4 million customers at the end of June 2007, while BSkyB was the fastest-growing, adding 259,000 customers in Q2 2007 to lift its total number of subscribers to 716,000 in less than a year after launch.

**Figure 4.43 UK broadband service provision share of retail connections**



Source: Ofcom / operators

Note: TalkTalk/AOL, Orange Home and Tiscali shares are commercially sensitive and are purposefully omitted from the chart. Ofcom is unable to release these data.

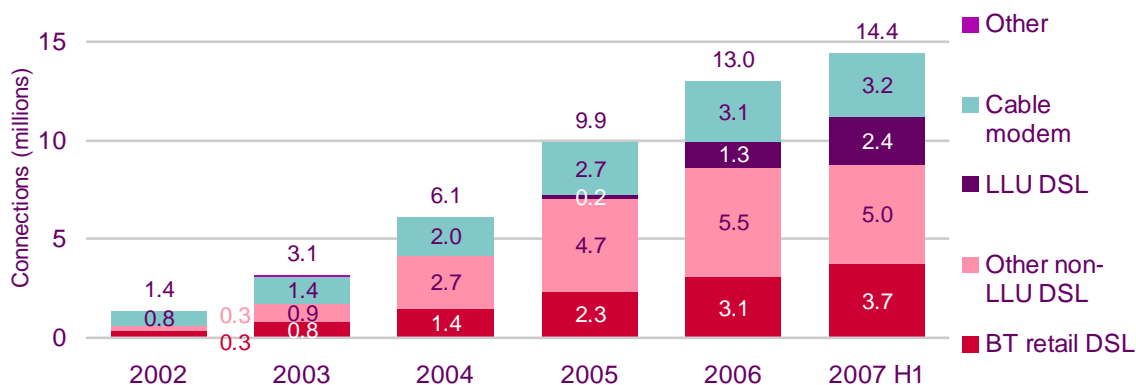
### LLU accounts for 17% of broadband connections as all sectors grow

During 2006 the number of LLU broadband lines increased from 0.2 million to 1.3 million and at the end of the year LLU accounted for 10% of all UK broadband connections, compared to 2% a year previously (Figure 4.44). By the end of June 2007 the number of LLU broadband connections had risen to 2.4 million, or 17% of the total, with 966,000 of these connections being either TalkTalk or AOL, and around 580,000 being BSkyB LLU connections. TalkTalk/AOL and BSkyB therefore account for almost two thirds of UK LLU broadband connections.

BSkyB has acquired over 700,000 broadband subscribers in less than a year by marketing 'free' broadband services to its subscriber base of 8 million digital satellite TV customers, while a similar offer from Orange to its 15 million mobile subscribers has had lower take-up. One possible reason for this may be that while digital TV and broadband are seen as household purchases, a mobile phone is seen as an individual purchase.

The increasing availability of LLU services in 2006 and aggressive pricing by providers increased LLU's share of broadband connections. This was at the expense of cable and non-LLU DSL connections, where growth slowed and market share reduced. Cable's market share fell by three percentage points to 24% in 2006, while total non-LLU DSL connections fell by five percentage points to 66%.

**Figure 4.44 UK residential and small business broadband connections**



Source: Ofcom / operators

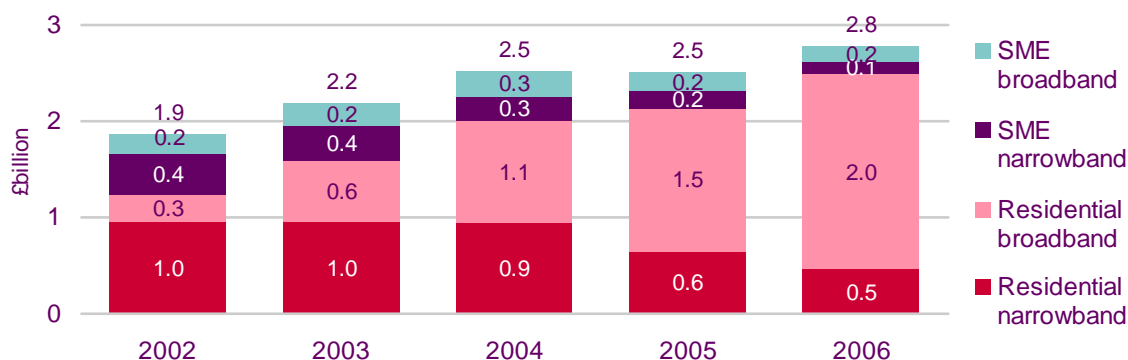
Note: Figures have been restated from the 2006 Communications Market Report to reflect more accurate data

## 4.2.10 Internet access revenues

### Falling prices limit growth of internet access revenues

We estimate that during 2006 total revenue from residential and SME internet connections increased by 11% to £2.8bn (Figure 4.45). In the same period, revenue from broadband services went up by 29% from £1.7bn to £2.2bn, while revenue from residential broadband connections rose by 33%, from £1.5bn to £2.0bn. Falling prices for broadband, associated with bundling offers, are constraining further growth in revenue and as LLU availability and take-up grows it seems likely that prices will continue to fall as competition for subscribers intensifies.

**Figure 4.45 UK internet and broadband service provision retail revenues**



Source: Ofcom / operators

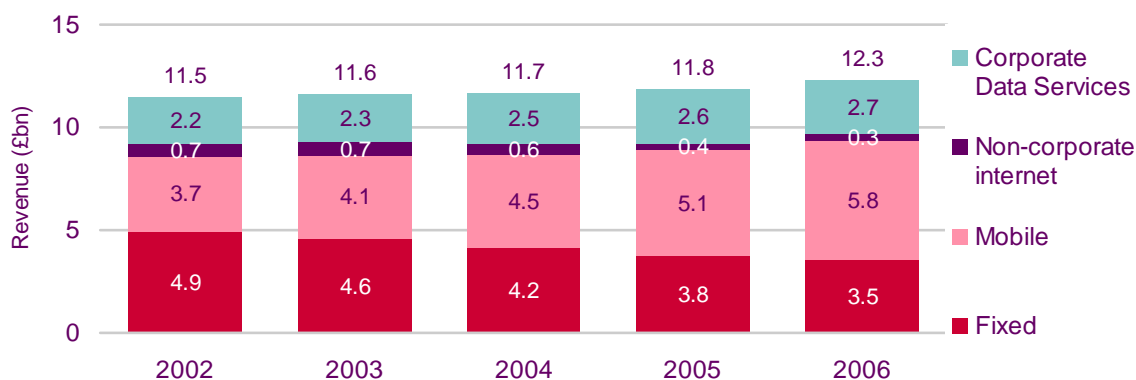
Note: Figures have been restated from the 2006 Communications Market Report to reflect more accurate data; dial-up metered revenue figure is based on revenue paid to telecom provider not the element retained by ISP.

## 4.2.11 Business markets

### Strong growth in mobile revenue from business customers

Total retail revenue from business telecoms services grew by 4% to £12.3bn during 2006. The largest increase was in revenue from mobile services, which grew by £0.7bn (15%) to £5.8bn in 2006 (Figure 4.46). Non-corporate internet revenue fell by £0.1bn during 2006 as a consequence of falling broadband prices, while fixed voice revenues declined by 7% to £3.5bn due to increasing use of mobile services. Estimated revenue from corporate data services increased by 4% to £2.7bn over the year, mainly due to growth in revenue from IP VPN and ethernet services.

**Figure 4.46 UK business telecoms services revenue**

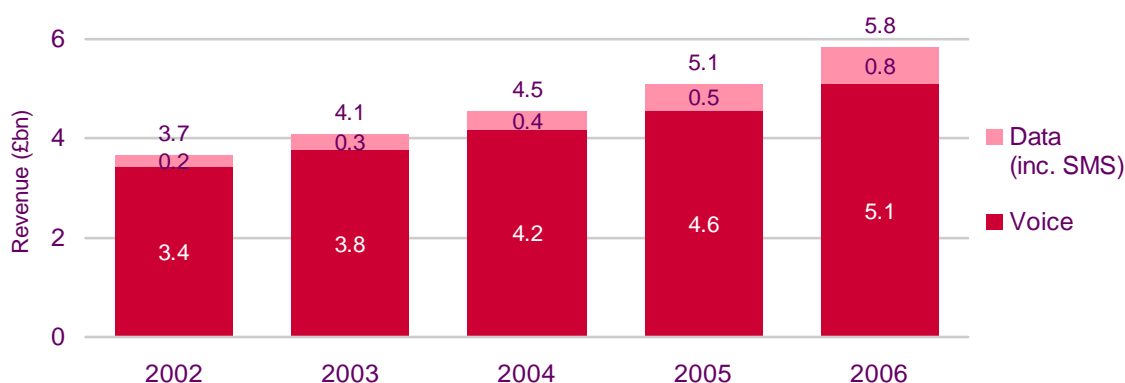


Source: Ofcom / operators / IDC

Note: Figures have been restated from the 2006 Communications Market Report to reflect more accurate data.

While business mobile voice revenues grew by 12% to £4.1bn during 2006, Ofcom estimates that revenues from mobile data services (including SMS messaging) increased by around 40% to £0.8bn. Much of this increase is a result of growing business take-up of advanced handsets such as mobile personal digital assistants (PDAs) and BlackBerry devices and the services required to exploit fully their capabilities. Despite business data revenues' strong growth, this sector still accounted for only 13% of total business mobile revenue, compared to around 30% in the residential market where SMS use is higher.

**Figure 4.47 Breakdown of business mobile revenue**



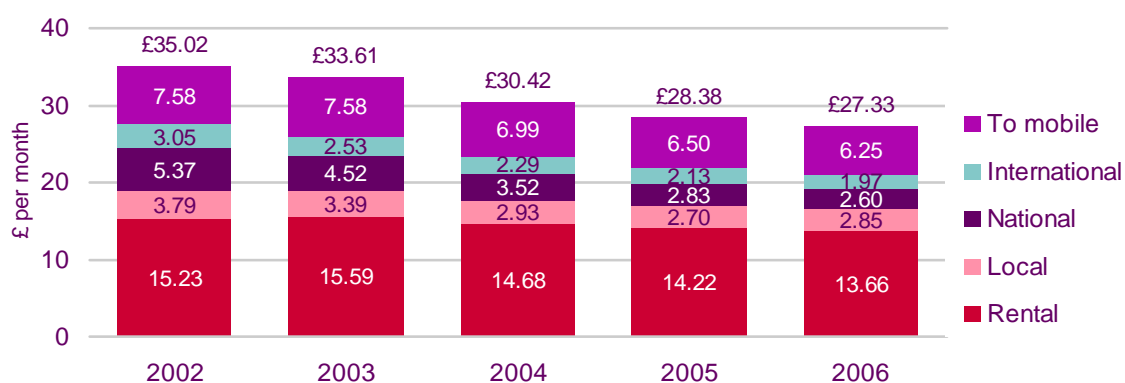
Source: Ofcom / operators / IDC

Note: Figures have been restated from the 2006 Communications Market Report to reflect more accurate data

### Revenues per business fixed line falling as mobile substitution increases

Average voice revenue per business line declined 4% to £27.33 during 2006, with most of the decrease being in line rental fees, which fell, on average, by £0.56 per month (Figure 4.48). Increased take-up of wholesale line rental (WLR) products contributed to this fall; at the end of 2006 there were 1.8 million business PSTN lines and ISDN channels provided using BT's WLR products, compared to 1.3 million at the end of 2005. Total business voice call revenues per line (excluding NTS voice calls) fell by £1.05 per month during 2007 due to lower prices and a slight decrease in average call volumes per line.

**Figure 4.48 Average voice revenue per business fixed line**



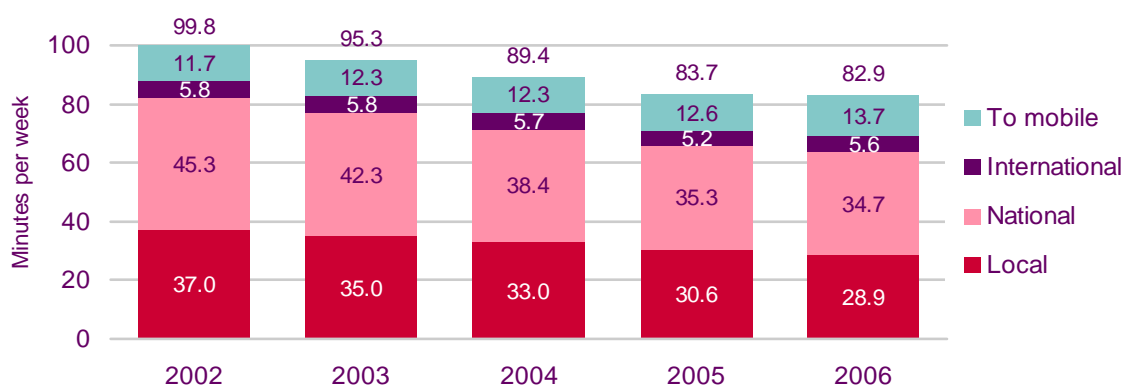
Source: Ofcom / operators

Note: Excludes revenues from NTS voice calls; figures have been restated from the 2006 Communications Market Report to reflect more accurate data.

## Business fixed call volumes per line continue to decrease

Average voice call volumes per business fixed line fell by 1% during 2006 to around 83 minutes per week (Figure 4.49). We estimate that during the same period, total business voice call volumes from mobile phones increased by 21%, suggesting that mobile calls are being substituted for fixed. Increasing use of email and other electronic forms of communications such as instant messenger and VoIP will also exert a downward effect on call volumes per line, although it is difficult to estimate the extent. However, Ofcom consumer research conducted in Q4 2006 suggested that 14% of SMEs had used VoIP at least once, compared to 8% a year previously, indicating that VoIP use is rising.

**Figure 4.49 Average voice call volumes per business fixed line**



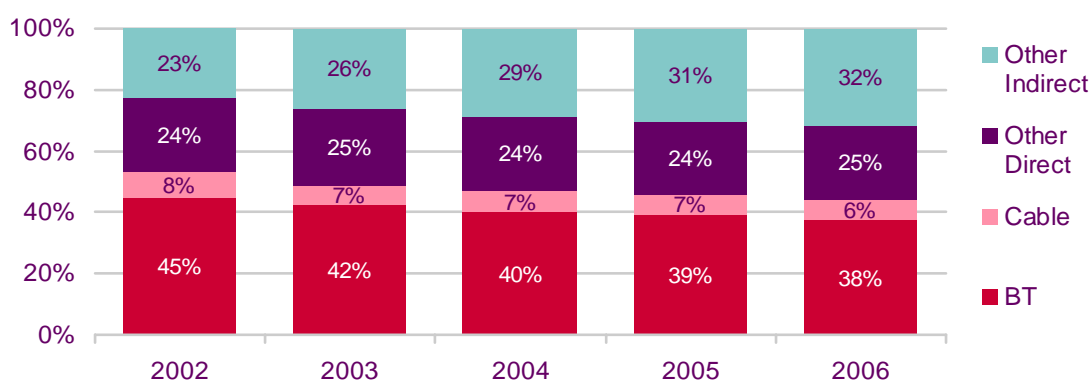
Source: Ofcom / operators

Note: Excludes NTS voice call volumes; figures have been restated from the 2006 Communications Market Report to reflect more accurate data.

## BT share of business call volumes continues to fall

BT's share of business fixed call volumes fell by one percentage point to 38% during 2006, as did that of ntl:Telewest (now Virgin Media) to 6% (Figure 4.50). The market share of other indirect operators, which includes CPS operators offering service over WLR lines, increased by one percentage point to 32%, as growth in the number of WLR lines continued. The market share of other direct operators, i.e. providers who own and operate their own network infrastructure, also increased during the year, to 25%.

**Figure 4.50 Market share of business fixed voice call volumes**



Source: Ofcom/operators

Note: Excludes NTS voice call volume; figures have been restated from the 2006 Communications Market Report to reflect more accurate data.

## 4.3 The Telecoms User

### 4.3.1 Introduction

This section looks at trends in consumer take-up and use of telecoms services to provide a 'bottom-up' approach which relates consumer behaviour to the wider industry trends discussed in the previous section.

We define 'consumer' as any end-user of telecoms services. These may be separated into three categories: residential, SME and large business/corporate.

- We focus primarily on the residential sector, both in order to provide continuity with the rest of this report (as broadcasting is focused very much on the residential sector), and because we believe that the residential sector benefits most from this type of analysis and guidance.
- SME telecoms take-up and consumption has more in common with residential consumers than with big corporates, and the specific nuances of the SME market are addressed in section 4.3.11.
- We do not address corporate users here in any detail for two reasons; firstly, general information about this market is well served by large companies' own IT/telecoms departments and relevant industry bodies; secondly, information about large business/corporate behaviour is difficult to obtain as most telecoms contracts are bespoke and details are generally confidential.

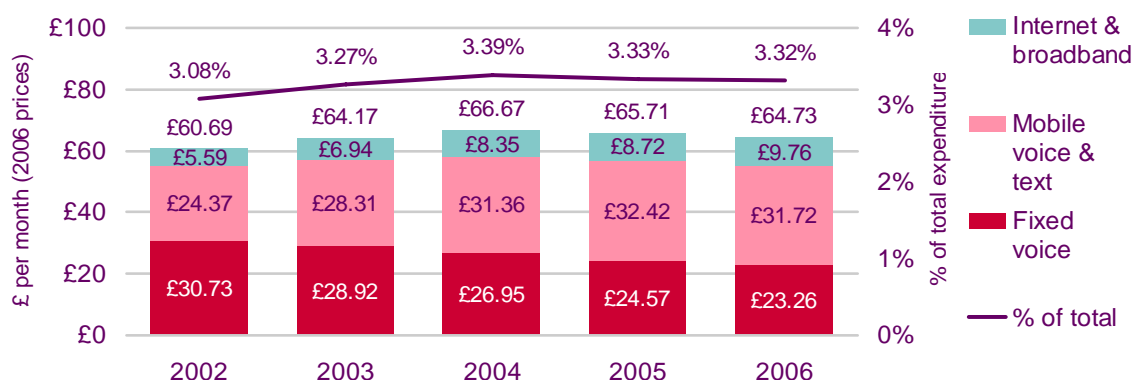
The analysis that follows is based on operator data and Ofcom's own consumer research. Third-party research is used to supplement this primary data where appropriate.

### 4.3.2 Household spend and pricing

#### Household mobile spend down for the first time

For the second consecutive year, household expenditure on telecoms services fell, both in actual terms and (marginally) as a proportion of average total household weekly spend.

**Figure 4.51 Average household spend on telecoms services**



Source: Ofcom / operators / ONS

Notes: Includes estimates where Ofcom does not receive data from operators; figures have been restated from the 2006 Communications Market Report to reflect more accurate data; adjusted to RPI

For the first time, average household spend on mobile fell in real terms, as falling prices more than compensated for an increase in both the total number of connections and the average use of voice calls and text messaging. Although estimated total mobile revenue increased by 6.9% during the year, the majority of this growth came from the business sector; we estimate that residential mobile revenue growth was just 2% in 2006. Estimated average household spend on mobile services was £31.72 per month in 2006, compared to £32.42 in 2005. Average spend on fixed-line telephony continued to fall, although at a slower rate than over the previous four years, driven by a combination of falling prices, fewer connections and lower usage.

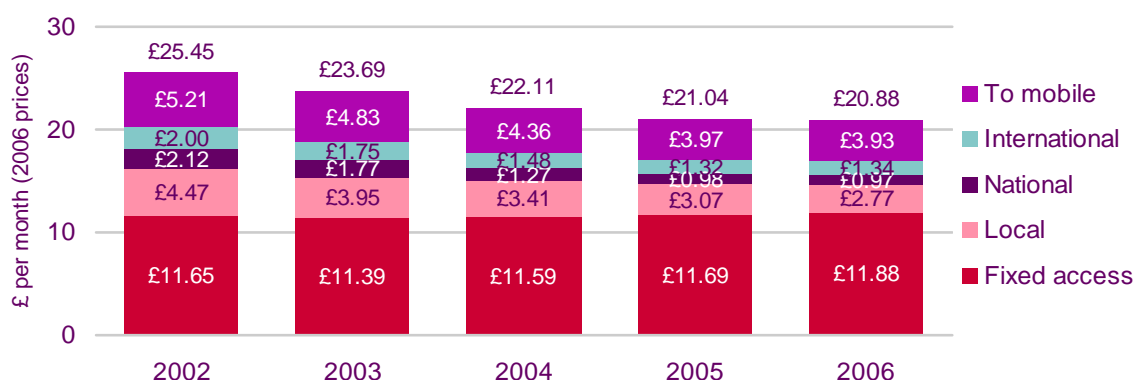
Falls in mobile and fixed-line spend were offset by an increase in spend on internet access, as a result of the growing penetration of broadband. Internet access now accounts for an estimated 15.1% of household spend on telecoms services (up from 13.3% in 2005). These figures are based on operators' own allocation of revenues; the prevalence of broadband being bundled with voice and/or other services makes it difficult to apportion spending definitively.

### Cost of fixed-line voice steadies after years of decline

We use analysis of the cost of a basket of telecoms services as a means of comparing costs over time. This analysis derives the 'real cost' by identifying the average cost per minute for access and calls (and cost per message for mobile) in a year, and then defining the 'basket' as the average number of minutes (and messages) used in 2006. Costs are then adjusted for changes in RPI in order to provide a year-on-year comparison.

As Figure 4.52 illustrates, after five years of decline, the real cost of a basket of residential fixed voice services has started to level out. A 1.6% increase in the access (or line rental) fee is a result of the increased availability and take-up of 'inclusive' services, where customers receive inclusive or reduced-rate calls in return for a higher monthly access fee. For example on *BT Together* plans, customers can choose to pay a monthly premium to get unlimited inclusive evening and weekend calls to fixed lines (under Option 2) or an additional premium to get unlimited calls at any time to fixed lines together with discounted mobile calls (under Option 3).

**Figure 4.52 Real cost of a basket of residential fixed voice services**



Source: Ofcom/operators

Note: includes VAT; excludes NTS; figures have been restated from the 2006 Communications Market Report to reflect more accurate data.

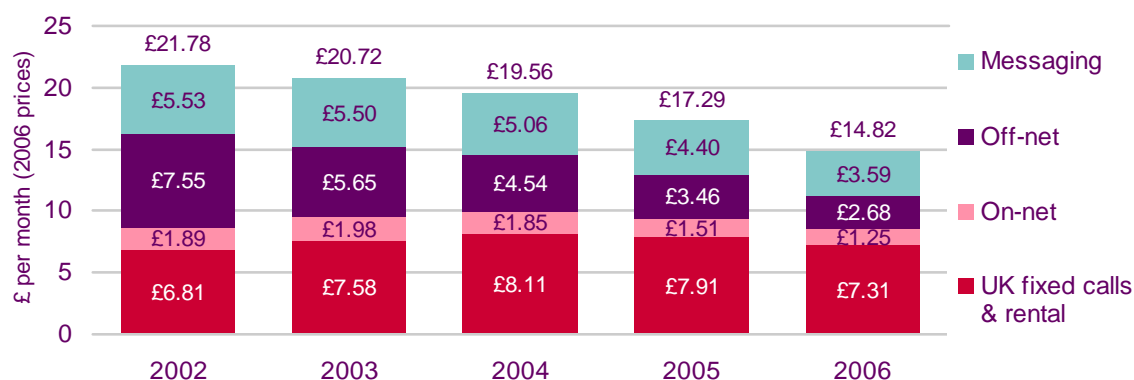
### Costs fall for all mobile services

The cost of mobile services fell significantly in 2006 (see Figure 4.53) with falls in the average costs of calls to other mobile networks (off-net), to the same mobile network (on-

net) and UK geographic fixed calls, as well as falls in the average cost of messaging. In addition, average line rental (or access) prices for contract services fell for the first time, driven by higher availability and take-up of lower price line rental contracts with more inclusive minutes and messages (which in turn has driven a decrease in the cost of on-net and off-net calls and messaging, as more of these are included within the monthly rental charge). For example, in February 2006, T-Mobile introduced its 'Flex' tariffs, beginning at £20 per month and offering customers the choice of a large number of inclusive voice minutes and/or text messages.

There is a significant difference between the actual cost of services to the consumer as detailed below, and the price of these services. Research by Noodle in June 2007 estimated that 900 million minutes are paid for each month as part of contracts but not used; for customers with more inclusive minutes than they use, the price of each incremental minute is effectively zero.

**Figure 4.53 Real cost of a basket of mobile services**



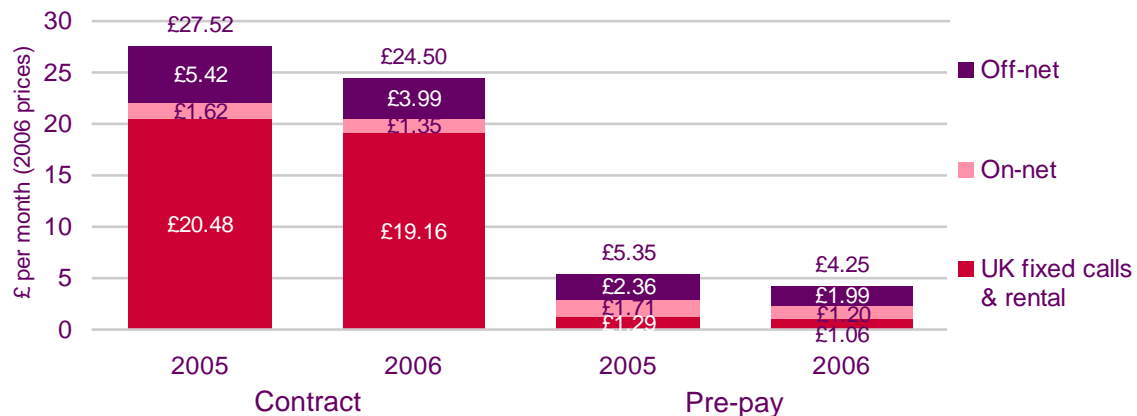
Source: Ofcom/operators

Note: Based on the average number of minutes used in 2006. Includes VAT. Excludes 3UK.

Comparison of the average cost of a basket of contract and pre-pay voice services (again based on average usage in 2006) shows that average spend is five times higher on contract than on pre-pay, as a result of monthly line rental payments and much higher usage (Figure 4.54). (Regrettably, it is not possible to include messaging within this analysis as the messaging data which Ofcom receives from operators does not currently distinguish between contract and pre-pay.)

Contract voice costs have fallen more slowly than pre-pay costs (an 11.0% decrease between 2005 and 2006 compared to 20.6% for pre-pay). This is in part a consequence of the increasing value passed on to contract customers in handset subsidies (which is not captured in the data below). However, it is also indicative of growing competition in the pre-pay market, with operators seeking to recruit new customers not only for retail revenue, but also for the interconnect revenue they receive from terminating inbound calls and messages. Mobile operator 3UK has been giving pre-pay customers credit in return for calls they receive under its *Wepay* proposition, while new virtual network operator Noodle launched in 2007 with a similar model.

**Figure 4.54 Real costs of baskets of mobile contract and pre-pay voice services**



Source: Ofcom/operators  
 Note: includes VAT; excludes 3UK

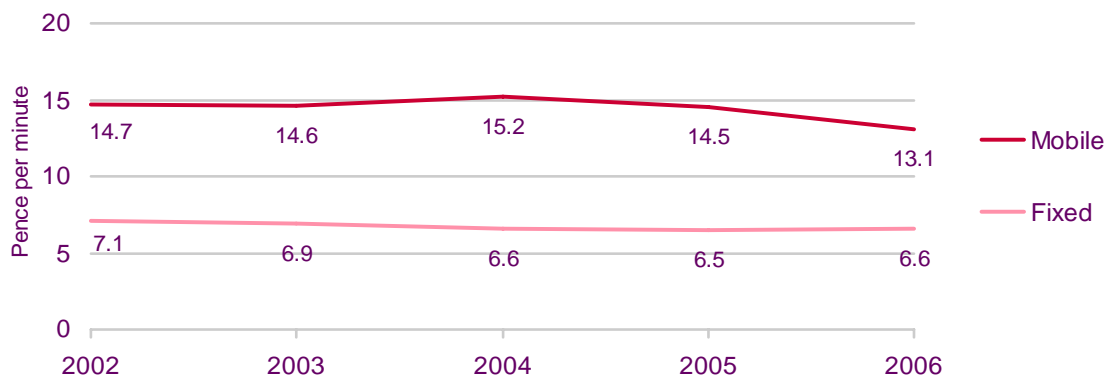
**Narrowing of difference in costs between fixed and mobile calls**

These trends are all contributing to a narrowing of the gap in the overall average cost per minute for mobile and fixed calls, although mobile calls still cost nearly twice as much on average as fixed-line calls (see Figure 4.55). It should, however, be noted that the cost per minute for mobile is over-stated as it does not include the value of the handset subsidy which mobile operators recoup over the course of a contract.

A decrease in the average mobile price per minute is caused by competition in the market which has driven down prices and in turn increased usage, but is also partly a consequence of operators increasingly focusing on 18-month rather than 12-month contracts, which has led to offers of more minutes and texts within lower value-contracts.

Although the cost of a basket of residential fixed-line voice services (based on customers making the same number of calls year-on-year) has fallen slightly, the average real price per minute has risen slightly. This small change is not indicative of pricing but is driven by lower average use of fixed lines, meaning that a higher proportion of total spend is accounted for by the fixed-cost line rental, combined with a small increase in the proportion of fixed-line calls that are made to mobiles (and are therefore more expensive), which rose from 11.8% in 2005 to 12.3% in 2006.

**Figure 4.55 Comparison of average fixed and mobile voice call charges**



Source: Ofcom / operators

Notes: the analysis takes rental revenues and bundles into account and is based on actual usage of all types of calls; figures have been restated from the 2006 Communications Market Report to reflect more accurate data.

### **Bundled broadband generally less expensive than buying services separately**

While the cost of a basket of fixed and mobile services can be estimated, we cannot use similar analysis as a proxy for broadband pricing, as almost 50% of broadband connections are paid for within a bundle of services alongside other communications services and it is difficult to allocate costs within bundles. TalkTalk, Orange and Sky promote free broadband offers in order to attract new customers and retain existing subscribers to their fixed-line, mobile and TV services, while most providers offer heavily discounted rates for broadband by bundling it with other communications services.

Figure 4.56 provides an illustrative guide to the value that customers can receive by subscribing to broadband in combination with other services. The table should not be used to make comparisons between operators; only the lowest cost option from each provider is shown; actual costs vary according to factors such as broadband speeds, usage caps, different bundles of fixed, mobile and television services, and hardware subsidies.

**Figure 4.56 Lowest cost broadband options from major suppliers, June 2007**

Provider	Broadband only	Broadband & fixed line	Broadband & mobile	Broadband & fixed & mobile	Broadband & fixed & TV	Broadband & mobile & fixed & TV
AOL	£25.99	£25.99				
Be	£25.00					
BSkyB					£26.00	
BT	£28.99	£28.99		£41.49	£28.99	£41.49
Orange	£25.99		£41.00			
Pipex	£25.99	£29.89				
PlusNet	£20.99	£20.99				
TalkTalk		£19.99				
Tiscali	£25.99	£19.99				
Virgin Media	£18.00	£20.00	£28.00	£30.00	£20.00	£30.00
Vodafone				£45.00		

Source: *Pure Pricing UK Broadband, Bundling and Convergence Update, June 2007*

Notes: Includes £11.00 BT line rental as relevant; lowest cost option / lowest price combination is shown; activation charges and promotional discounts are excluded; mobile options may be SIM-only; allowances for fixed-line and mobile calls, plus availability of TV channels included within packages may differ by operator and option

Although bundling makes quantification of broadband pricing a complex issue, it is clear that broadband bundling has exerted a significant downward pressure on overall household prices for communications services. A 'free' offer is, of course, rarely truly free and customers often have to pay a connection fee, commit to a longer contract than they may wish to and sign up for a premium service that they might otherwise do without. Another downside for some customers is that switching can be more onerous because of the complication of needing to find a new supplier for each service and because bundled deals are generally associated with longer contracts (typically at least 18 months). In addition, for some customers the offer of bundled broadband actually reduces choice; if they want broadband only, they have fewer suppliers to choose from.

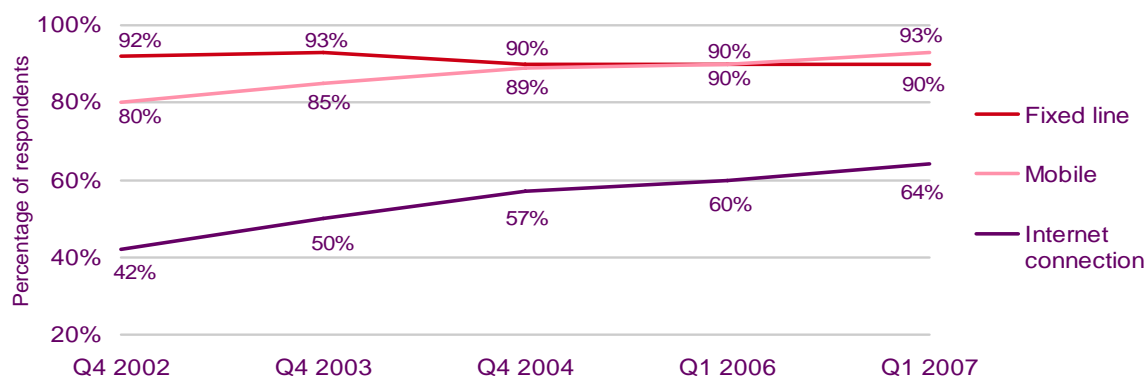
Customer value has also been increased by the option of higher broadband speeds; Ofcom data show that the average headline speed rose from 1.6Mbit/s at the end of 2005 to 4.6Mbit/s at the end of June 2007, although as discussed previously there is a difference between headline speed and actual speed. (See Section 4.1.6 for more details.)

### 4.3.3 Fixed-line and mobile penetration

#### More households now have mobile than fixed-line connections

A decrease in the cost of mobile access and calls has contributed to fixed-to-mobile substitution, and, for the first time, the number of households with a mobile now exceeds those with a fixed line (see Figure 4.57).

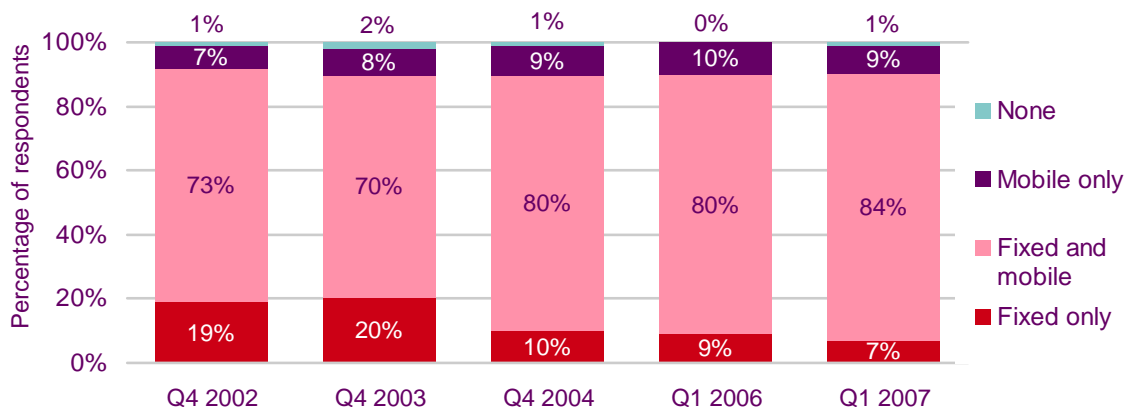
**Figure 4.57 Household penetration of key telecoms services**



Source: Ofcom research

The vast majority of households, however, have both mobile and fixed line (see Figure 4.58), and the requirement to have a fixed line for DSL broadband access may put a constraint on further increases in mobile-only households.

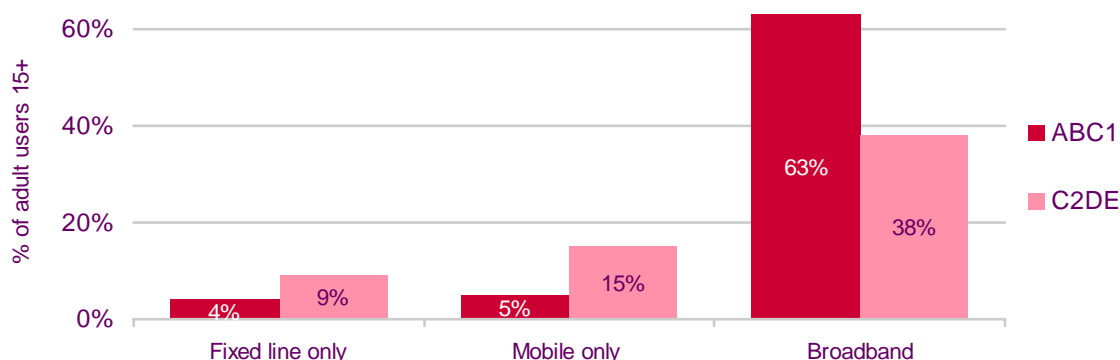
**Figure 4.58 Household penetration of fixed and mobile telephony**



Source: Ofcom research

Our research shows that mobile-only households tend to be in the lower socio-economic groups; in Q1 2007, 5% of ABC1 households were mobile-only, compared to 15% of C2DE households (Figure 4.59). This may be partly caused by the higher penetration of broadband in ABC1 households (63% compared to 38% of C2DE households), while other contributing factors include the higher numbers of tenanted households among C2DE groups (which are less likely to have a household fixed line) and the desire among lower socio-economic groups to have greater control and flexibility over spending, as is offered by pre-pay mobile.

**Figure 4.59 Household telecoms connections by socio-economic group**



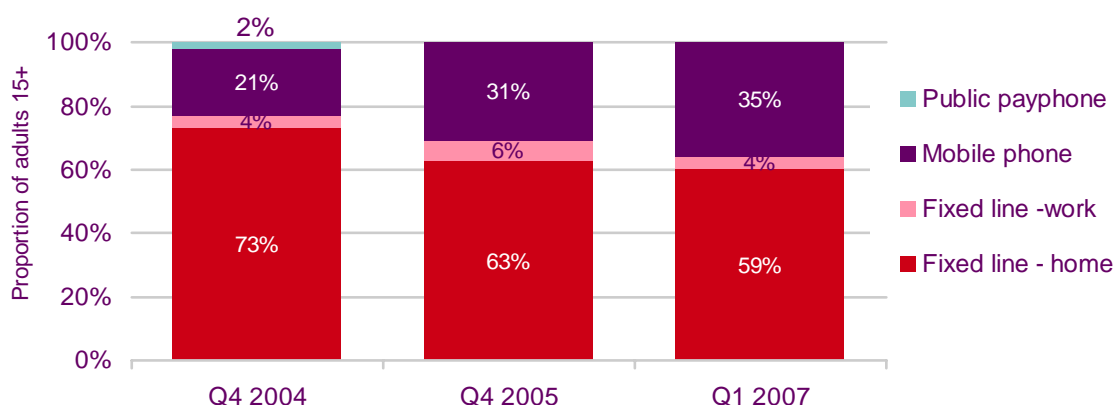
Source: Ofcom research, Q1 2007

### 4.3.4 Fixed-line and mobile usage

#### Fixed to mobile substitution driven by more inclusive minutes

As the price gap with fixed-line narrows, an increasing proportion of people claim that their main method of making calls is now via mobile (see Figure 4.60). However, a majority of people (59%) still claim that their fixed line at home is their main method of making calls.

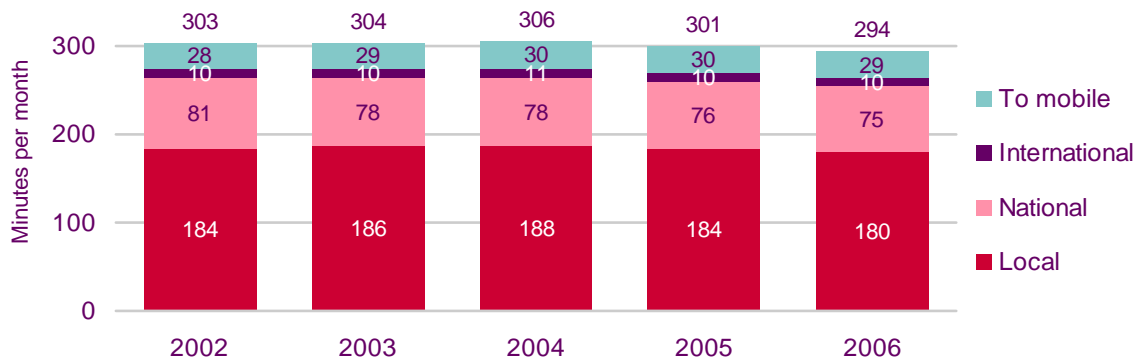
**Figure 4.60 Main method of making and receiving calls among UK adults**



Source: Ofcom research

This is consistent with average usage data for fixed-line and mobile connections reported by operators. Partly because fixed-line connections are often shared by members of a household, while mobiles are typically used by individuals, there are still nearly three times as many call minutes per fixed-line connection as per mobile connection, but average monthly mobile minutes rose to over 100 for the first time in 2006, while average fixed-line minutes fell below 300.

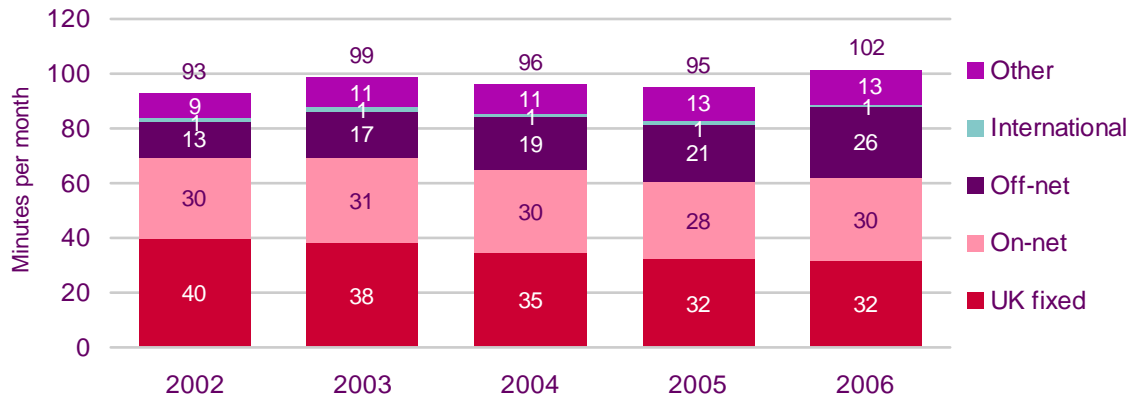
**Figure 4.61 Average outbound voice minutes per residential fixed line**



Source: Ofcom / operators

Note: Excludes NTS voice calls; figures have been restated from the 2006 Communications Market Report to reflect more accurate data.

**Figure 4.62 Average outbound voice minutes per mobile connection**

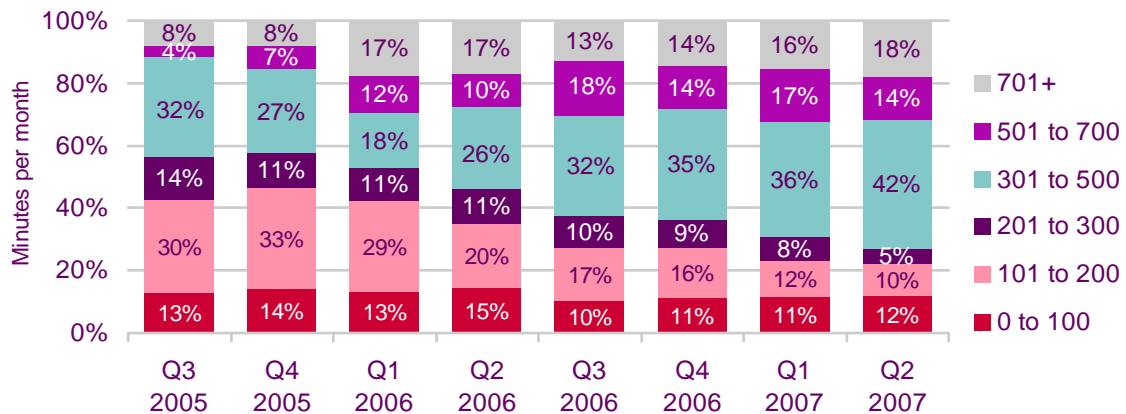


Source: Ofcom/operators

Note: Includes estimates for MVNOs where Ofcom does not receive data from operators; excludes 3UK. 'Other calls' include roaming, premium rate calls, WAP calls and all other call types; figures have been restated from the 2006 Communications Market Report to reflect more accurate data.

Increasing use of mobile is partly driven by significant increases in the number of inclusive minutes included in new contract connections (Figure 4.63).

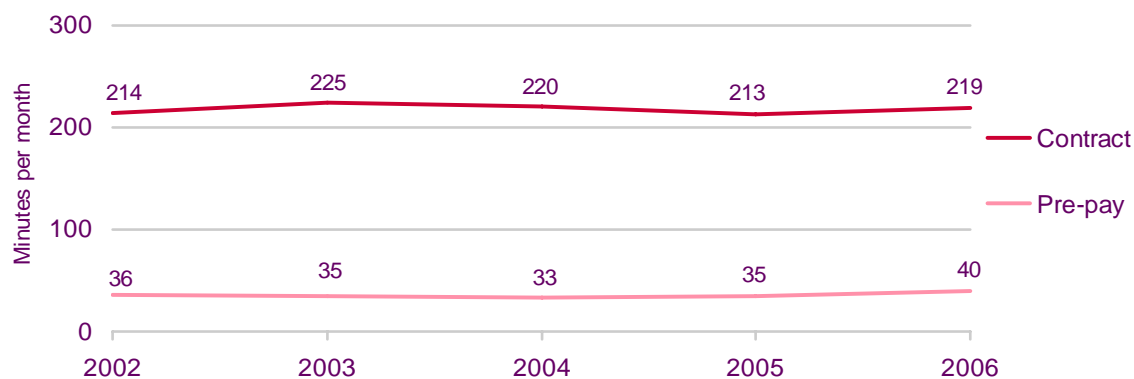
**Figure 4.63 Inclusive minutes in new mobile contract connections**



Source: GfK

In mobile, average voice use increased for both contract and pre-pay customers throughout 2006 (Figure 4.64). There were more than five times as many contract minutes as pre-pay minutes.

**Figure 4.64 Average outbound mobile minutes by customer type**

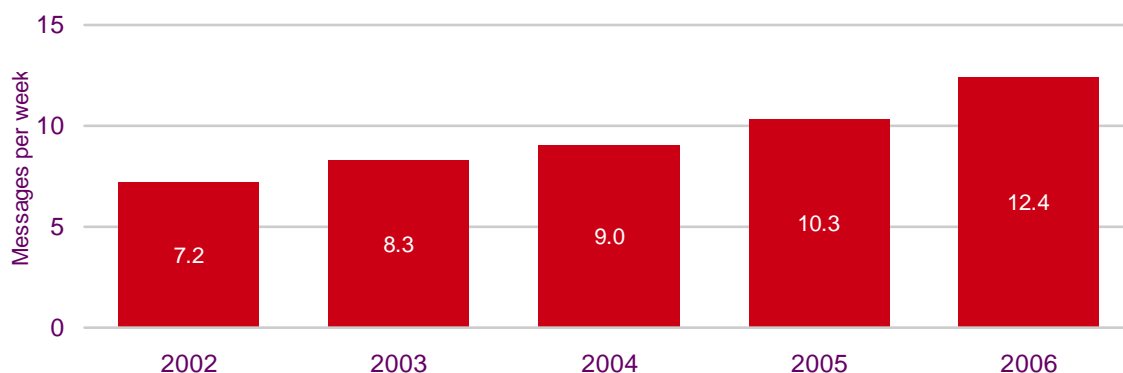


Source: Ofcom / operators

Note: Includes estimates where Ofcom does not receive data from operators; excludes 3UK; figures have been restated from the 2006 Communications Market Report to reflect more accurate data.

The average mobile user is now sending more than 12 text messages a week, with usage increasing by 20% between 2005 and 2006 (Figure 4.65). In part, this may be related to lower costs, with large numbers of text messages often included within bundles (see Figure 4.65) or available as separate add-ons; for example, T-Mobile's 'Flex' tariffs which enable users to choose between inclusive texts and inclusive minutes. However, it is also probably an example of the 'network effect' as text messaging has widened from a predominantly young user base into a communications tool for the older population.

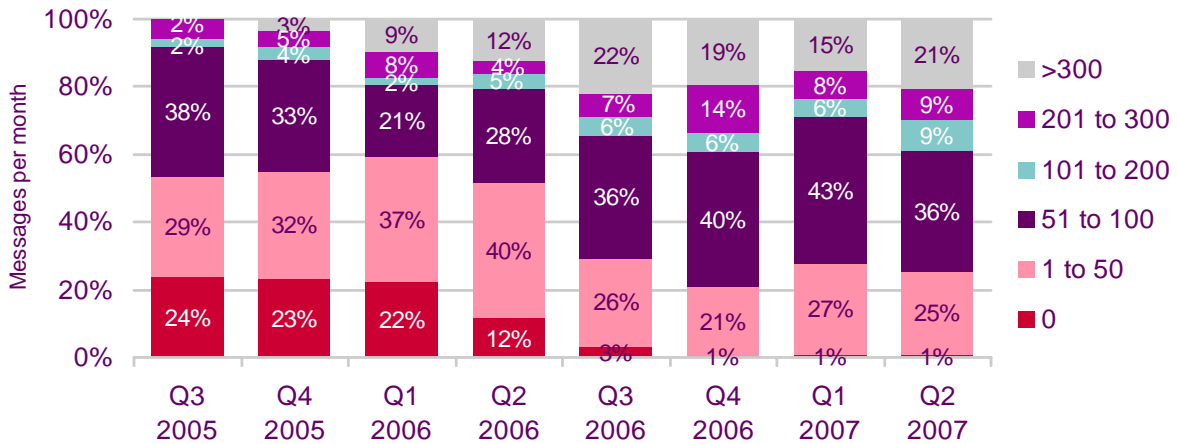
**Figure 4.65 Average outbound text messaging use per mobile connection**



Source: Ofcom / operators

Note: Includes estimates where Ofcom does not receive data from operators; excludes 3UK; figures have been restated from the 2006 Communications Market Report to reflect more accurate data.

**Figure 4.66 Inclusive texts messages in new mobile contract connections**



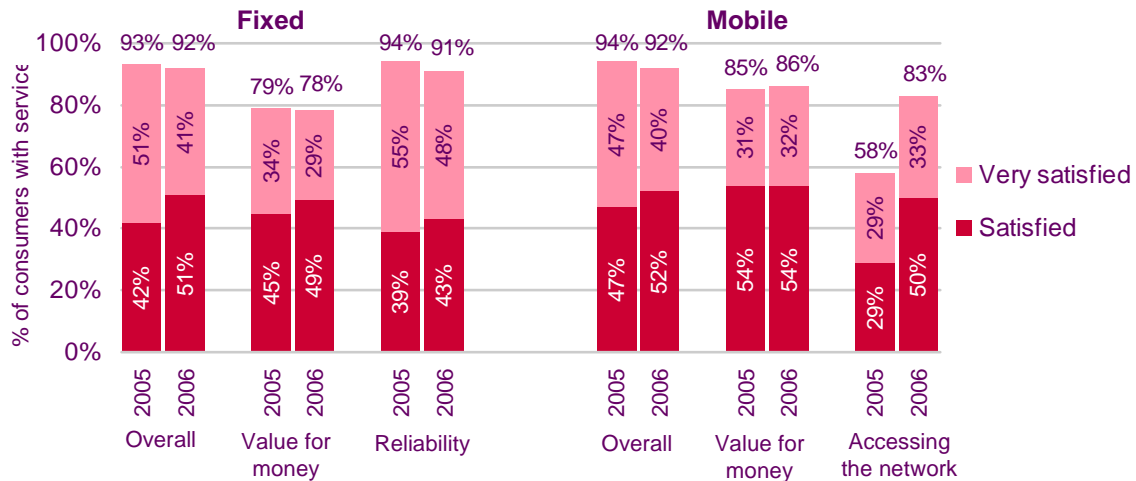
Source: GfK

### 4.3.5 Customer satisfaction

#### Over 90% of customers satisfied with fixed and mobile services.

Levels of overall customer satisfaction with both fixed and mobile telecoms services remain high among residential customers, with over 90% claiming they are 'satisfied' or 'very satisfied'. The most significant change since 2005 is a steep rise in the proportion of customers satisfied with their mobile network access, which has risen by 24 percentage points to 83%. This may partly reflect improved handover between 2G and 3G networks, which has led to fewer dropped calls.

**Figure 4.67 Residential consumer satisfaction with fixed and mobile services**



Source: Ofcom research, Q3 2005 and Q4 2006

Note: Includes only those who expressed an opinion

#### Falling satisfaction with internet access

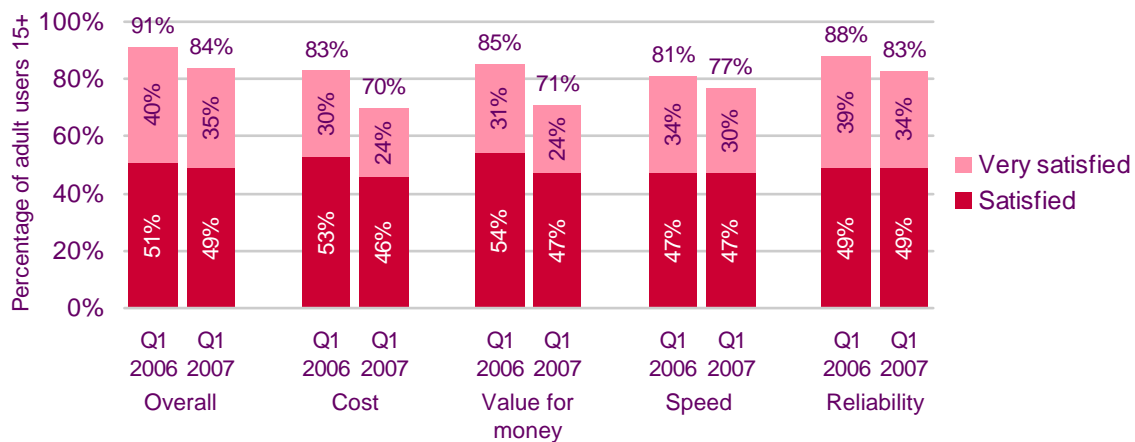
Overall satisfaction levels with internet service provision are markedly lower than those for fixed and mobile services (see Figure 4.68). In part, this may be because the technology is still developing, and standards are yet to be fully established and understood.

A fall in the number of customers who are satisfied with internet cost is interesting in the context of the falling prices associated with bundling. However, it may be a reflection of a perceived gap between some of the marketing messages associated with broadband (for example, the 'free' offers) and the reality of often having to pay connection fees, or upgrade fees, or commit to other premium services.

Similarly, satisfaction with speed of access has not increased despite migration to broadband and the rising average headline connection speeds of broadband, and may reflect dissatisfaction with performance compared to advertised speeds, combined with increasing use of high-bandwidth services such as streaming video.

A small fall in satisfaction with reliability may be partly attributed to contention issues which can mean that, as the number of broadband customers rise, during busy periods connections slow down and can fail. The increasing use of home wireless networks which are more prone to intermittent failure than wired access may also be a contributing factor (Oxford Internet Institute research finds that 29% of households with internet access could access WiFi in April/May 2007 compared to just 5% two years previously).

**Figure 4.68 Residential consumer satisfaction with aspects of internet service**



Source: Ofcom research

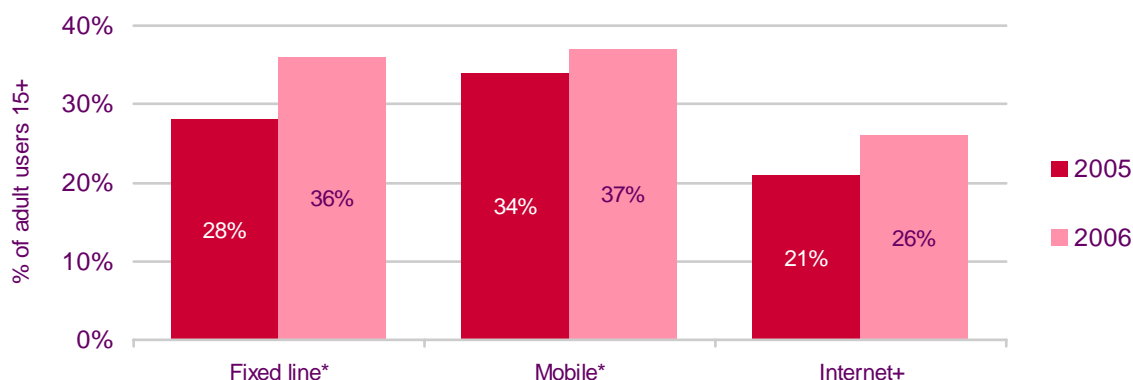
### 4.3.6 Switching

#### New telecoms landscape prompts high levels of switching

The high level of satisfaction of mobile and fixed customers comes against the background of rising levels of switching: it appears that more consumers are shopping around for the best deal and when they are dissatisfied with a particular provider they are now willing and able to do something about it by changing provider.

An eight percentage point increase in the proportion of fixed-line users who have ever switched provider in 2006 (see Figure 4.69) reflects increased competition in the market, driven by local loop unbundling and wholesale line rental services and the associated rise in bundled offers where other communications services, in particular broadband, are included with basic fixed telephony. There is also a greater awareness of alternative service options.

**Figure 4.69 Residential customers who have ever switched provider**

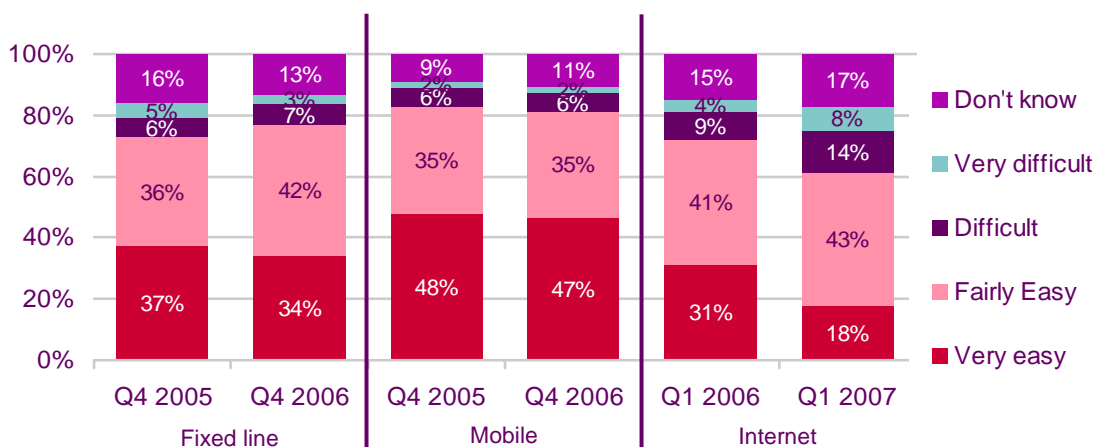


\* Data Q4 2005 and Q4 2006  
 + Data Q1 2006 and Q1 2007  
 Source: Ofcom research

There is little change in the perception of the ease with which a fixed-line supplier can be changed (see Figure 4.70), but a decreasing perception of the ease of changing internet supplier. New regulation was introduced from February 2007 to ease broadband switching by requiring internet service providers to provide customers who are out of contract and request a Migration Authorisation Code with the code within five working days.

A rise in the perception of the difficulty of switching broadband provider could well be caused by the rise in bundled offers, where customers cannot change broadband provider without changing the provider of another service, generally in association with a minimum contract length of at least 12 months. In the short-term, multi-service offers have been one of the main drivers of switching as customers seek greater value, but in the longer term the higher prevalence of bundled services may lead to a reduction in switching levels.

**Figure 4.70 Ease of switching supplier**



Base: All adults who have ever switched  
 Source: Ofcom research

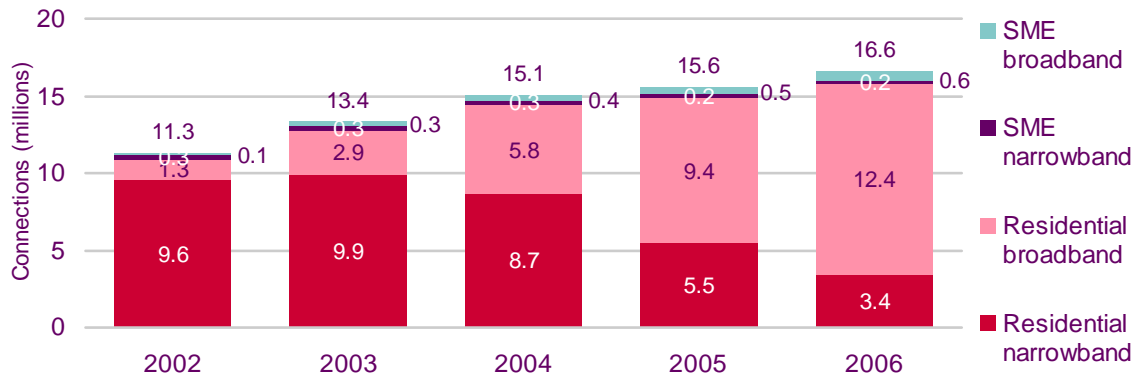
### 4.3.7 Internet access

#### Over 50% of UK households now have broadband

The take-up of broadband over the past five years has been faster than the take-up of any other new technology by the UK public – around 50% (12.4 million) of households had broadband access at the end of 2006 – a result of migration from narrowband (dial-up)

access and also new internet households. However, over three million households still use narrowband access; where high-bandwidth services such as video streaming, music downloading or picture uploading cannot be used effectively.

**Figure 4.71 UK residential and small business internet connections**

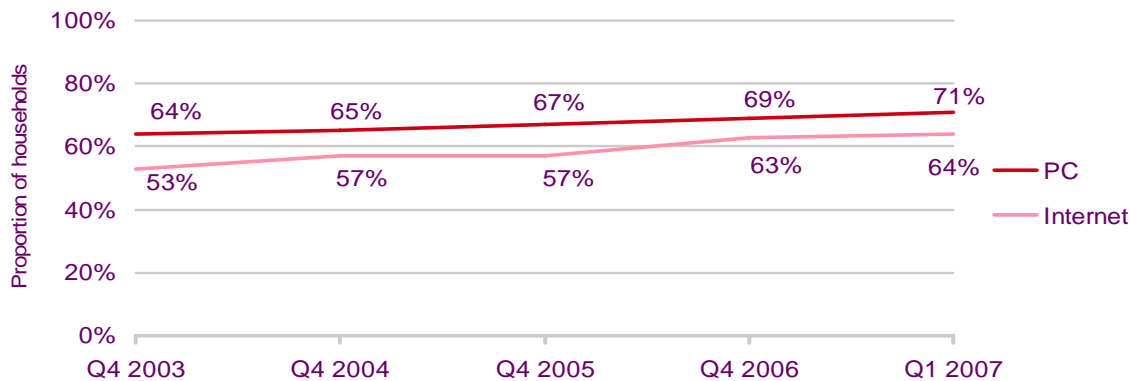


Source: Ofcom / operators; figures have been restated from the 2006 Communications Market Report to reflect more accurate data.

### Internet penetration grows with home computer ownership

For the last three years, internet penetration has closely followed household computer ownership levels (Figure 4.72), suggesting that desire to use the internet has been a key motivation for households to invest in a computer.

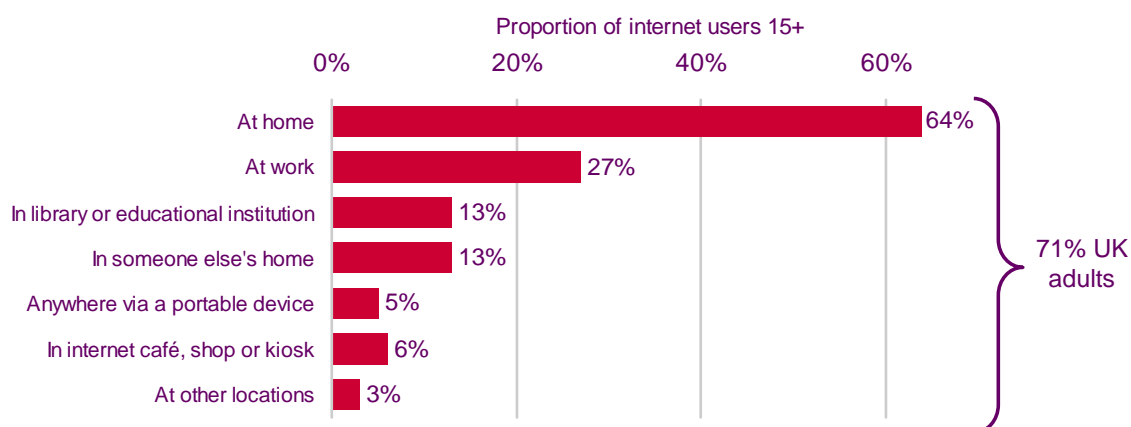
**Figure 4.72 PC and internet penetration in UK homes**



Source: Ofcom research

Overwhelmingly, people who do not have the internet at home do not use it at all: only 7% of UK internet users do not access it at home. After the home, the second most common location for access is at work (Figure 4.73).

**Figure 4.73 Location of internet access**

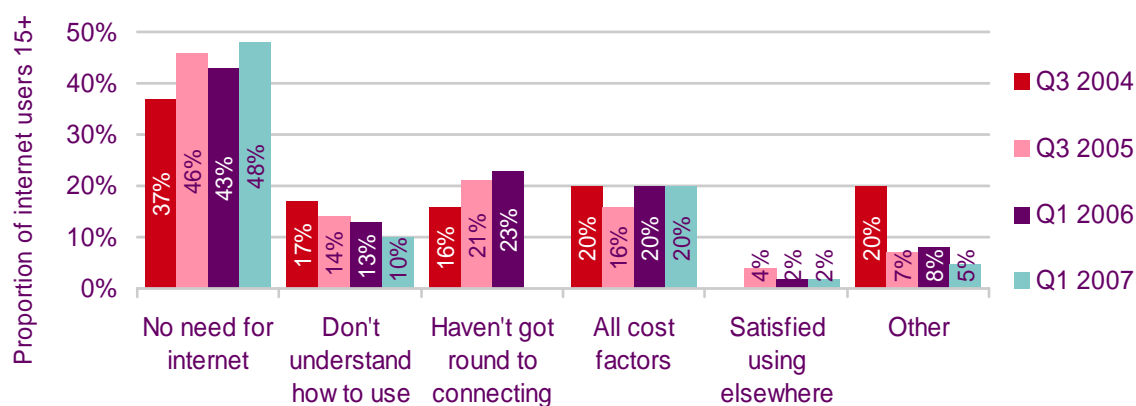


Source: Ofcom research, Q1 2007

### Lack of perceived 'need' for internet is major constraint on further penetration

The limited extent to which people are seeking alternative locations to the home for accessing the internet is backed up by our research which finds that only one in five households without the internet state cost as a reason for not having it. With only one in ten claiming their reason is because they do not understand how to use it (a fall from 17% in 2004), the reasons for not having internet access are primarily voluntary (although some consumers may give 'voluntary' non-ownership reasons because they do not wish to discuss affordability/competency issues within research). Nearly half of all adults without access say that they have no need for the internet. This equates to around 4.5 million households (18%) and, as the next section on internet usage illustrates, there is a strong correlation with age. When it comes to internet penetration, a large element of the so-called digital divide is related to perceived need and is a divide between younger and older generations.

**Figure 4.74 Reasons for not having the internet at home**



Source: Ofcom research

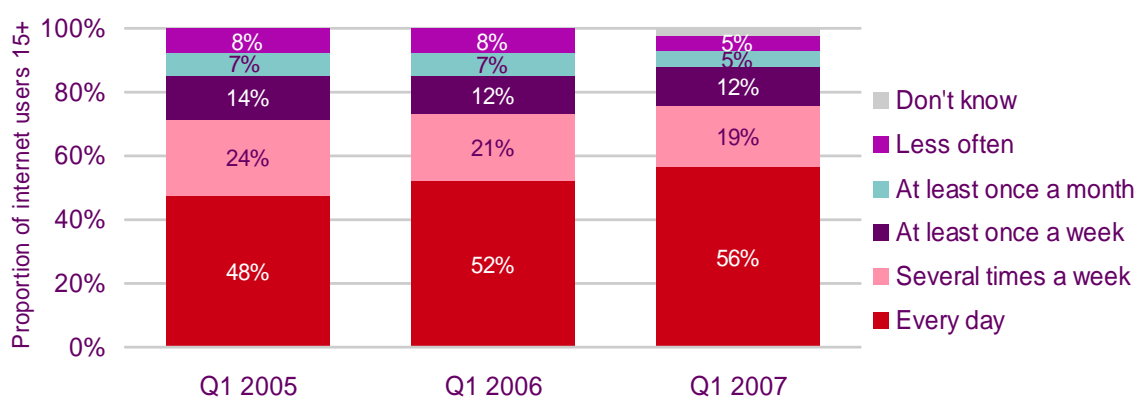
Note: Multi-coded question – respondents were asked to state all reasons that were applicable

### 4.3.8 Internet usage

#### UK has most active online population in Europe

The widespread availability of broadband, together with the emergence of the internet as a mainstream channel for communication, information and entertainment, has led to increasing time spent online by those who have internet access. Ofcom's research finds that in Q1 2007 56% of internet users claimed to use the internet every day, a four percentage point rise on a year previously (Figure 4.75). A Home.net report commissioned by Orange Broadband found that in April 2007 47% of households spent three or more hours on the net every day). ComScore research published in June 2007 reported that the UK had the most active online population in Europe, with users spending an average of 34.4 hours online a month, with a peak of more than 21.8 million people online in any given day.

**Figure 4.75 Frequency of internet access**

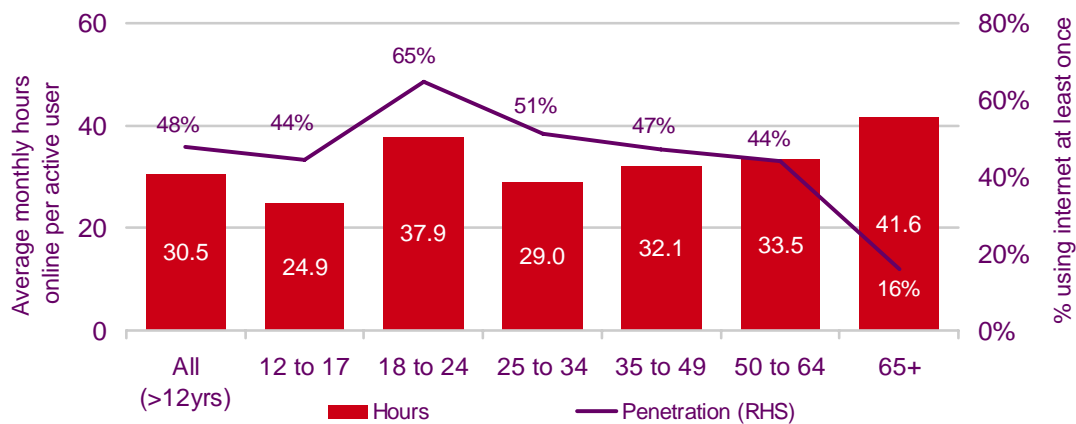


Source: Ofcom research

#### Internet take-up highest among the young, but 'silver surfers' are the most active

Unsurprisingly it is the 'internet generation' of 18-24 year-olds who are the greatest users of the internet, with (according to Nielsen//NetRatings and ONS data) around 65% accessing the internet at least once in April 2007 (Figure 4.76). Penetration falls with age, with just 16% of over-65s using the web, although these 'silver surfers' spend on average almost 42 hours online every month, more than any other age group. Indeed, far from being just a young person's technology, one quarter of all Britons online are over 50 and 30% of total time spent on the internet is by over-50s.

**Figure 4.76 Internet use by age, April 2007**

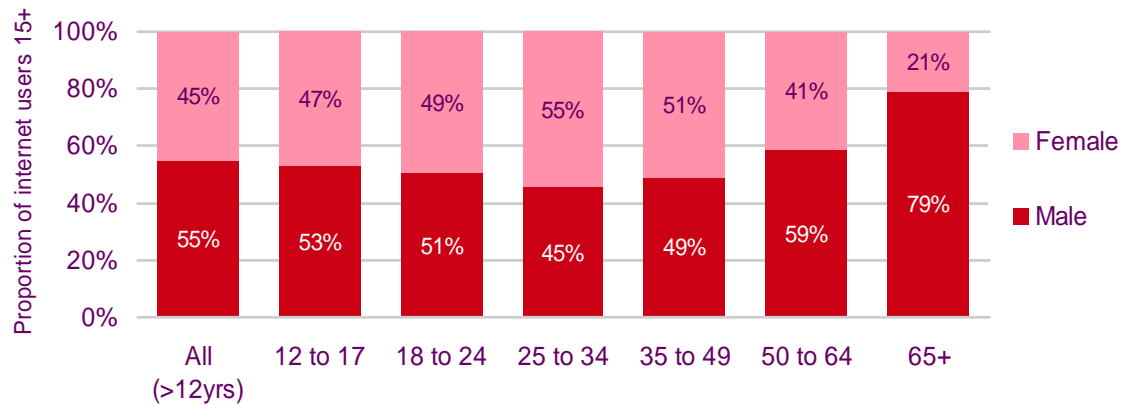


Source: Nielsen NetRatings / ONS

**25-34 year-old women spend more time online than their male counterparts**

As internet take-up has grown, women have accounted for an increasing proportion of use. Although in April 2007 55% of total use was by men, among younger age-groups the balance is reversed; women in the 25-34 age group spent ten percentage points more time online than their male counterparts (See Figure 4.77). This is driven both by a larger user base (2.18 million 25-34 year-old women used the internet in April 2007 compared to 1.83 million men), and women spending slightly more time on average online than men (29 hours and 9 minutes compared to 28 hours and 51 minutes). Conversely, among the older age groups, men spend much more time online than women, with only 21% of internet usage among over-65s accounted for by women.

**Figure 4.77 Internet usage by gender, April 2007 (total time spent online)**

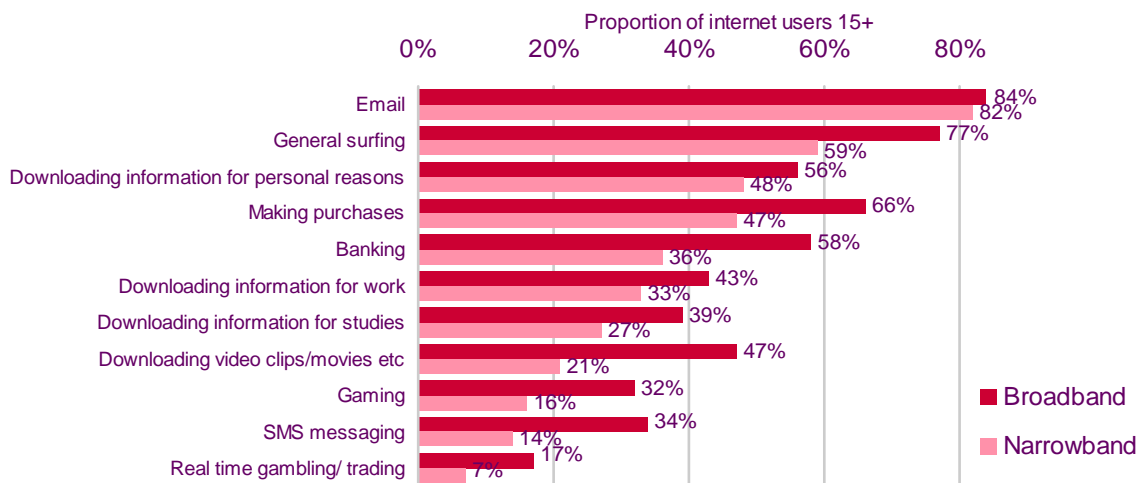


Source: Nielsen NetRatings

**Broadband customers use higher bandwidth services**

According to Ofcom research, email is the most popular use of the internet, followed by web surfing, although the majority of broadband users also use the internet for online shopping (66%) and banking (58%) (Figure 4.78). Broadband users do more of everything than narrowband users, with a particularly marked difference in high bandwidth applications such as gaming and video downloading.

**Figure 4.78 Online applications used by broadband and dial-up users, Q1 2007**



Source: Ofcom research, Q1 2007

### eBay and social networking services most popular web sites, by time spent

Measures of online use by domain or category usually focus on reach in terms of numbers of unique visitors in a given period. However, Nielsen NetRatings data measuring use by time is also a useful metric and presents a very different picture (Figure 4.79). Based on usage in April 2007, eBay emerges as a very clear leader, with users spending over twice as much time on the UK website as on its nearest rival.

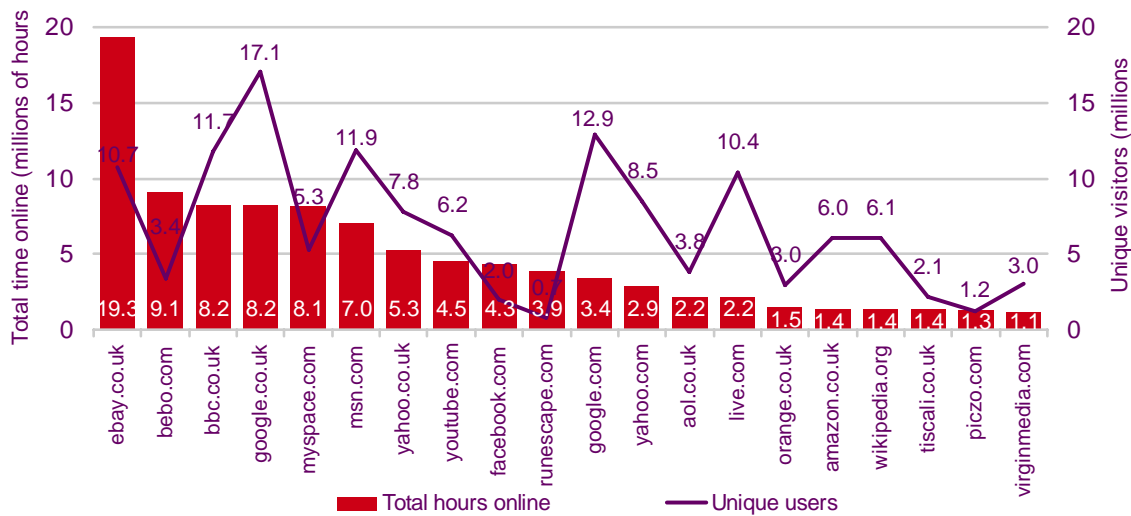
Social networking websites also rank very highly, with Bebo, MySpace and Facebook all in the top ten. Bebo was the second most popular website in terms of total time spent on it, despite being only ranked 20<sup>th</sup> in terms of unique users, with users spending on average 162 minutes on it every month. Average monthly use of multiplayer role-playing game Runescape was 318 minutes per user, lifting it to into the top ten by time, even though it only ranks 131<sup>st</sup> by reach.

Research by the Oxford Internet Institute in March-April 2007 showed that 17% of UK internet users have created a profile on a social networking site, and that use of social networking sites is strongly related to life stage; 42% of students have created a profile, compared to just 2% of retired internet users.

Web portals and search engines rank highly by time spent, but are more dominant in terms of unique users. Google has consolidated its number one position in terms of reach with 17 million unique users visiting Google.co.uk in April 2007 (or 69% of the online population). This is 43% more than its nearest rival MSN.com, which it led by 10% in April 2006 (and Google.com has 12 million unique users).

The dominance of brands and companies that did not exist a decade ago illustrates the sweeping changes that the internet has brought to the UK media landscape. Among the top 20 websites by use and by reach, the BBC is the only representative from the 'old media' of broadcast and print.

**Figure 4.79 Top 20 UK websites by time spent online, April 2007**



Source: Nielsen//NetRatings, April 2007 – ‘At home’ data excluding internet applications

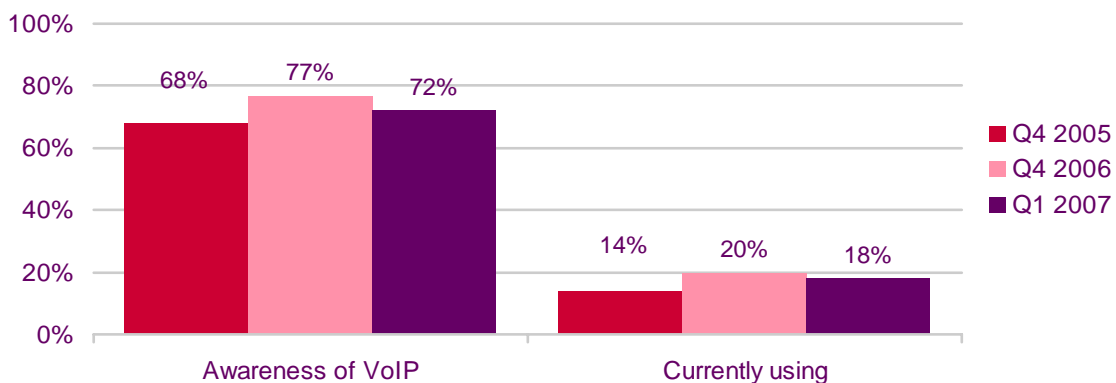
### 4.3.9 Voice over internet protocol (VoIP)

#### VoIP slowly gets foothold among residential consumers

Ofcom research in Q1 2007 found that 18% of households with broadband were currently using VoIP (Figure 4.80), a four percentage point increase since December 2005. With awareness of VoIP remaining fairly steady at around 70%, the increase in use may be a consequence of the network effect, i.e. a service becoming more valuable as more people use it, rather than the result of new product offers or marketing campaigns.

Typical of new technologies, younger people are more likely to use VoIP services (in October 2006, 13% of all 15-24s and 14% of 25-44s compared to 9% of 45-64s and 2% of over-65s did so), as are higher socio-economic groups (14% of ABC1s compared to 6% of C2DEs).<sup>12</sup>

**Figure 4.80 Awareness and use of VoIP**



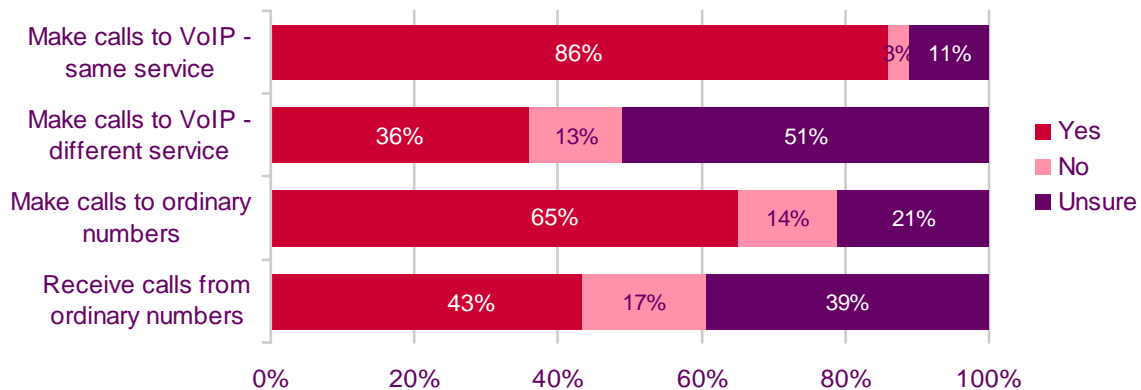
Source: Ofcom research  
Base: All adults with broadband

<sup>12</sup> For more information on use of and attitudes towards VoIP, see Ofcom’s research publication, ‘Research Report: Voice over Internet Protocol (VoIP)’, 26 July 2007, <http://www.ofcom.org.uk/research/telecoms/reports/voip/>

## Perceived interoperability issues constrain growth of VoIP

The most common use of VoIP services is for making calls to others using the same VoIP provider (Figure 4.81), again emphasising the importance of ‘critical mass’ before VoIP becomes widely adopted. Ofcom research in October 2006 found that 67% of users used Skype as their service provider, with MSN a distant second at 18%. Almost a quarter of respondents (23%) stated that they were with more than one operator, suggesting that perceived interoperability issues create a need to sign up with different providers, and that this is easily done as a number of the basic services are free of charge, meaning that switching providers or using multiple providers incurs no extra cost.

**Figure 4.81 Usage of VoIP services, October 2006**



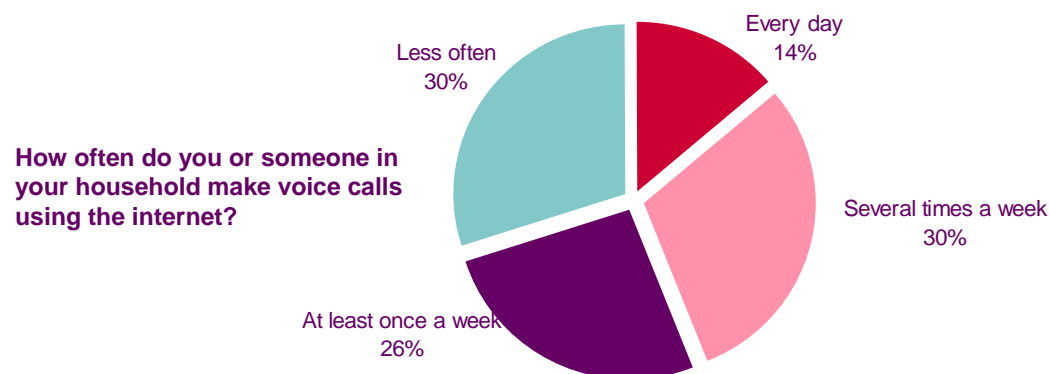
Source: Ofcom research of VoIP users, October 2006

## VoIP has not yet reached the mass market

Difficulties in sizing VoIP take-up stem from problems with identifying call volumes. We estimate that 70% of VoIP users use it at least once a week, with 44% using it every day or several times a week. About 30% of users do so less often than once a week (Figure 4.82).

Our research finds that, to date, VoIP services have not replaced fixed or mobile services. VoIP users are more likely to have a fixed line than UK adults as a whole; 97% of the users surveyed said they had access to a fixed line. Likely contributory factors are the requirement for most broadband households also to have a fixed voice line, the generally low per-minute cost of UK geographic calls from fixed lines, and the familiarity and ease of use of fixed-line equipment. But 10% of users surveyed said they did not have access to a fixed line (3%) or had one but did not use it (7%).

**Figure 4.82 Frequency of VoIP usage, October 2006**



Source: Ofcom research of VoIP users, October 2006

VoIP users are also more likely to have the use of a mobile service than UK adults as a whole; all 500 VoIP users surveyed had use of a mobile phone. Substitution of VoIP services for mobile services is likely to be slower than for fixed-line services because, currently, most operators are restricting use of VoIP. Orange and Vodafone modified Nokia's N95 handset to disable the function that allows users to make VoIP calls; Vodafone excludes VoIP from its mobile internet data pack (as of June 2007, VoIP is charged at £2 per Mbit/s plus a 5p minimum charge for each data session); while T-Mobile explicitly prohibits phone customers from making VoIP calls under the terms of its 'Web & Walk' contract. Among mobile operators, only 3UK has actively promoted VoIP, using its partnership with Skype to promote its X-Series add-on (from £5 a month), although availability is restricted to a small number of handsets.

Data are not available, but it is likely that there is some substitution of call volumes, particularly of international calls as this is where most cost savings can be made.

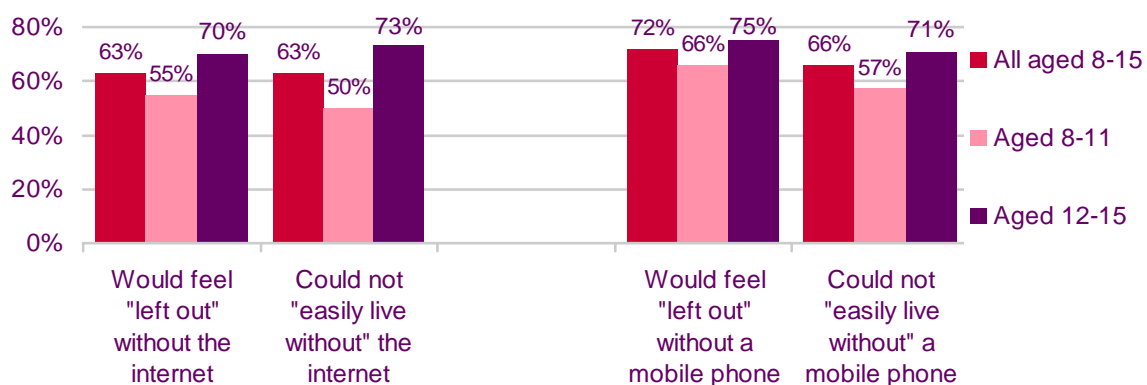
### 4.3.10 Children

#### Children feel 'left out' without their own mobile and the internet at home

As described in section 1.9.6, children are at the vanguard of the convergence of media and telecoms technologies, and their use of communications provides insight into the cultural shifts that are taking place in the digital world. Ofcom research finds that over 60% of ten-year-olds own a mobile phone, rising to over 90% of 15-year-olds. Seventy per cent of ten-year-olds use the internet at home, rising to nearly 80% of 15-year-olds.

Mobile phones and the internet are essential to the way in which children live their lives and define themselves. Around two thirds of children do not believe they could easily live their lives without a mobile phone and the internet and claim that they would feel 'left out' if they had to do so (Figure 4.83).

**Figure 4.83 Children's attitudes towards mobile phone and the internet**



Source: Ofcom research, April / May 2007

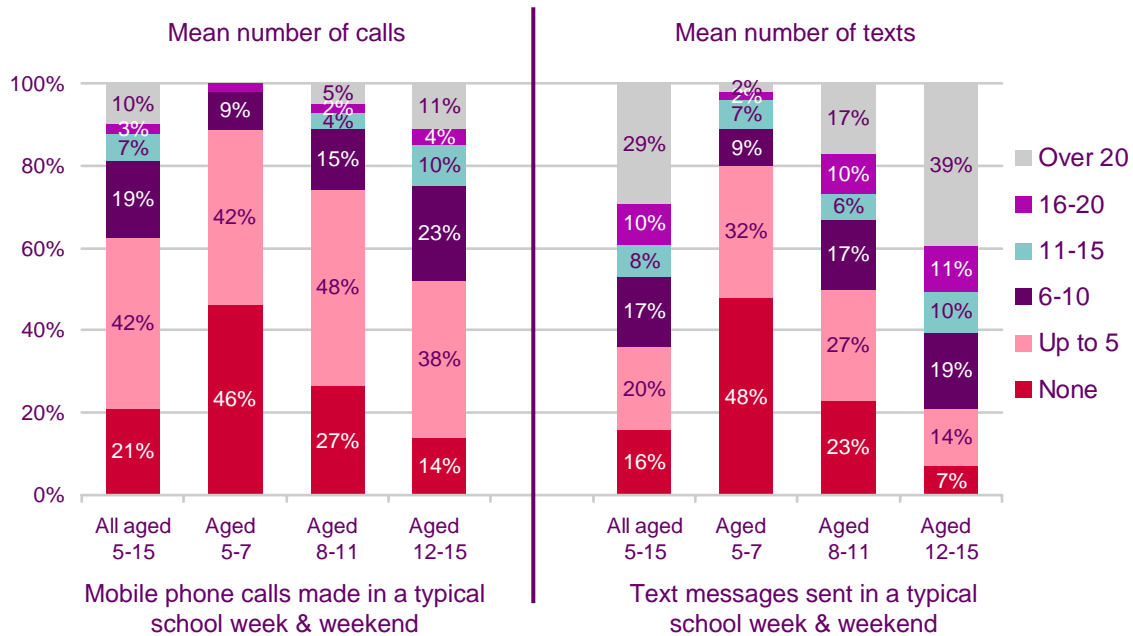
Base: Children who own their own mobile phone / use the internet at home

#### Children send nearly four times as many texts as they make mobile calls

There is a wide range in the amount that children use their mobile phones. A large proportion of younger children make very few calls or texts. For these children, ownership of a mobile phone appears to be primarily about safety, and when questioned 96% of 8-15 year-olds said that their phone kept them safe and in contact with parents.

However, 10% of children make over 20 calls a week, and 29% send over 20 texts. As might be expected, use rises with age, but all ages make many more texts than voice calls. Texting seems to be a way of life for many children, with children between 8 and 15 who have mobile phones sending on average 30 texts a week, compared to making just eight phone calls.

**Figure 4.84 Voice calls and texts sent in a typical school week & weekend**



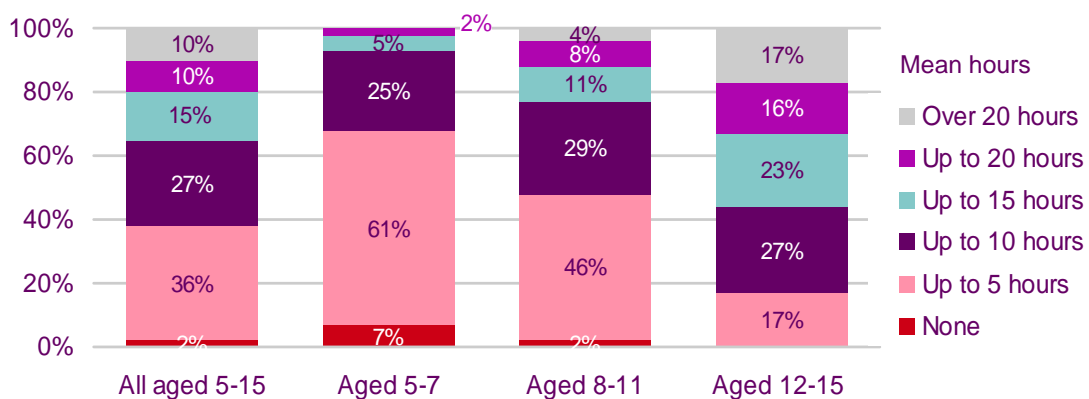
Source: Ofcom research, April / May 2007

Base: Children who own their own mobile phone / use the internet at home

### 12-15 year-olds spend an average of two hours a day on the internet

The internet also forms a major part of children's lives, with those with home access spending on average nearly one and a half hours a day online (Figure 4.85). This rises to an average of two hours a day among 12-15 year olds, nearly one fifth of whom spend over 20 hours a week on the internet.

**Figure 4.85 Hours using the internet at home in a typical school week and weekend**



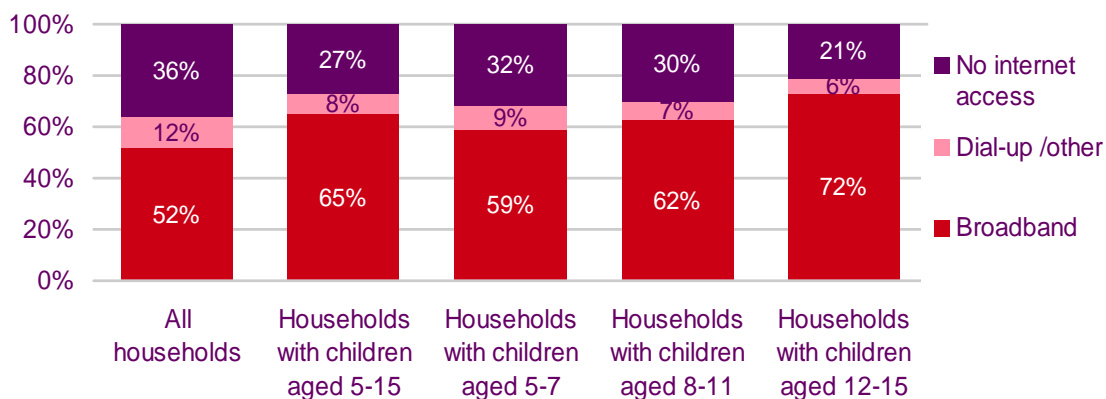
Source: Ofcom research, April/ May 2007

Base: Parents of children aged 5-11 who use the internet at home and children aged 12-15 who use the internet at home

## Over three-quarters of households with children have internet access

Households with children are more likely to have internet access than those without, and those with internet access are more likely to have broadband (Figure 4.86). Levels of internet access and broadband use also rise as children in the household get older, suggesting that children's needs are a significant driver in the take-up of household internet services. However, over a quarter of UK households with children do not have internet access.

**Figure 4.86 Internet access in households with children**



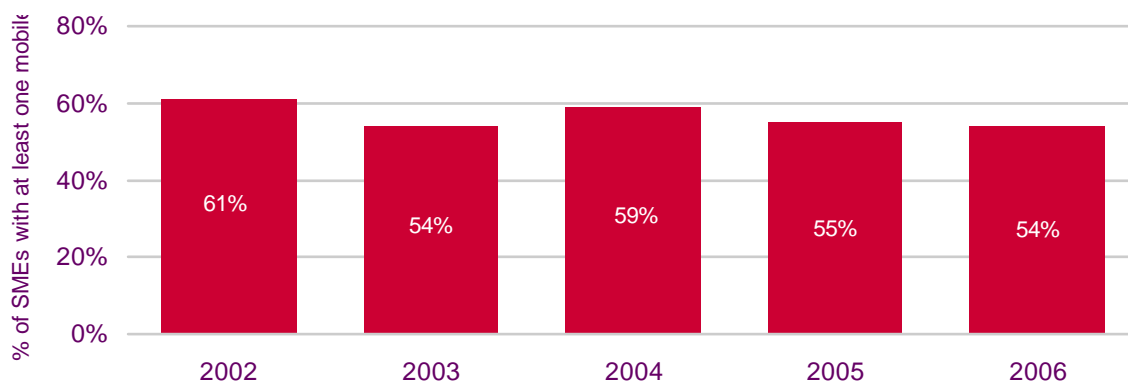
Source: All households, Ofcom research, Q1 2007; Households with children, Ofcom research, April/ May 2007

### 4.3.11 SMEs<sup>13</sup>

#### SMEs have less need for company mobile connections

Ofcom's research into small to medium businesses (<250 employees) finds that mobile penetration is slowly falling (Figure 4.87). However, this should not be seen as a decrease in the use of mobile communications; it is more likely that as mobile penetration among the population as a whole has risen, smaller companies are increasingly relying on employee subscriptions, with costs claimed back as staff expenses.

**Figure 4.87 Penetration of mobile telephony among SMEs**



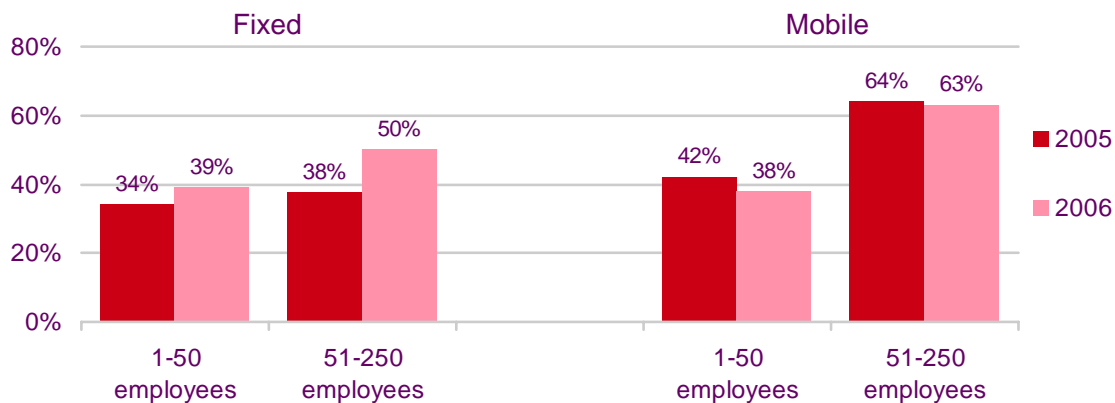
Source: Ofcom research

<sup>13</sup> Ofcom changed its SME research methodology in 2006 and now excludes sole traders. Therefore, trends should be treated as indicative rather than definitive.

## 50% of SMEs have ever changed fixed-line supplier

As in the residential market, 2006 saw a significant rise in the numbers of small businesses who have at some point switched their supplier of fixed-line services. This was particularly true among the larger SMEs (50-249 employees) in 2006, of which half reported that they had at least once switched supplier, compared to 38% in 2005. This may be partly due to Cable & Wireless's decision to rationalise its customer base and focus on the corporate market, but also comes in the context of increasing competition, particularly from the availability of unbundled lines, and the effective targeting of larger SMEs by alternative network providers.

**Figure 4.88 SME switching of fixed and mobile suppliers**

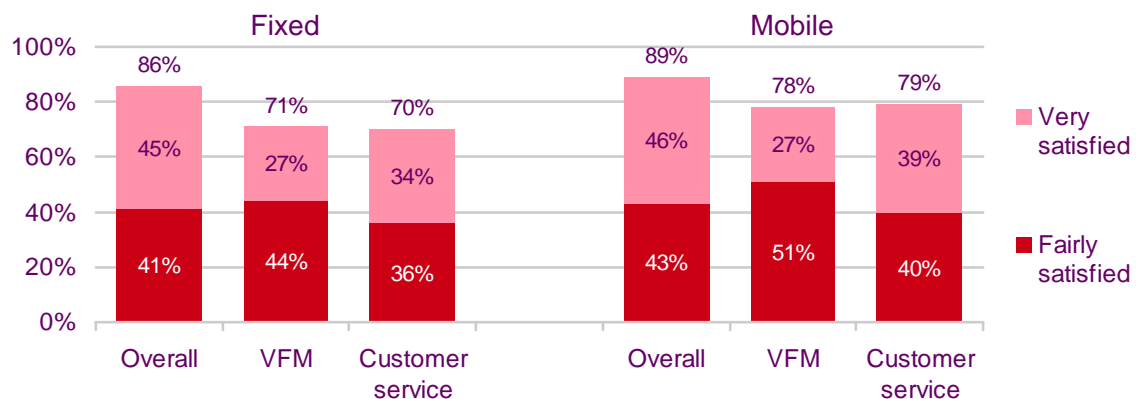


Source: Ofcom research

## High levels of satisfaction with telecoms services

Increased levels of switching do not, however, appear to be a reflection of dissatisfaction, with overall satisfaction with both fixed and mobile remaining high. However, satisfaction in terms of value for money and customer service was higher for mobile than for fixed, perhaps as a result of the mobile market being more stable in 2006 in terms of the providers and propositions available.

**Figure 4.89 SME satisfaction with fixed and mobile services, 2006**

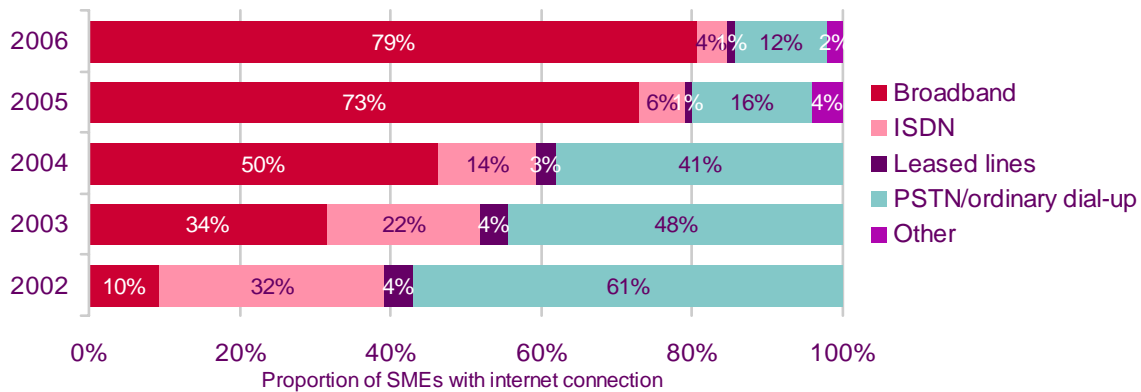


Source: Ofcom research

## Broadband dominates, but over 10% of SMEs still use dial-up

The internet is well established as an essential tool for small businesses, with our research finding that 83% had an internet connection in 2006. In line with changes to the residential market, these connections are now overwhelmingly broadband (Figure 4.90), although the 12% who still use dial-up indicate that for a significant minority either their level of internet usage is not sufficient to prompt them to move to broadband, or they are not aware of the benefits that broadband can offer.

**Figure 4.90 SME internet access by main connection method, 2006**

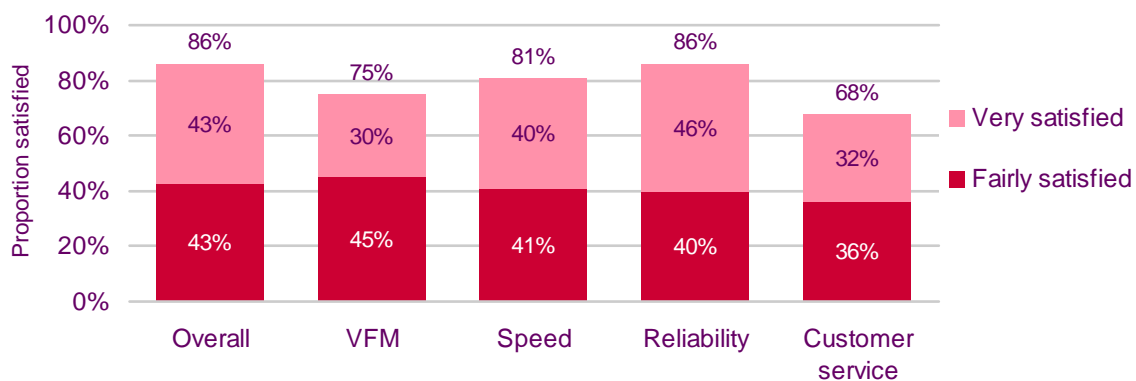


Source: Ofcom research

## Small fall in satisfaction with internet service

Satisfaction with the service levels provided by internet providers is lower than for fixed and mobile providers, and matches the pattern among residential consumers. Satisfaction levels are similar to 2005 (when, overall, 45% were 'very satisfied' and 46% 'satisfied').

**Figure 4.91 SME satisfaction with aspects of internet service**



Source: Ofcom research, 2006