International Communications Market Report 2013

6 Telecommunications and networks

Contents

6.1 Key market developments in telecoms and networks

6.1.1 Overview

The telecoms section of this report looks at the fixed voice, fixed broadband and mobile voice and data markets among our 17 comparator countries. The section is split into three parts:

- Key market developments – provides an overall context and highlights recent developments in international telecoms markets, including the deployment of NGA networks and the resulting growth in take-up of superfast broadband services, and changing patterns in consumers' use of traditional voice telephony services.

- The telecoms industry – provides a 'top-down' approach by looking at the telecoms sector from the perspective of industry data, and compares and contrasts trends in revenues and market structures across our comparator countries before looking specifically at fixed and mobile markets.

- The telecoms user – provides a 'bottom-up' approach from the point of view of consumers, and looks at the overall take-up of communications services, before focusing specifically on consumers' experience of fixed-line voice, fixed broadband and mobile voice and data use.

6.1.2 Introduction

Internet access has continued to grow and the ability to access online services has become an important part of consumers' lives. Figures from the United Nations' International Telecommunications Union (ITU) show that over 2.5 billion people (more than a third of the world's population) were accessing the internet in 2012, a 1.1 billion (83%) increase since 2007.[68]

Take-up of fixed broadband services grew across all of the 17 countries that feature in our analysis in the five years to 2012. During this period, fixed broadband take-up increased from an average of eight connections per 100 people to 13 connections per 100 people among our comparator countries, and there was significant growth in fixed broadband take-up in the BRIC countries (Brazil, Russia, India and China), where average increases in the number of fixed broadband connections ranged from 21% to 37% a year.[69] The use of mobile data services has also increased rapidly over the same five-year period. Total revenues generated by mobile internet services in our non-BRIC comparator countries exceeded those generated by fixed broadband services in 2012, as in 2011.

Increasing smartphone take-up has been a key driver of growing mobile data use over established 2G and 3G networks and newly-deployed 4G LTE infrastructure: almost all of the people living in the 14 non-BRIC comparator countries for which we had mobile availability data had 2G mobile coverage in 2012, while around 95% had 3G coverage and 56% lived in areas with 4G LTE coverage at the end of 2012 (although the relatively high average for LTE services is mainly due to very large coverage in the US and, to a lesser extent, in Japan).

[68] http://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2013/ITU_Key_2005-2013_ICT_data.xls
[69] IDATE

The growing popularity of text-based communications services (such as SMS, email, instant messaging and communication over social media), many of which are provided over data connections, and high levels of mobile take-up, have contributed to a decline in the use of traditional fixed voice services in the majority of countries featured in this report. In some countries the shift away from voice services is more pronounced, and there is evidence of falling mobile and total voice call volumes.

In this section we examine two of the developments which are shaping telecoms markets, both in terms of industry structures and consumer behaviour:

- **The growth in superfast broadband take-up as next-generation access deployments gather pace.** We look at the deployment of superfast broadband services, and the extent to which they are being adopted by consumers across our comparator countries.

- **The continued erosion of voice services.** This section analyses the changes in the voice market and the extent to which consumers are migrating towards mobile and text-based communications services as an alternative to traditional fixed voice calls.

Figure 6.1 Key telecoms indicators: 2012

	UK	FRA	GER	ITA	USA	CAN	JPN	AUS
Telecoms service revenues (£bn)	28.1	27.7	32.8	21.1	190.8	22.6	92.4	17.1
Telecoms revenues per capita (£)	445	421	404	343	605	657	725	770
Fixed telephone lines per 100 popn	53	27	48	26	44	51	30	46
Monthly outbound fixed minutes per capita	135	140	183	104	124	-	37	50
Mobile connections per 100 population	132	111	139	159	104	81	101	139
Share of mobile post-pay connections	52	75	47	19	87	86	99	61
3G/4G as % of all connections	54	45	30	43	61	56	100	57
Monthly outbound mobile minutes per capita	174	151	113	196	608	364	95	165
Monthly outbound mobile messages per capita	226	232	61	130	579	234	0	107
Fixed broadband connections per 100 population	34	36	35	22	29	34	31	27
FTTx as a proportion of fixed broadband connections	5	4	1	3	9	1	59	2
Mobile broadband connections per 100 population	8	5	7	14	53	4	11	27
VoIP subscriptions per 100 population	7	34	14	9	13	14	24	15

	ESP	NED	SWE	IRL	POL	BRA	RUS	IND	CHN
Telecoms service revenues (£bn)	16.2	8.1	4.5	2.3	5	31.7	18.9	10.1	77.6
Telecoms revenues per capita (£)	344	483	489	474	131	158	133	8	58
Fixed telephone lines per 100 popn	40	23	55	35	14	22	30	3	21
Monthly outbound fixed minutes per capita	108	106	140	105	28	72	-	-	10
Mobile connections per 100 population	113	125	161	123	141	131	162	71	83
Share of mobile post-pay connections	67	75	69	40	46	19	4	4	35
3G/4G as % of all connections	70	39	89	74	31	20	25	3	21
Monthly outbound mobile minutes per capita	123	112	222	192	150	115	237	124	397
Monthly outbound mobile messages per capita	10	39	151	216	114	-	-	-	-
Fixed broadband connections per 100 population	24	41	34	23	15	9	19	1	13
FTTx as a proportion of fixed broadband connections	3	7	34	1	1	1	28	2	16
Mobile broadband connections per 100 population	5	7	23	12	11	-	-	-	-
VoIP subscriptions per 100 population	4	28	16	6	3	-	-	-	-

Source: IDATE / industry data / Ofcom
Note: Figures for the US include other forms of mobile text messaging than SMS and are not directly comparable to those for the other comparator countries

6.1.3 Superfast take-up grows as next-generation access deployments gather pace

The availability of networks capable of supporting superfast broadband services varies widely across our comparator countries

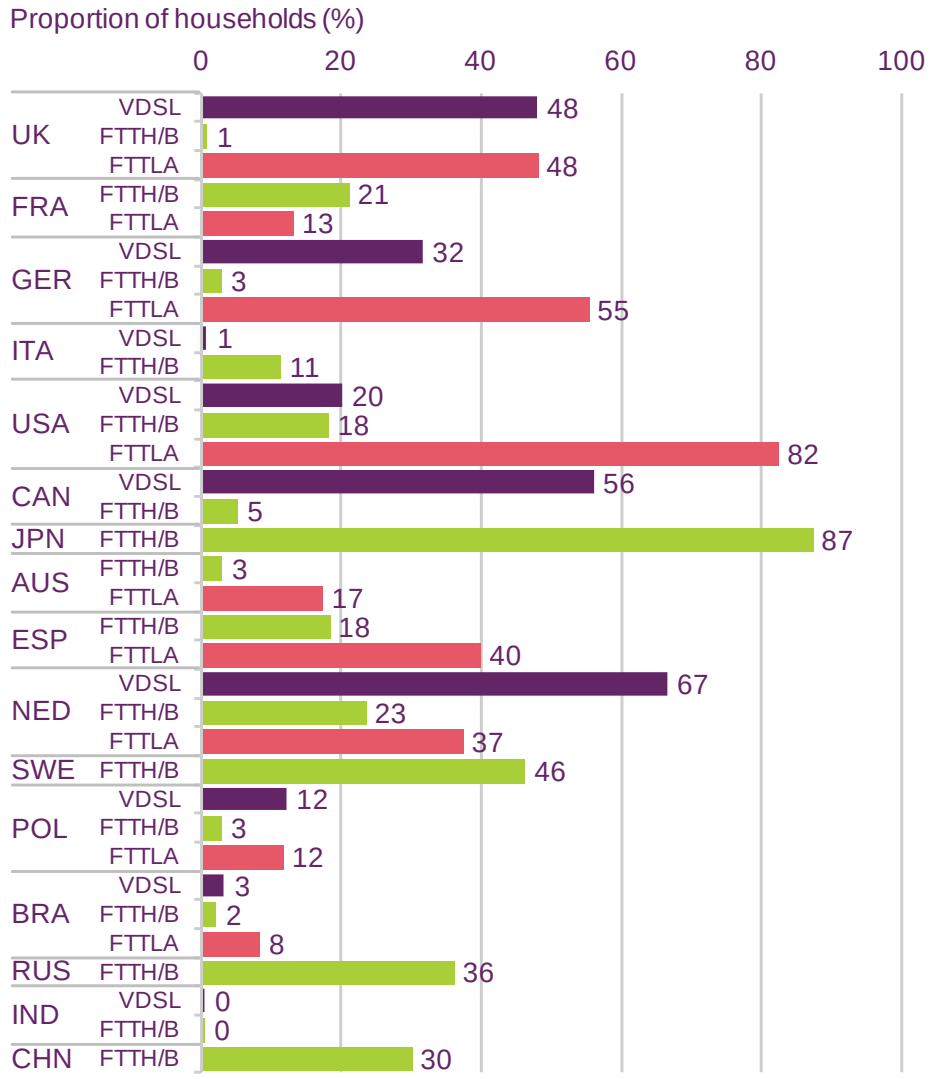
Superfast broadband services (i.e. those with an advertised speed of 'up to' 30Mbit/s or higher) are provided over next-generation access (NGA) networks. While Ofcom calculates the overall availability of NGA broadband networks in the UK by overlaying data on the availability of different NGA technologies (the latest available data shows that 73% of UK premises were in postcodes that were served by at least one NGA network in June 2013, up from 65% a year previously),[70] similar figures are not available for most comparator countries,[71] so to compare NGA network availability we look at availability on a technology-by-technology basis.

Japan had the highest availability of fibre-to-the-home/building (FTTH/B) at the end of 2012, when 87% of homes were able to receive such services, the highest availability of any single NGA technology across our comparator countries (Figure 6.2). Superfast cable broadband (fibre-to-the-last-amplifier, or FTTLA) availability was highest in the US, at 82% of homes, while the Netherlands had the highest availability of the very-high-bit-rate digital subscriber line (VDSL) technology used in fibre-to-the-cabinet (FTTC) deployments (at 67% of homes). In the UK, the technologies with the highest availability were VDSL and FTTLA, both of which were available to around 48% of homes at the end of 2012, with the availability of VDSL having increased significantly over the last few years as a result of BT's roll-out of FTTC services. Australia, Poland, Italy, Brazil and India were the only comparator countries where no single NGA technology was available to more than 20% of households.

[70] Ofcom *Infrastructure Report 2013 Update*: http://stakeholders.ofcom.org.uk/market-data-research/other/telecoms-research/broadband-speeds/infrastructure-report-2013/

[71] It is likely that the Netherlands has the highest overall NGA availability among these countries, as the European Commission's Digital Agenda Scoreboard 2013 shows that, taking all technologies into account, it had 98.4% NGA availability in 2012 (see "Broadband markets in the Netherlands - 2013 report" in the European Commission's Digital Agenda Scoreboard website: https://ec.europa.eu/digital-agenda/en/scoreboard/netherlands)

Figure 6.2 Availability of NGA networks: end 2012



Source: IDATE / industry data / Ofcom

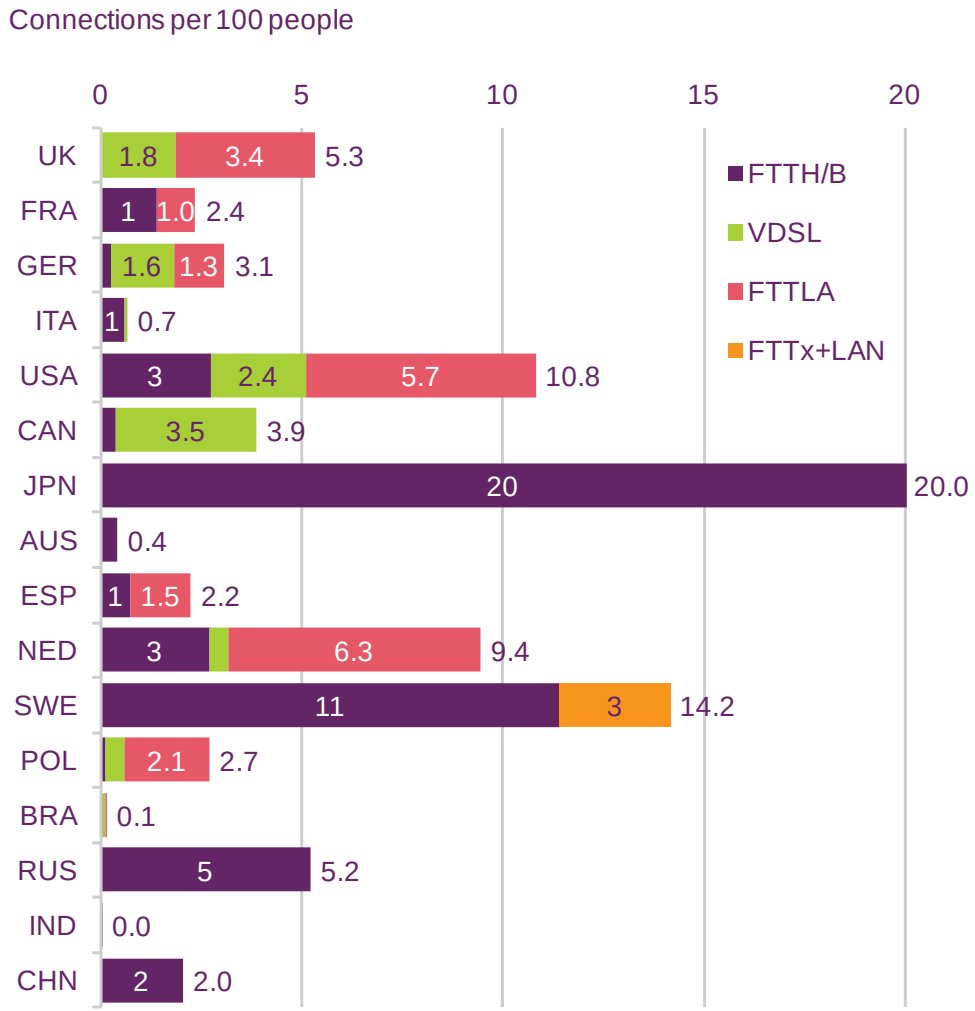
The UK had the fifth highest take-up of NGA broadband among our comparator countries at the end of 2012

The widespread availability of NGA broadband in Japan (and in particular FTTH/B) contributed to it having the highest penetration of NGA broadband across the comparator countries for which we had data at the end of 2012, at 20.0 connections per 100 people (Figure 6.3). In Sweden, the country with the second highest NGA penetration (14.2 connections per 100 people), NGA services were provided using a mixture of FTTH/B and FTTx + LAN, an NGA technology which is not in widespread use in our other comparator countries, and which provides service over a fibre broadband connection which is then shared by many users over Ethernet cabling. This sharing of the FTTx connection means that the speeds provided by FTTx + LAN connections are typically much lower than those provided over a standard FTTH/B connection.

In the UK there were 5.3 NGA connections per 100 people at the end of 2012, most of which were DOCSIS3.0 FTTLA connections, provided over Virgin Media's cable network. NGA take-up in the UK was the fifth highest among the 16 countries for which figures were available. In Australia, Brazil and India, where NGA network availability was low, there was less than one NGA broadband connection per 100 people at the end of 2012, while among

the other EU5 countries NGA take-up ranged from 0.7 connections per 100 people in Italy (again, where availability is low) to 3.1 connections per 100 people in Germany, where VDSL services have been commercially available since 2007.

Figure 6.3 NGA connections per 100 people, by technology: 2012



Source: FTTx Watch service, IDATE 2013 / industry data / Ofcom

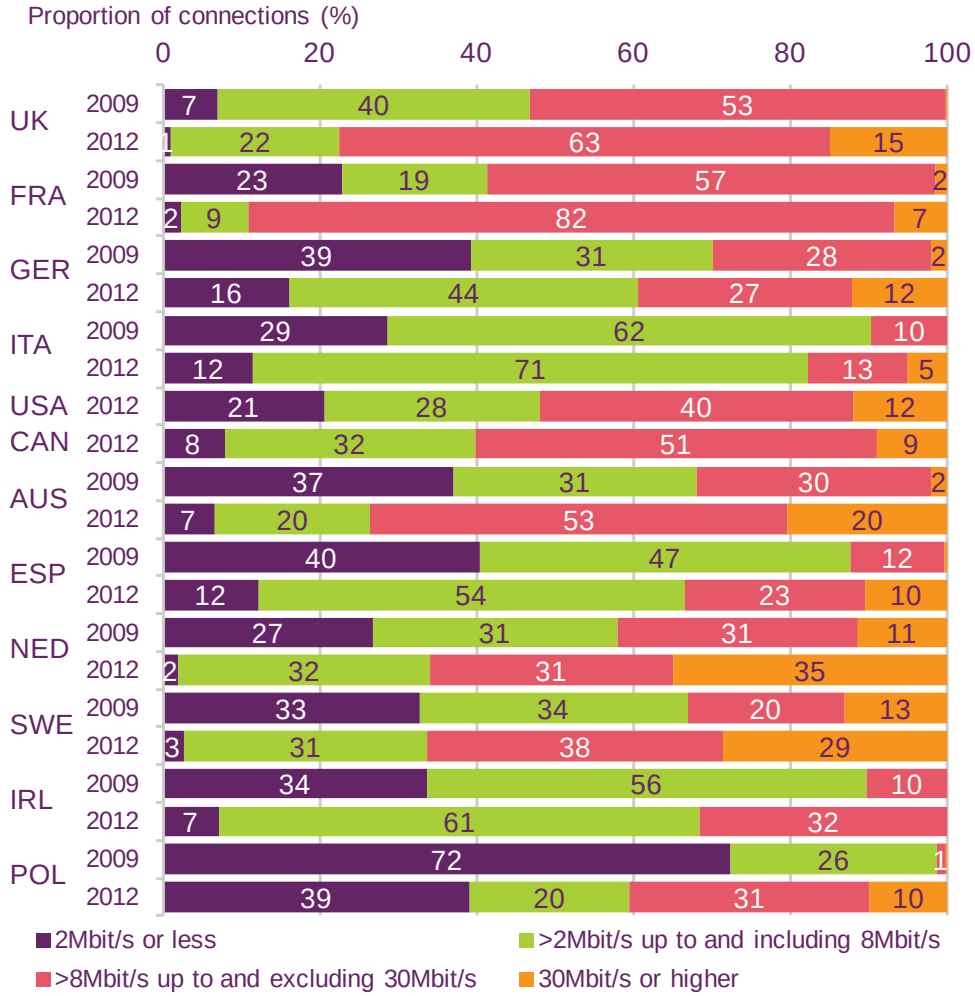
Fifteen per cent of UK fixed broadband connections were superfast at the end of 2012

The proportion of fixed broadband connections that were classed as being superfast (i.e. that had a headline speed of 30Mbit/s or higher) continued to grow in most of our comparator nations in 2012, and by the end of the year Ireland was the only comparator country where less than 5% of connections were superfast, largely as a result of the low availability of NGA networks (Figure 6.4). High NGA broadband take-up does not necessarily mean that superfast broadband take-up is high, as in some countries (for example, the US) ISPs use NGA networks to offer broadband services at sub-superfast speeds.

The nations with the largest proportions of connections that were superfast at the end of 2012 were Japan (which is not shown in the chart below as a full split of fixed broadband connections by headline speed is not available, at 64%), the Netherlands (35%) and Sweden (29%), which all benefit from high levels of next-generation access (NGA) availability. In the UK, 15% of connections were superfast at the end of 2012, the fourth highest proportion among the comparator countries for which we had data.

France had the highest proportion of fixed broadband connections with a headline speed above 8Mbit/s at the end of 2012 (89%), followed by the UK (78%). In both countries, this was because most fixed broadband connections are provided using ADSL2+ technology, which has a theoretical maximum speed of 24Mbit/s and is typically advertised with lower speeds (in the UK these services are usually marketed as being either 'up to' 14Mbit/s or 'up to' 16Mbit/s) as actual speeds are usually much lower that the theoretical maximum.[72] Poland had the highest proportion of lower-speed connections (i.e. those advertised as being 'up to' 2Mbit/s or less), at 39%.

Figure 6.4 Fixed broadband connections, by headline speed: 2009 and 2012



Source: IDATE / Ofcom / operator data

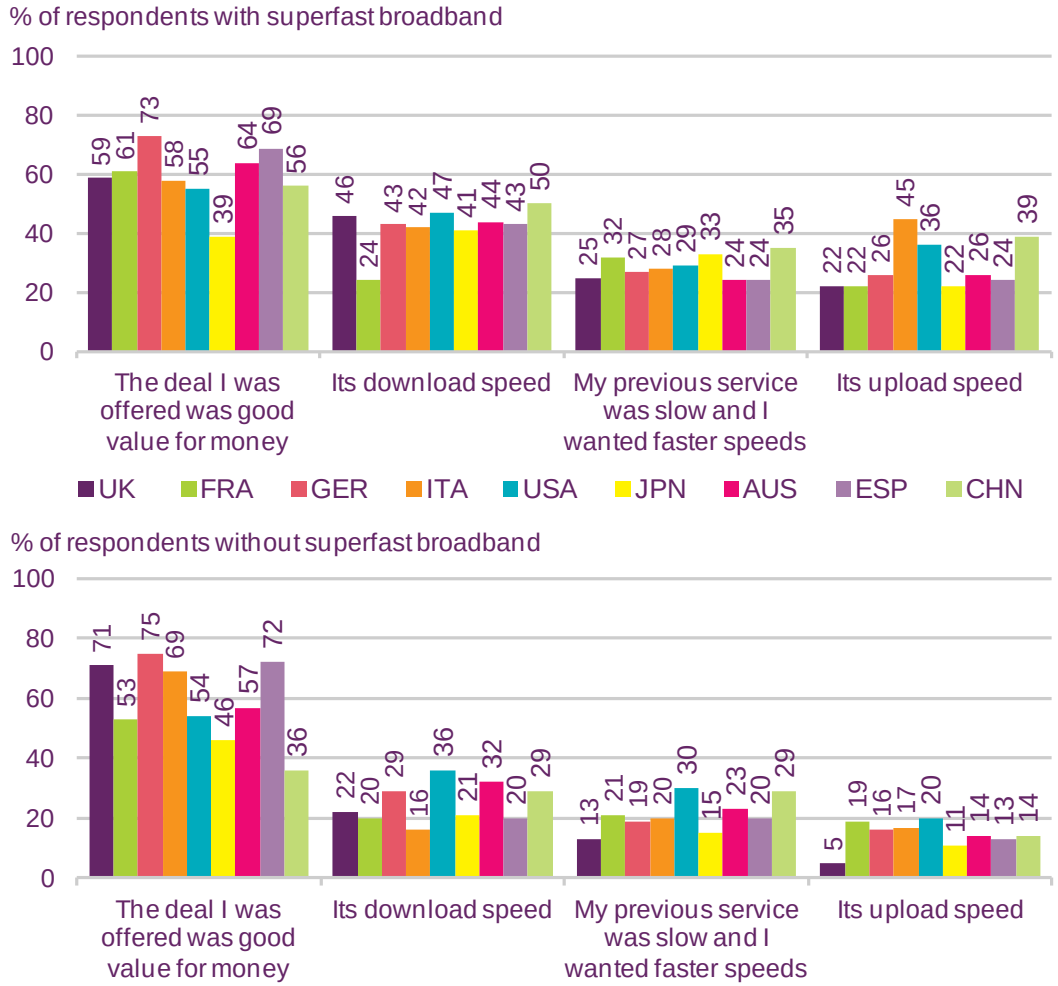
Price is the most important factor for most consumers when selecting a fixed broadband service

Ofcom research asked fixed broadband users about the factors that they took into consideration when selecting their current fixed broadband service. Price was the most frequently cited reason, among both superfast and non-superfast users, in all of the countries where the research was undertaken, apart from superfast broadband users in Japan, who were more likely to cite the speed of their service (Figure 6.5).

[72] In the UK, Ofcom research conducted in May 2013 found that the average speed of uncapped ADSL2+ fixed broadband services was 6.5Mbit/s (http://stakeholders.ofcom.org.uk/market-data-research/other/telecoms-research/broadband-speeds/broadband-speeds-may2013/).

Non-superfast users were more likely than superfast users to say that price was a consideration when choosing their current service in most countries, unsurprising given that superfast services usually command a price premium over lower-bandwidth services. Superfast users in all countries except France were more likely to say that the download and/or upload speeds were reasons why they chose their current service, suggesting that consumers are happy to pay extra for the additional performance that superfast services provide.

Figure 6.5 Reason for choosing current fixed broadband service



Source: Ofcom research, September 2013

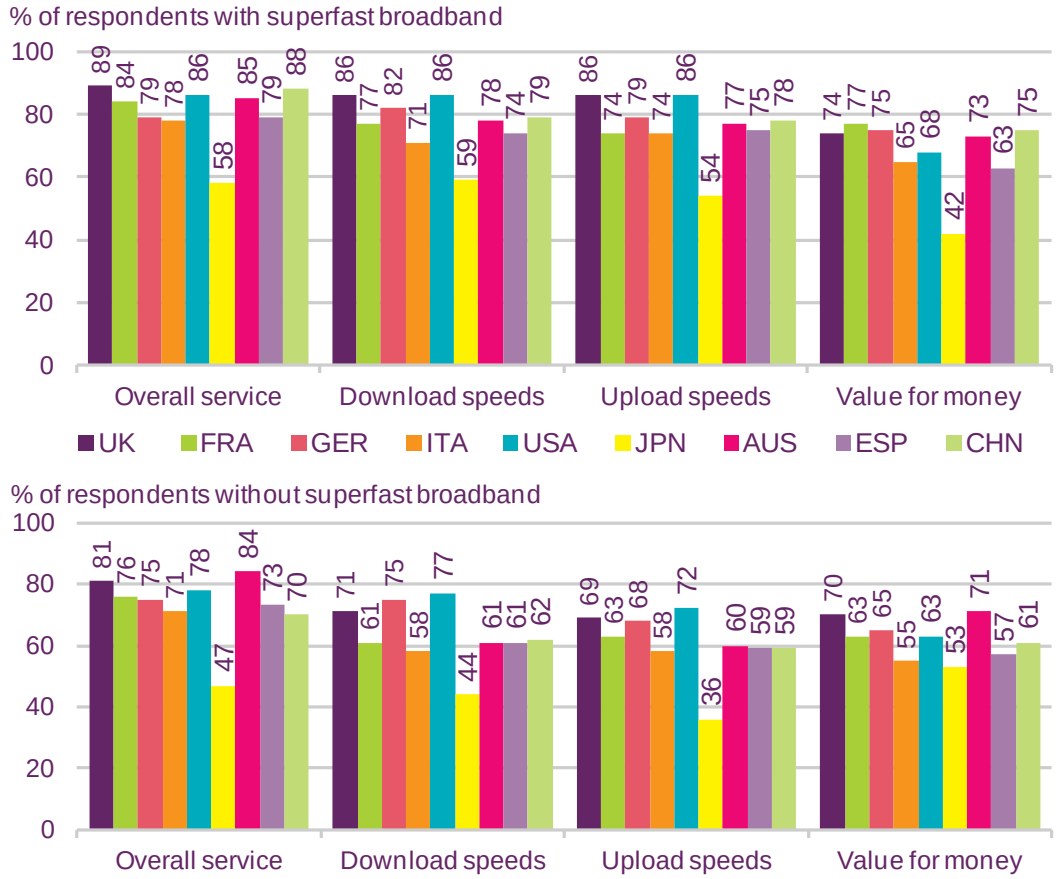
Overall levels of satisfaction with superfast broadband services were highest in the UK in 2013

We also asked superfast and non-superfast fixed broadband users in nine of our comparator countries about how satisfied they were with various aspects of their service (Figure 6.6). Overall satisfaction levels, along with satisfaction with downstream and upstream connection speeds, and the value for money of their service, were higher among superfast than non-superfast users in almost all cases. The only exception was in Japan, where superfast users were less likely than non-superfast users to be satisfied with the value for money of their service.

As shown in Figure 6.4, superfast users in Japan were the only users for whom price was not the most frequently-cited reason for choosing their service. Figure 6.26 shows that Japan

had the highest average revenue per fixed broadband connection in 2012, and it may be the case that while some superfast users in Japan were less concerned with price when they chose their service, others are unhappy about having to pay high prices for their broadband. In the UK, 89% of superfast broadband users were happy with their overall service in September 2013, the highest proportion among our comparator countries.

Figure 6.6 Satisfaction with current fixed broadband service



Source: Ofcom research, September 2013

6.1.4 The erosion of voice services continues

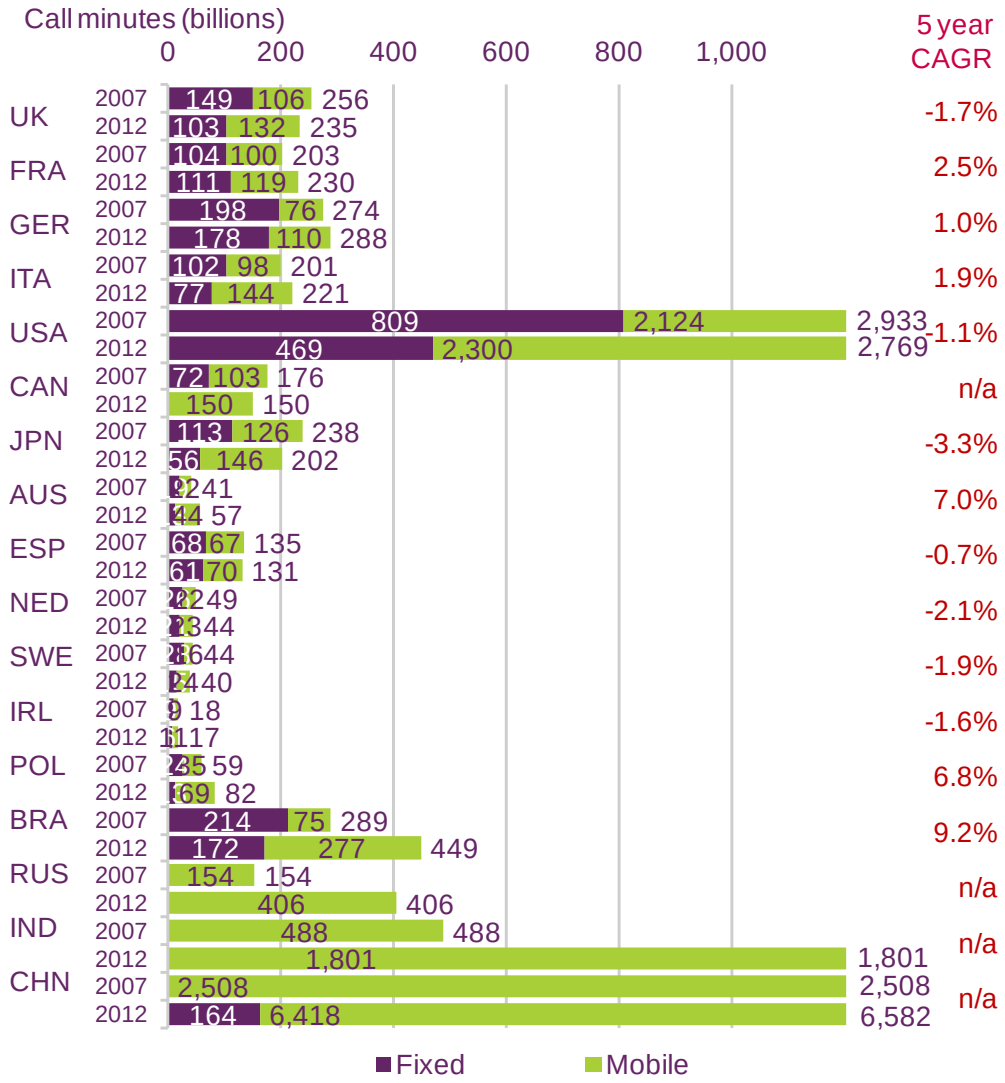
Fixed-to-mobile substitution continued in the five years to 2012

There has been a major shift in voice calling patterns across our comparator countries over the last decade, with falling fixed call volumes having been offset by increasing mobile call volumes. Figure 6.7 shows this over the last five years. Additionally, there is evidence that total voice call volumes are falling in some countries, as consumers substitute traditional fixed and mobile voice calls with text-based alternatives. The UK was one of seven comparator countries where total voice call volumes fell in the five years to 2012, with total call volumes falling by an average of 1.7% a year to 235 billion minutes over this period. The fall in total voice call volumes in the UK occurred despite mobile call volumes having increased by 25% to 132 billion minutes over the period; this increase was not sufficient to offset a 31% decline in fixed call volumes.

The highest average annual rate of decline in voice call volumes in the five years to 2012 was in Japan, at 3.3%, an overall decrease of 37 billion call minutes to 202 billion minutes of calls over the period. This decline was due to consumers in Japan having been users of data connections for messaging and VoIP for many years, and because traditional voice services

are comparatively expensive in Japan, making alternatives more attractive to consumers. Conversely, the highest average annual growth in total voice call volumes between 2007 and 2012 was in Brazil, at 9.2%, an increase of 160 billion call minutes to 449 billion minutes of calls as a result of strong growth in the number of mobile connections.[73]

Figure 6.7 Total telecoms voice call volumes, by sector: 2007 to 2012



Source: IDATE / industry data / Ofcom
Note: Figures for USA, CAN and CHN include incoming calls

Germany was the only comparator country where over half of all voice call minutes originated on fixed lines in 2012

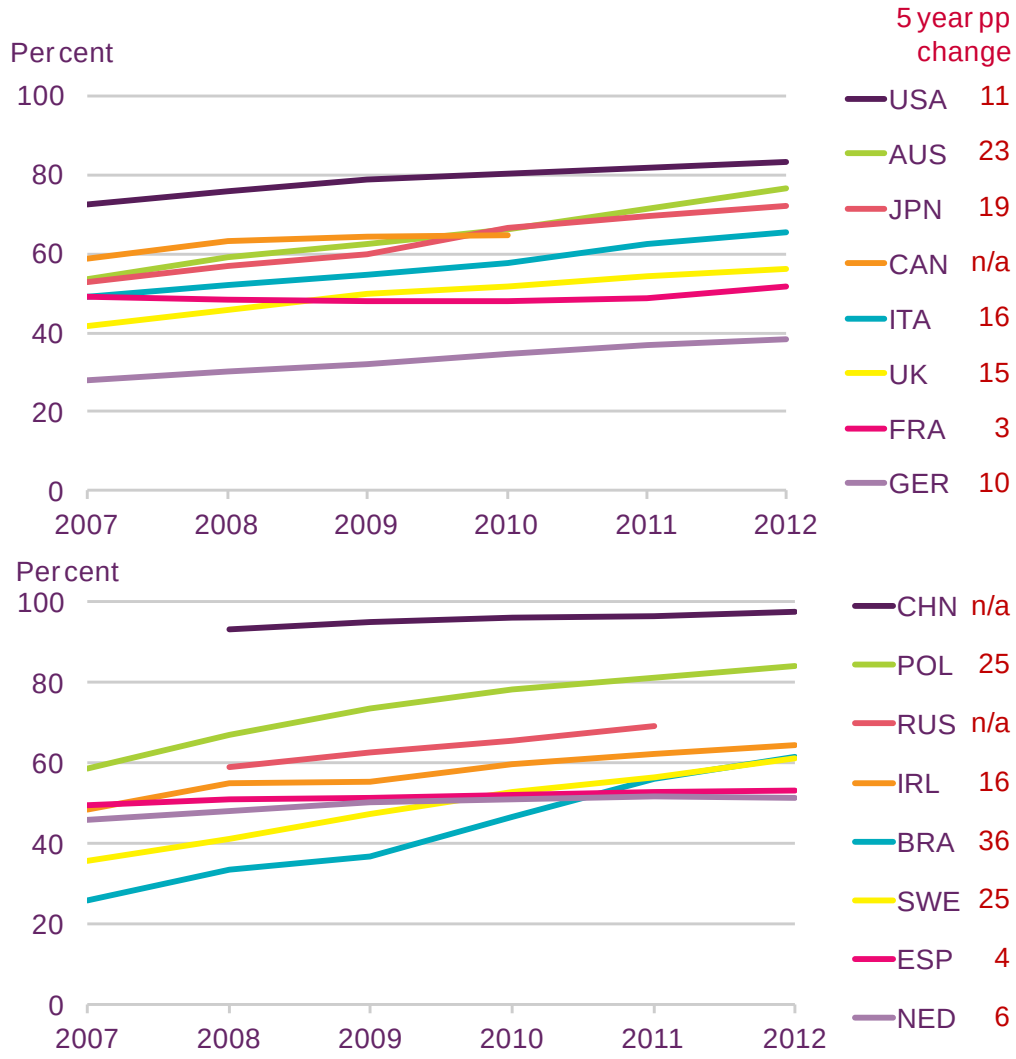
In all but one of the comparator countries for which we had data, over half of outgoing voice call minutes originated on mobile phones in 2012 (Figure 6.8). The sole exception was Germany, where 38% of calls were mobile-originated in 2012. Levels of mobile use are comparatively low in Germany as there is a large differential between the price of fixed and mobile calls (data provided to Ofcom by IDATE show that the average cost of a fixed call minute in Germany was 4.9 pence in 2012, compared to an average of 9.7 pence for mobile-

[73] Growth rates may have been higher in Russia, India and/or China; however, we do not have fixed call volume data for these countries.

originated calls). As a result, consumers in Germany are more likely to make calls from a landline than a mobile than in our other comparator countries.

China had the highest proportion of voice call minutes that originated on mobile networks among our comparator countries in 2012, at 98%, although this is partly because the mobile call volume data used to calculate the figures below also including incoming calls to mobiles (as is the case with the US and Japan). Among the comparator countries for which separate outgoing mobile call volume data were available, the proportion of voice call minutes originating on mobiles was highest in Poland in 2012, at 84%. In the UK, 56% of call minutes were mobile-originated in 2012, the fifth lowest proportion among the 14 countries for which we had data, despite this proportion having increased by 15 percentage points over the preceding five-year period. Brazil had the largest increase in the proportion of calls that originated on mobile phones between 2007 and 2012, a 36 percentage point increase from 26% to 62%.

Figure 6.8 Proportion of voice call minutes originating on mobiles: 2007 to 2012



Source: IDATE / industry data / Ofcom
Note: Figures for USA, CAN and CHN include incoming calls

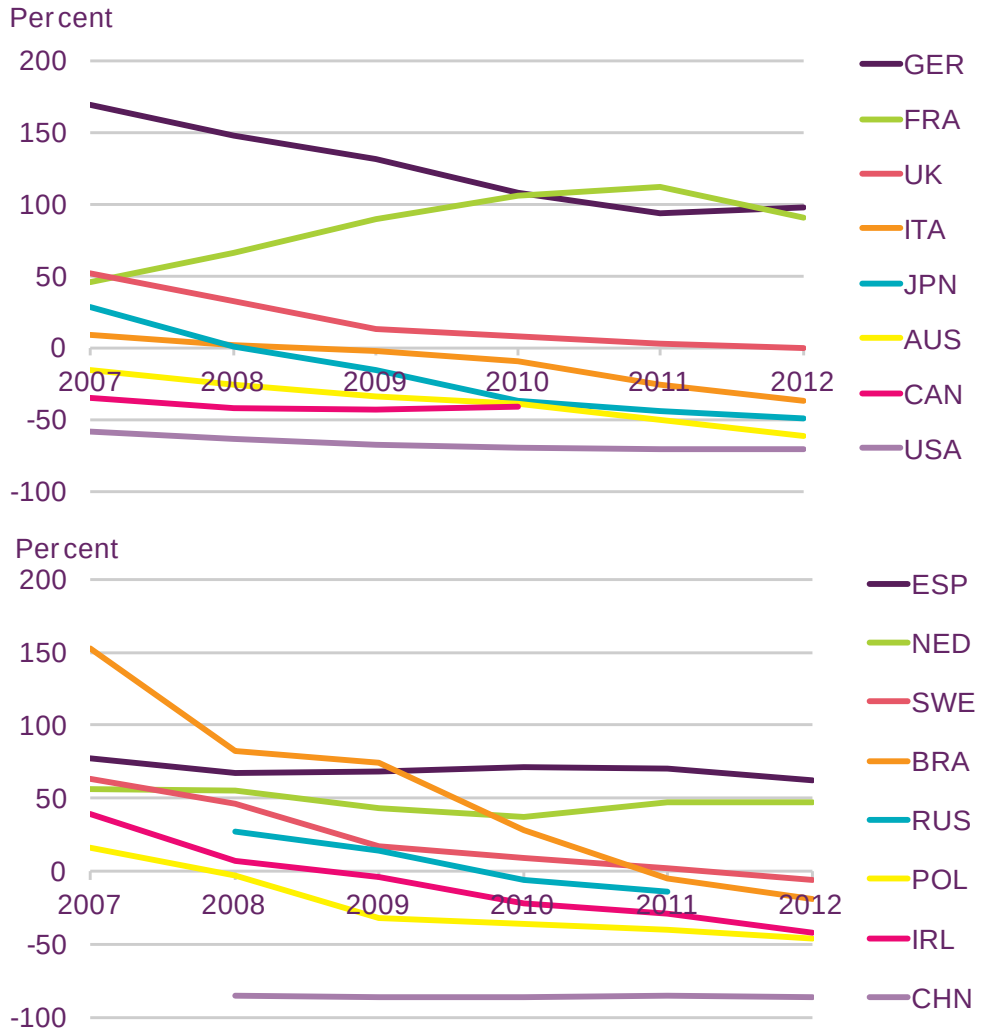
Mobile calls were cheaper than fixed calls in most comparator countries in 2012

Falling mobile prices have been a key reason behind increasing fixed-to-mobile substitution in recent years, and Figure 6.9 shows the average price premium of a mobile-originated voice call minute over a fixed network-originated voice call minute across our comparator countries. Where the value shown (the mobile price premium) is greater than zero, the price of a mobile-originated call minute was higher than that of a fixed call minute, on average. Likewise, where it is less than zero, a mobile call minute was, on average, cheaper than a fixed voice call minute. It should be noted that the average mobile pence-per-minute call charges used in the calculation of the mobile price premium is likely to be overstated, as it includes revenues relating to bundled mobile message and data allowances.

The average price of a mobile-originated voice call minute was higher than that of a fixed voice call minute in just four of the 14 comparator countries for which we had data in 2012. By way of comparison, this had been true in all but three comparator countries in 2007 (the US and Canada, where mobile customers are also charged for incoming calls, along with Australia). The highest mobile call premium in 2012 was in Germany, where the average cost of a mobile call minute was almost twice that of a fixed call minute; the mobile premium was 98%. The UK had the smallest difference between the average price of a fixed and mobile voice call minute among our comparator countries in 2012; the average price of a mobile call minute was 0.1% lower than that of a fixed call minute.

Among the other countries where the average price of a mobile call minute was less than that of a fixed call minute in 2012, the difference between the two ranged from 6% in Sweden (where 2012 was the first year in which the average price of a mobile call minute was lower than that of a fixed call minute) to 86% in China. The largest decline in the mobile premium in the five years to 2012 was in Brazil, where the average price of a mobile-originated call minute fell from being 153% higher than a fixed voice minute to being 19% lower, largely as a result of a fall in the average cost of a mobile call minute from 16 pence per minute to 5 pence per minute over the period.

Figure 6.9 Average price premium of a mobile voice call minute over a fixed call minute: 2007 to 2012



Source: IDATE / industry data / Ofcom
Note: The average fixed and mobile pence-per-minute values used to calculate the price premiums shown include the monthly access charge, and as such may include revenues relating to bundled mobile messaging and data services.

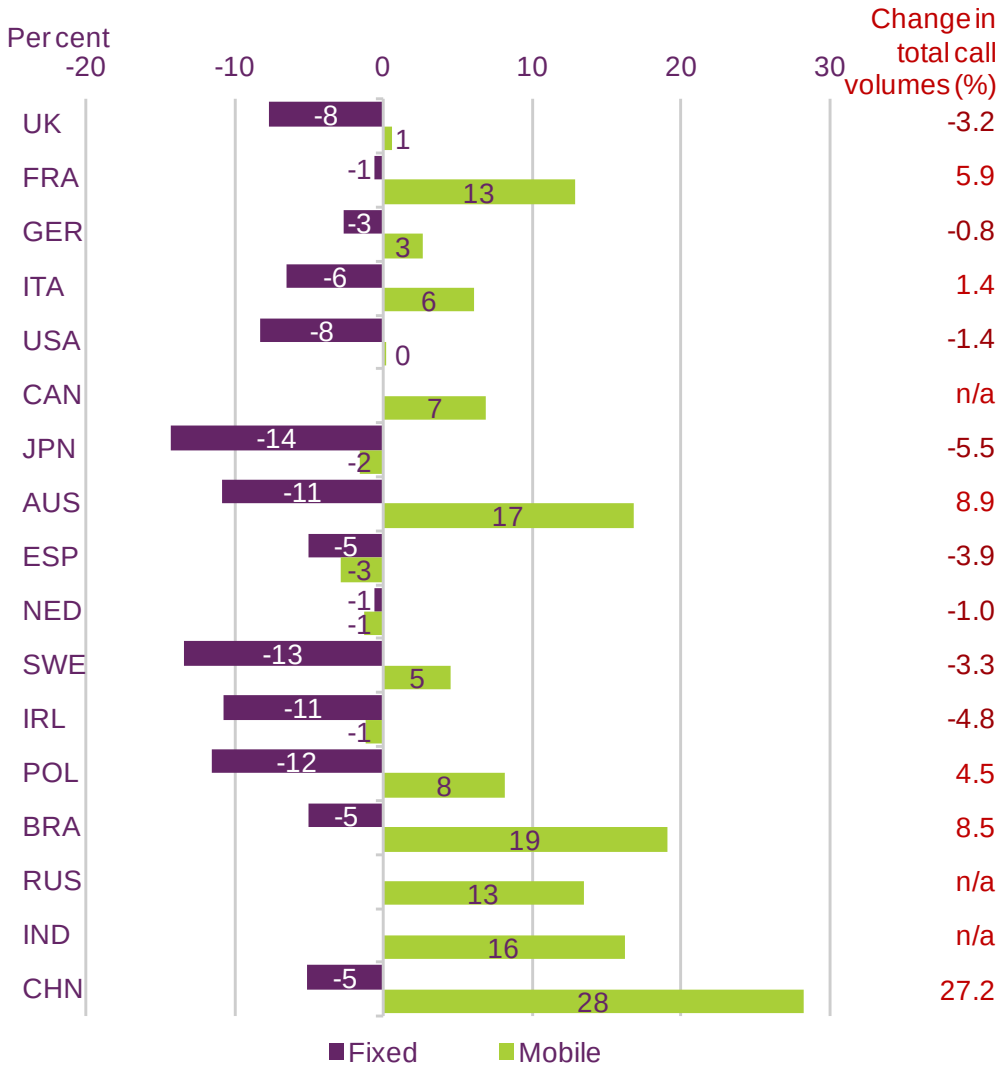
The UK was one of eight comparator countries where total voice call volumes fell in 2012

While fixed-to-mobile substitution has been evident for a number of years, a more recent trend in some markets has been falling total voice call minutes. Figure 6.10 shows the percentage changes in fixed, mobile and overall voice call volumes among our comparator countries in 2012. Fixed voice call volumes fell in all of the countries for which we had data, with the largest decline being a 14% fall in Japan during the year. Outgoing mobile voice call volumes fell in four comparator countries in 2012: Spain, Japan, the Netherlands and Ireland. The largest decrease was a 3% fall in Spain, which was partly due to consumers in Spain adjusting their use of mobile services in order to reduce their bills, in response to the economic downturn.

In 2012, total voice call volumes fell in eight of the 14 comparator countries for which we had both fixed and mobile call volume data. The UK was one of these countries, and during the

year an 8% fall in fixed voice call volumes was offset by a 1% increase in mobile call volumes, which resulted in a 3.2% fall in total voice call volumes. Among the other comparator countries where total voice call volumes fell in 2012, the annual decline ranged from a 0.8% fall in Germany to a 5.5% fall in Japan.

Figure 6.10 Change in fixed and mobile voice call volumes: 2012

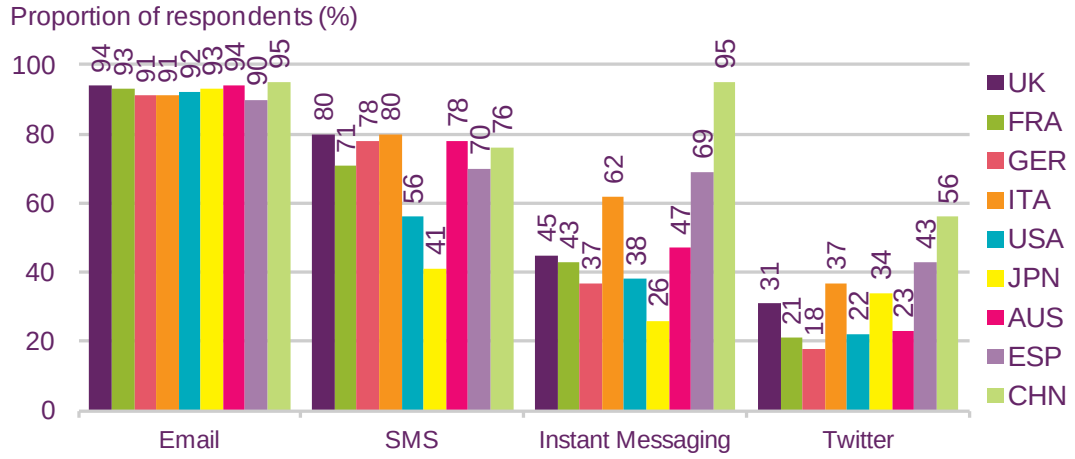


Source: IDATE / industry data / Ofcom

Consumers are substituting voice calls for text-based communication services

A key driver of the falling total voice call volumes which are evident in some comparator countries is increasing use of text-based forms of communication. Ofcom research undertaken in September 2013 indicates that 90% or more of respondents were users of email in all nine of the comparator countries included in the research (although these figures are likely to be overstated as the research was conducted online). Similarly, 70% or more of respondents in all of these countries except Japan (41%) and the US (56%) said that they sent and received SMS messages. Use of instant messaging services and Twitter, which are both relatively new services compared to email and SMS, were both higher than average in Italy, Spain and China (Figure 6.11).

Figure 6.11 Use of alternatives to traditional voice calls



Source: Ofcom research, September 2013
Base: All respondents
Note: Research conducted online

6.2 The telecoms industry

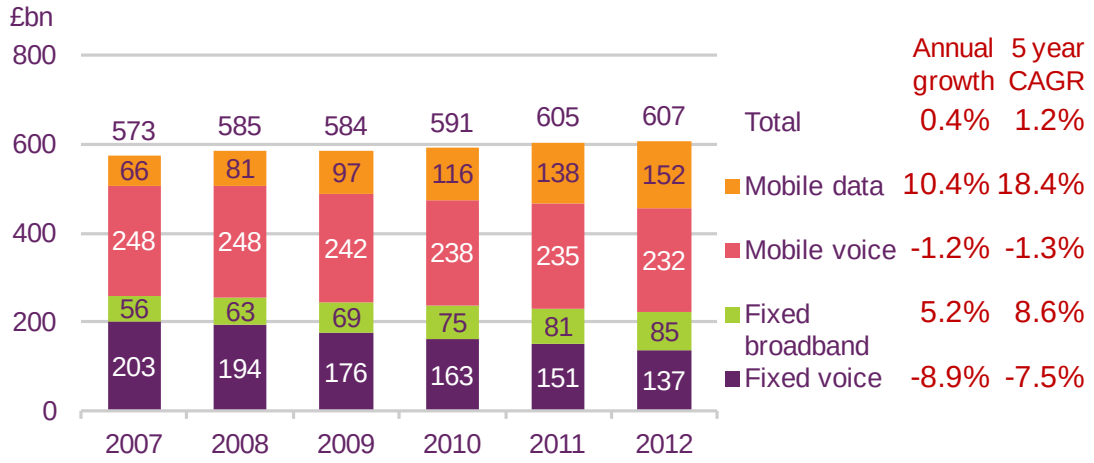
6.2.1 Market overview

Total comparator country telecoms revenues increased by 0.4% in 2012

Total telecoms revenues (from fixed voice, fixed broadband excluding access over leased lines, mobile voice and mobile data services) across all our comparator countries increased by 0.4% (£2bn) to £607bn in 2012 (Figure 6.12). Fixed voice revenues fell by 8.9% to £137bn during the year, reflecting falling call volumes (down 15.0%) and line numbers (down 3.2%). Total mobile revenues increased by 3.1% to £385bn during the year, as growth in mobile messaging and mobile internet revenues (up by 7.3% and 12.4% respectively) were offset by a 1.2% fall in mobile voice revenues. Fixed broadband revenues increased by 5.2% to £85bn, as the number of connections grew by 8.0% during the year to 500 million.

Overall, data services generated £237bn in revenues in 2012, an increase of 8.5% compared to 2011. This equated to 39.1% of total comparator country telecoms revenues, up from 36.2% in 2011 and 21.3% in 2007. Similarly, the proportion of data revenues that were generated by mobile data services (including mobile messaging) increased from 53.8% to 64.3% in the five years to 2012.

Figure 6.12 Total comparator country retail telecoms revenue, by sector: 2007 to 2012

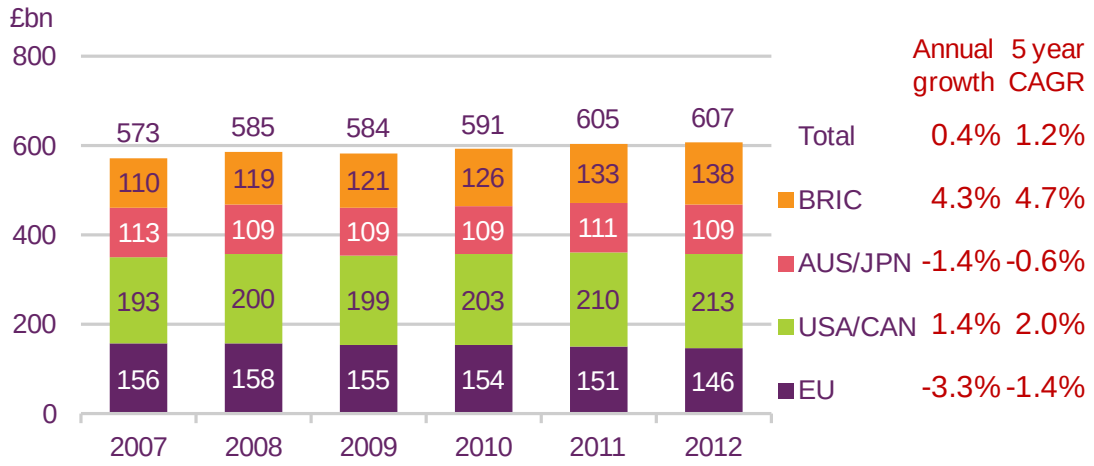


Source: IDATE / industry data / Ofcom
Note: Fixed broadband revenues exclude the BRIC countries; voice revenues include access/line rental revenues and may include revenues relating to bundled data services.

The largest increase in telecoms revenues was in the BRIC countries in 2012

The increase in total comparator country telecoms revenues in 2012 was due to revenue increases in the BRIC countries (up 4.3%) and the US/Canada (up 1.4%), as total revenues declined in our EU comparator countries (down 3.3%) and in Australia/Japan (down 1.4%) during the year (Figure 6.13). The increase in total comparator country telecoms revenues in 2012 was the third successive rise recorded following a small (0.3%) fall in revenues in 2009, which was to a large extent the result of the global economic downturn.

Figure 6.13 Total comparator country retail telecoms revenue, by country type: 2007 to 2012



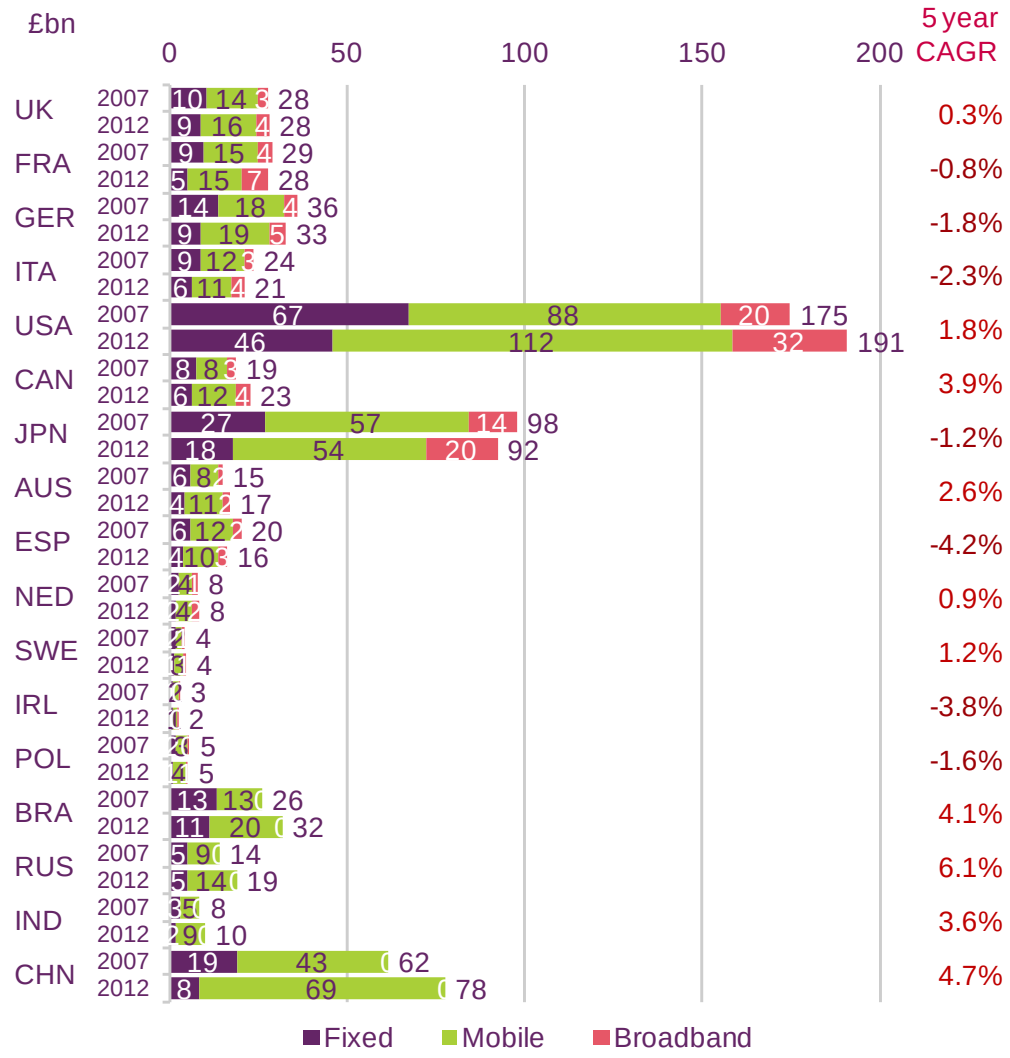
Source: IDATE / industry data / Ofcom
Note: Figures for the BRIC countries exclude fixed broadband revenues

Total UK telecoms revenues increased by an average of 0.3% a year in the five years to 2012

While total telecoms revenues increased in most of our 17 comparator countries between 2007 and 2012, they fell in seven countries over the period (Figure 6.14). The largest proportional fall was in Spain, where revenues fell by an average of 4.2% a year during this five-year period, partly as a result of the economic downturn, which has led to consumers seeking to reduce their spend on telecoms services. Revenue growth was strong in the BRIC countries, ranging from an average of 3.6% a year in India to 6.1% a year in Russia, due to increasing mobile use (over this period the number of mobile connections in the BRIC countries increased by 133% to 2.5 billion, while fixed voice revenues fell in all four of the BRIC countries).

In the UK, total telecoms revenues increased by an average of 0.3% a year between 2007 and 2012, as increasing mobile and fixed broadband revenues (up by averages of 2.2% and 4.7% a year respectively) were offset by falling fixed voice revenues (down by 4.0% a year). The increase in total telecoms revenues in the UK between 2007 and 2012 compares to an average annual fall of 1.8% across the other EU countries included in our analysis.

Figure 6.14 Telecoms service retail revenues, by sector: 2007 and 2012



Source: IDATE / industry data / Ofcom
Note: Figures for the BRIC countries exclude fixed broadband revenues

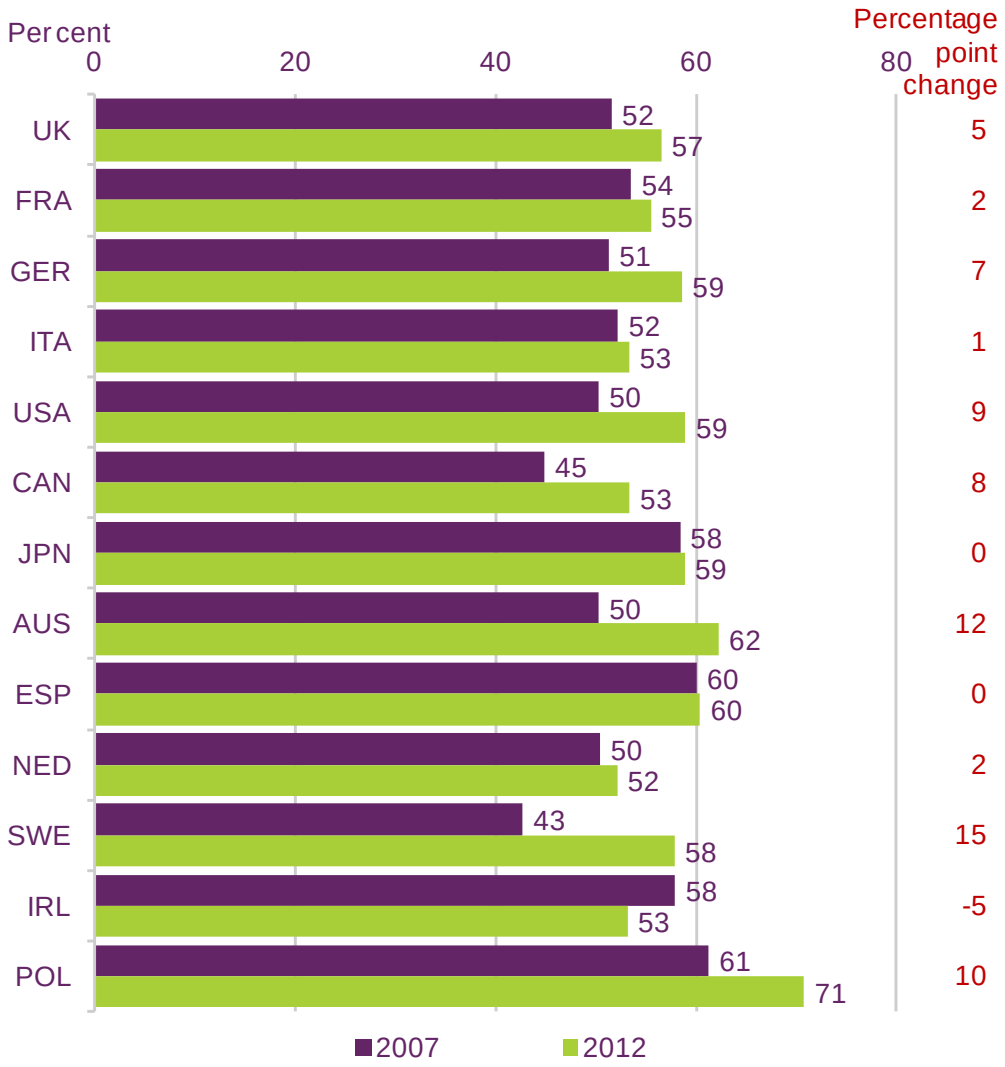
Mobile services generated 57% of total telecoms revenues in the UK in 2012

There was relatively little variation in the proportion of total telecoms revenues that were generated by mobile voice and data services among our comparator countries in 2012 (Figure 6.15). Of those nations for which data were available, the only countries where the proportion of telecoms revenues generated by mobile services was not between 50% and 60% were Spain, Australia and Poland, where the proportions were higher at 60.4%, 62.3% and 70.8% respectively (in the UK, mobile services generated 56.5% of total telecoms revenues in 2012, up from 51.6% in 2007).

In Australia and Poland, the proportion of total telecoms revenues that were generated by mobile services was high as a result of growing take-up of mobile services and increased levels of fixed-to-mobile substitution for both voice and data services. In Australia, mobile accounted for 77% of total call volumes in 2012, while in Poland (where fixed telecoms availability and take-up is low) the figure was 84% (the average across the comparator countries shown below for which separate outgoing mobile call volume data was available was 58%).

Additionally, mobile phone subscribers in Australia often choose to purchase an extra mobile broadband plan, and mobile broadband take-up in Australia is much higher than average (there were 39 mobile broadband connections per 100 households in Australia at the end of 2012, compared to an average of 20 per 100 households across our other non-BRIC comparator countries - excluding the US, where comparable figures were not available).

Figure 6.15 Mobile as a proportion of total telecoms revenues: 2007 and 2012



Source: IDATE / industry data / Ofcom

Mobile internet services generated £93bn in revenue in 2012

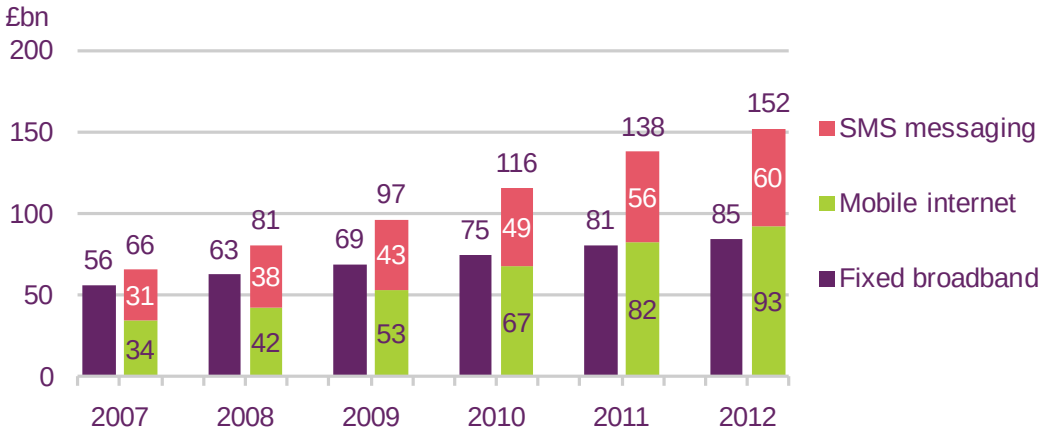
In total, mobile data services (which here include revenues from mobile messaging and mobile internet services) generated £152bn of revenue in our comparator countries in 2012, an increase of £14bn (10%) compared to 2011 (Figure 6.16). It should be noted that mobile data revenues are likely to be understated as they do not include revenue relating to mobile messaging and mobile internet use, which is included in the monthly fee for post-pay mobiles.

Mobile internet services generated £93bn in revenue in 2012, a £10bn (12%) increase compared to 2011 and £59bn more than in 2007, almost a three-fold increase. The growth in mobile internet revenues was a result of increasing mobile broadband take-up (in the five years to 2012 the number of dedicated mobile data connections among our non-BRIC

comparator countries increased from 12 million to 220 million) and growth in mobile data use on handsets, which was largely the result of increasing take-up of smartphones (see section 5.1.3 of this report for more details). Mobile internet services generated 61% of total mobile data revenues in 2012, a nine percentage point increase compared to 2007 and one percentage point higher than in 2011.

Fixed broadband revenue growth was slower than that of mobile data services in 2012, up by 5.2% to £85bn. In the five years to 2012, fixed broadband revenues increased by £29bn (50.7%) as a result of a 36% increase in the number of fixed broadband connections among our non-BRIC comparator countries between 2007 and 2012 (up from 194 million to 265 million), and a 4.1% increase in the average revenue per connection in these countries; to £27 per month.

Figure 6.16 Total fixed broadband and mobile data revenues: 2007 to 2012



Source: IDATE / industry data / Ofcom
Note: Excludes the BRIC countries

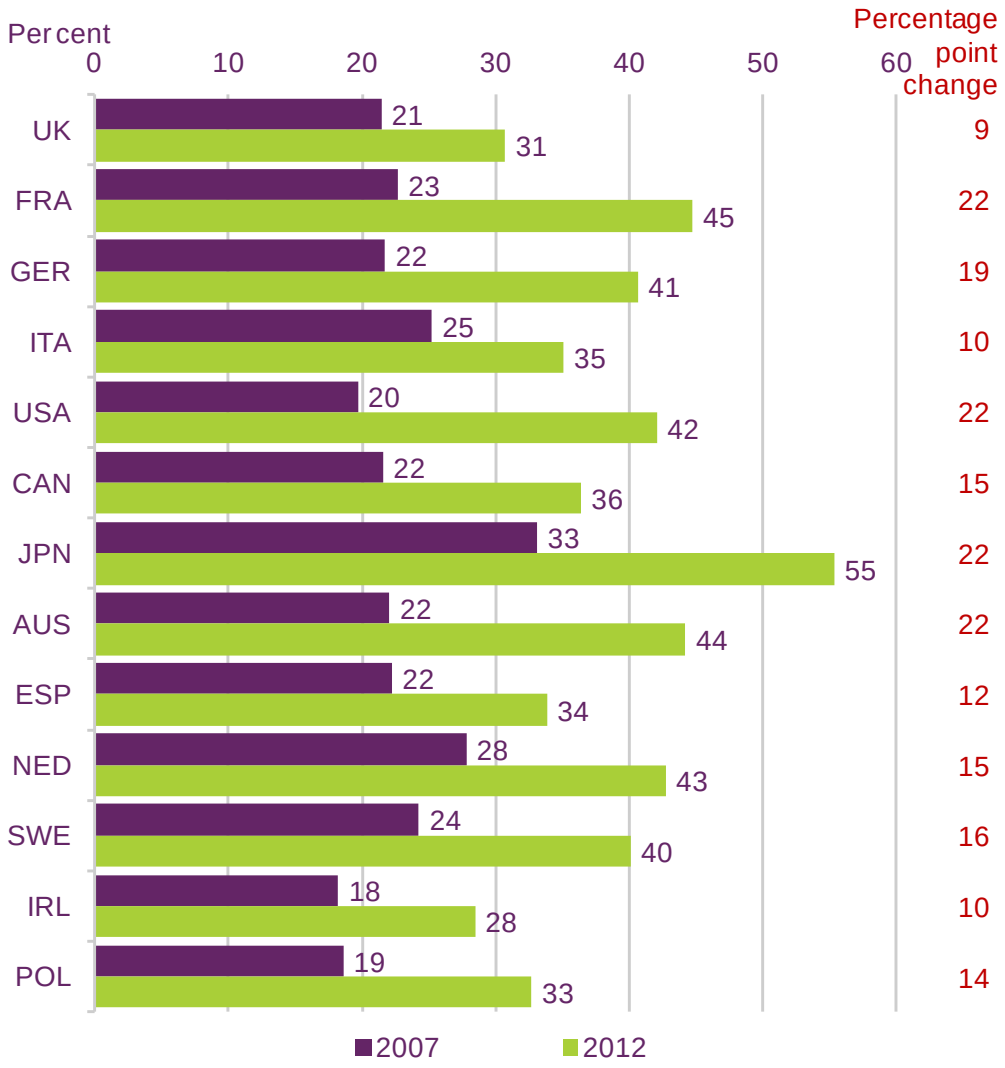
The UK had the second lowest proportion of total telecoms revenue generated by data services in 2012

The proportion of total telecoms revenue that was generated by fixed and mobile data services varied widely across those comparator countries for which figures were available (this analysis excludes the BRIC countries as no fixed broadband revenue data were available for them). The figures below exclude revenue from mobile messaging and data use in the allowances that are frequently included in post-pay mobile contract monthly access fees. The UK had the second lowest proportion (after Ireland) of total revenue generated by data services in 2012, at 31%, partly because the average revenue per fixed broadband connection in the UK in 2012 (£14.65 a month) was the third lowest among the comparator countries for which we have data (after Poland and Germany), and significantly lower than the £27.26 average across the comparator countries for which fixed broadband revenue data were available (Figure 6.17).

Japan had the highest proportion of total telecoms revenue generated by data services in 2012 (55%), as a result of the widespread use of mobile data services and the high take-up of fibre broadband (59% of fixed broadband connections in Japan were fibre-to-the-home or building at the end of 2012, compared to an average of 14% across all of our non-BRIC countries, and Japan had the highest average monthly revenue per fixed broadband connection across these countries at £43.82). France, the US, Japan and Australia had the largest increases in the proportion of total telecoms revenue generated by data services between 2007 and 2012, at 22 percentage points: in the UK the increase was nine

percentage points; the smallest increase across these 13 countries as a result of falling fixed broadband prices and the commonplace bundling of mobile data services with post-pay mobile tariffs (which means that these revenues are recorded as voice revenues rather than data revenues).

Figure 6.17 Data revenue as a proportion of total telecoms revenue: 2007 and 2012



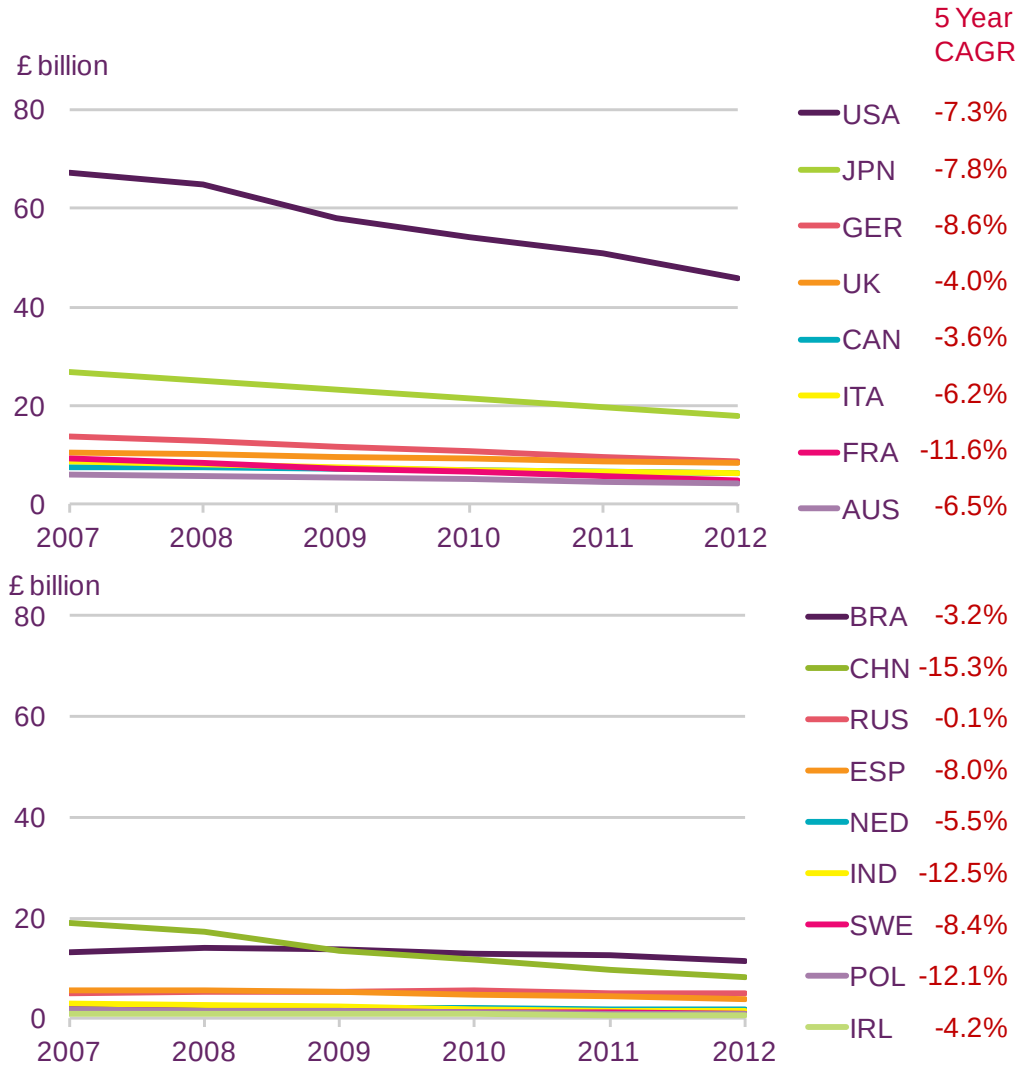
Source: IDATE / industry data / Ofcom

6.2.2 Fixed voice services

UK fixed voice revenues fell by an average of 4% per year in the five years to 2012

Retail fixed-line voice revenues fell by an average of 8.9% across the 17 comparator countries for which data were available in 2012 (Figure 6.18). This rate of decline was higher than the average annual fall of 7.5% in the five years to 2012, suggesting that the rate at which consumers are migrating from traditional fixed voice services to alternatives, including mobile voice calls and text-based forms of communication, such as SMS, email and instant messaging, has accelerated. Fixed voice revenues fell in all of our comparator countries, both in 2012 and over the five-year period, and the fastest rate of decline in 2012 was found in China, where revenues fell by 14.5% during the year. Outside the BRIC countries, the largest percentage falls during the year were in Spain (13.7%) and Poland (13.5%). In the UK, fixed voice revenues fell by 3.4% in 2012 and at an average annual rate of 4.0% between 2007 and 2012, largely as a result of falling fixed call volumes.

Figure 6.18 Fixed line voice retail revenues: 2007 to 2012



Source: IDATE / industry data / Ofcom

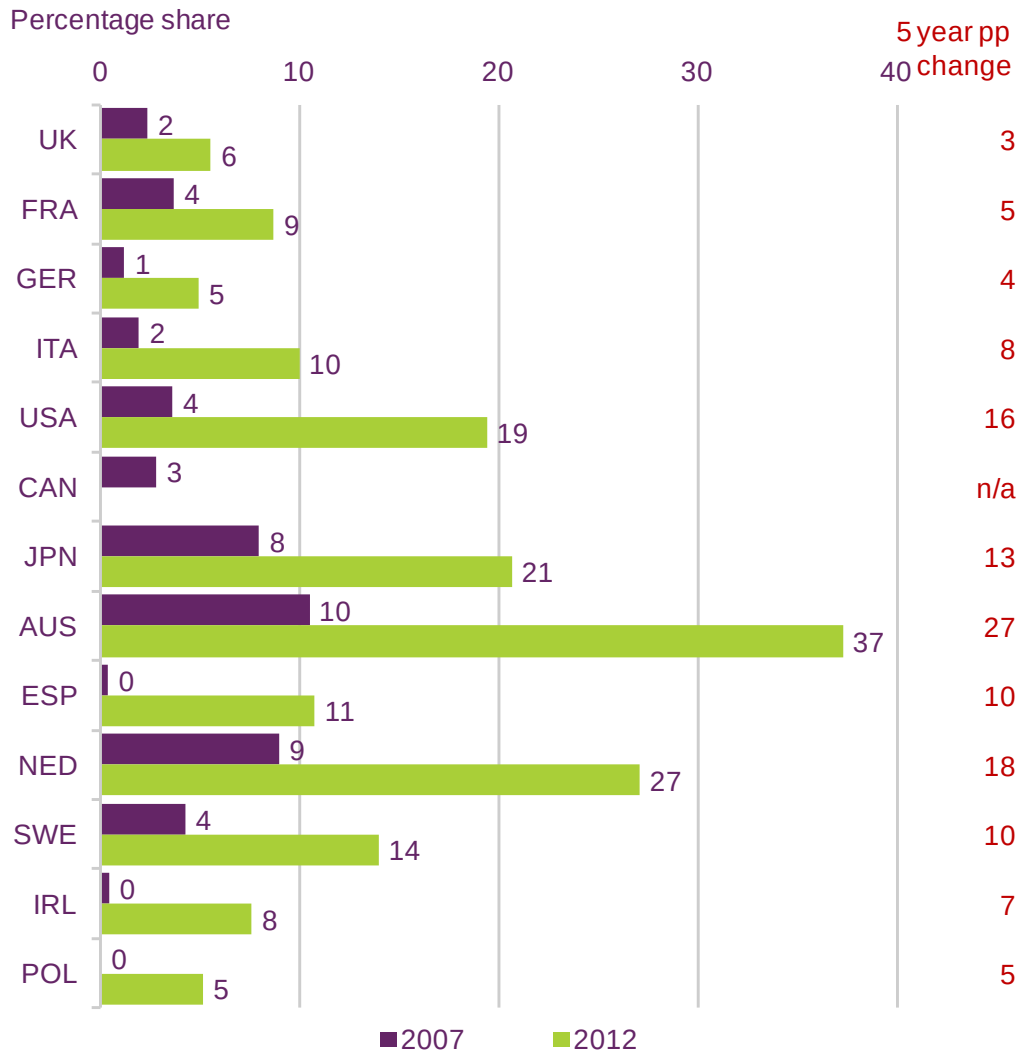
VoIP generated 37% of fixed voice revenues in Australia in 2012

VoIP services generated 37% of total fixed voice revenues in Australia, the largest proportion among all comparator countries in 2012 and a 27 percentage point increase

compared to five years previously (Figure 6.19). Managed VoIP telephony services have been successful in Australia, where there are a large number of providers offering a wide range of VoIP call packages. The Netherlands, where average revenue per VoIP user was high, also experienced a large increase in the proportion of fixed voice revenue generated by VoIP services over the period, up by 18 percentage points to 27%.

By comparison, the UK had a much smaller increase in the five years to 2012, a three percentage point increase to 6%: only Germany and Poland (both at 5%) had a lower proportion of fixed voice revenues generated by VoIP during the year. The use of managed VoIP services as an alternative to traditional voice services is low among residential consumers in the UK, and unlike many cable operators internationally, Virgin Media, the UK's largest cable provider, does not deliver fixed voice services using VoIP. As such, most managed VoIP use in the UK is among business users.

Figure 6.19 VoIP revenues as a proportion of fixed voice revenues: 2007 and 2012



Source: IDATE

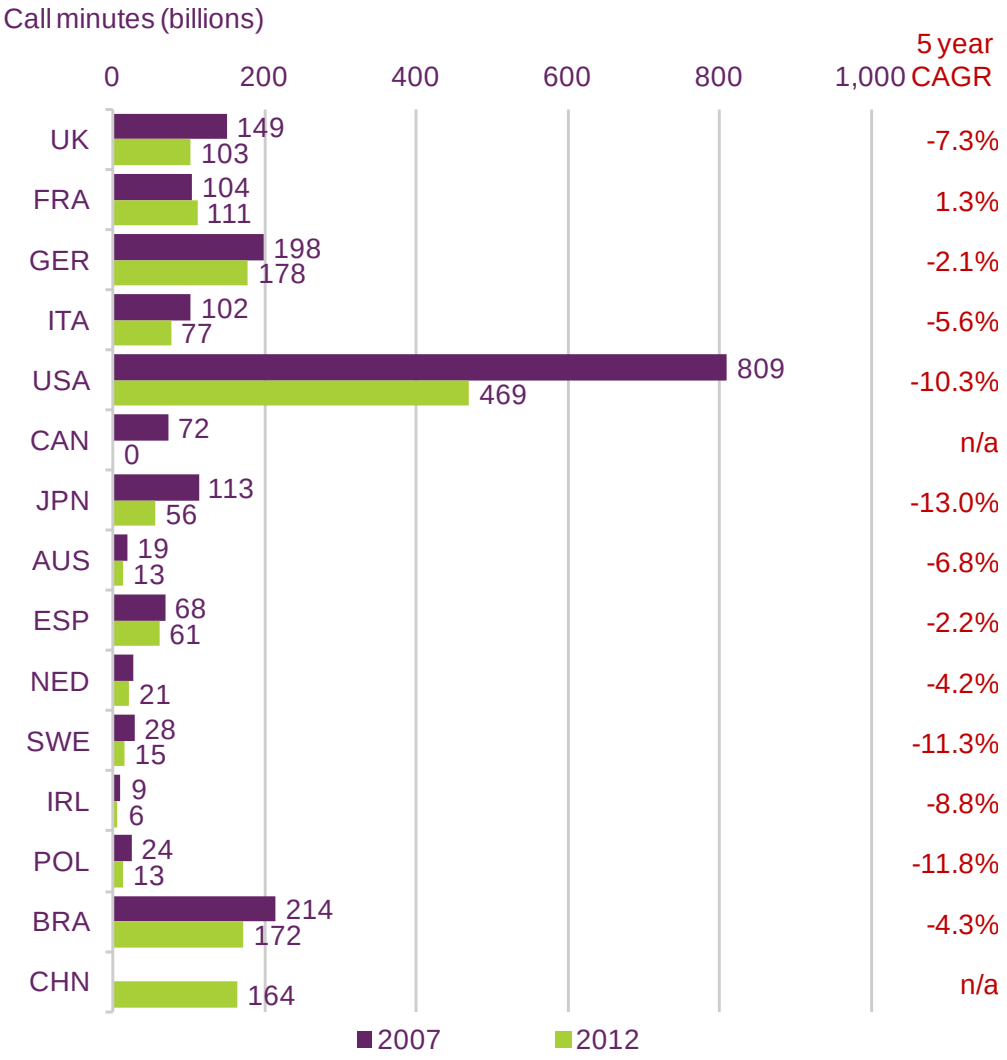
France was the only comparator country where fixed call volumes increased in the five years to 2012

Total fixed-line voice call volumes across those comparator countries for which call volume time series data were available fell by an average annual rate of 7.0% to 1.3 trillion call minutes between 2007 and 2012. France was the only comparator nation where fixed call

volumes increased over this period, up by an average annual rate of 1.3% to 111 billion minutes as a result of the availability of low-cost VoIP-based fixed telephony services (Figure 6.20).

In the UK, fixed voice call volumes fell at an average annual rate of 7.3% in the five years to 2012, the main reason being fixed-to-mobile substitution, although there have also been increases in the use of text-based communications services (such as email, SMS and instant messaging) and VoIP. The highest average annual rate of decline between 2007 and 2012 was in Japan, at 13.0%, where increasing use of mobiles and other alternatives to traditional fixed voice calls contributed to a 50% fall in voice call volumes to 56 billion minutes over the period.

Figure 6.20 Fixed line voice call volumes: 2007 and 2012



Source: IDATE / industry data / Ofcom
Note: Figures for USA and CAN exclude local and VoIP calls and include incoming mobile calls

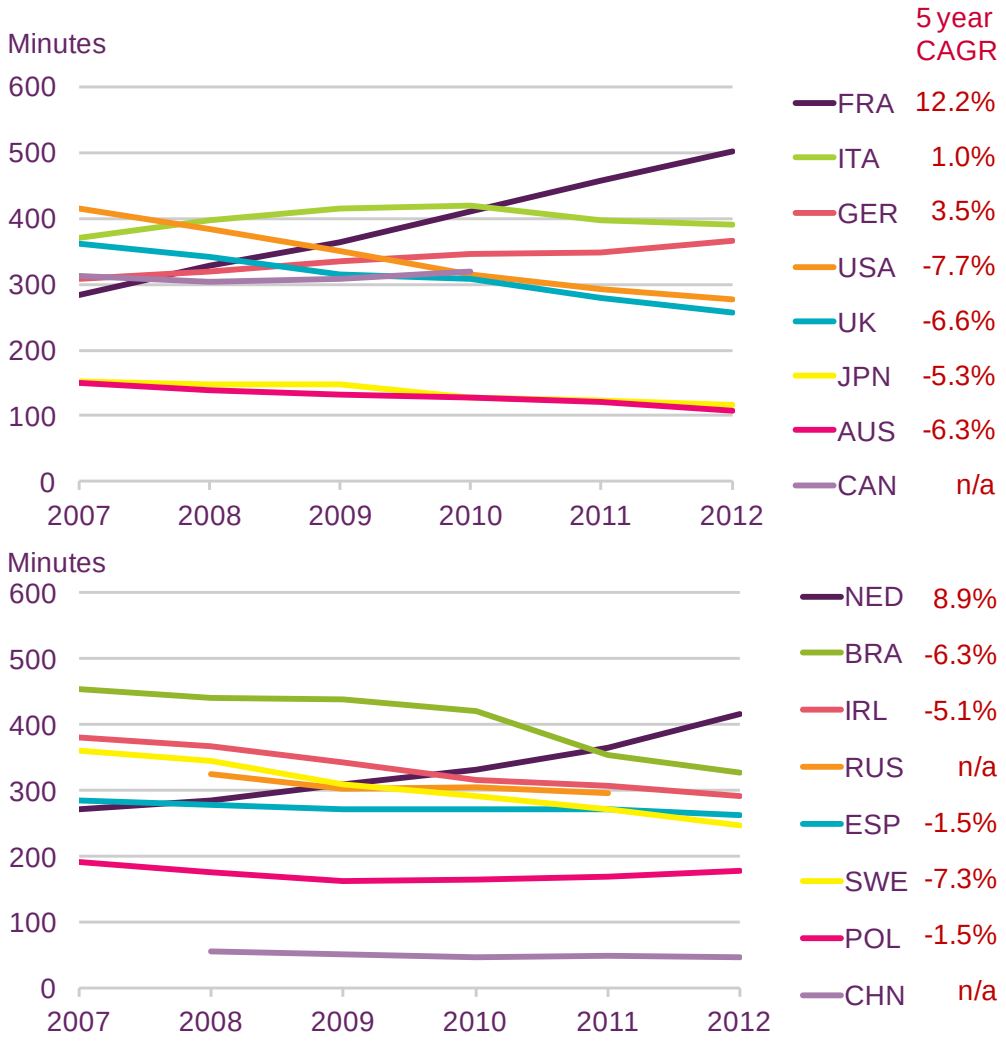
The US had the largest fall in outgoing voice call minutes per fixed line in the five years to 2012

Across the comparator countries for which data were available, the total number of outbound voice call minutes per fixed line fell by an average of 3.2% a year, to 262 minutes per month between 2007 and 2012 (Figure 6.21). It should be noted that the call volume data used to

calculate the figures below includes VoIP call volumes, whereas the fixed-line data excludes VoIP connections. As such, the call volumes per fixed line will be overstated in countries where VoIP services are available over naked DSL, fibre or cable broadband connections (such as France and the Netherlands) as these services generate call volumes, but do not include a traditional landline. Largely as a result of its high take-up of VoIP over broadband without a fixed line, France had the highest number of average call minutes per fixed line, at 502 minutes a month in 2012, more than ten times the 48 minutes per month in China, where average use per line was the lowest among our comparator nations.

Between 2007 and 2012 there were increases in average call volumes per fixed line in France (up by an average of 12.2% a year), the Netherlands (8.9% a year), Germany (3.5% a year) and Italy (1.0% a year). In France and the Netherlands this was due to increasing VoIP traffic and a fall in the number of traditional fixed lines, while in Germany a key driver of increasing use per line was growth in business call volumes. In the UK the average number of outgoing minutes per line fell from 361 minutes per month to 257 minutes per month in the five years to 2012, an average of 6.6% a year. Falling average use in the UK can be explained by growing fixed-to-mobile substitution and resilience in the number of fixed lines, which is partly because most UK homes need to have a fixed line in order to be able to access fixed broadband services (Figure 6.34).

Figure 6.21 Monthly outbound minutes per fixed line: 2007 to 2012



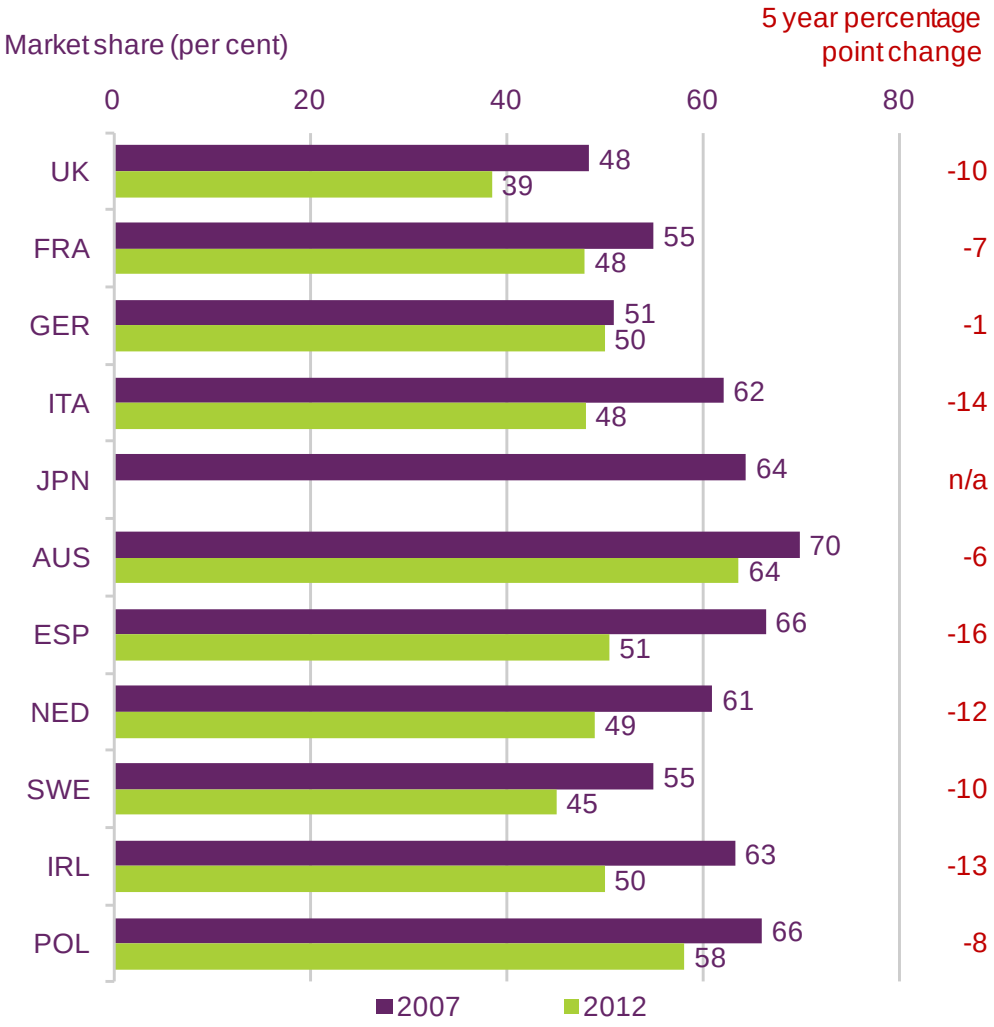
Source: IDATE / industry data / Ofcom
Note: Figures for USA and CAN exclude local and VoIP calls and include incoming mobile calls

BT's share of fixed voice call volumes was the lowest among the incumbent operators in our comparator countries in 2012

Across most of the comparator countries for which data were available, there were significant declines in the incumbent provider's share of fixed voice call volumes in the five years to 2012 (Figure 6.22). These falls ranged from a one percentage point drop in Deutsche Telekom's share of fixed voice call volumes in Germany (partly due to it offering its customers additional call packages in order to secure customer loyalty) to a 16 percentage point fall in Telefónica's share in Spain, where overall traffic has declined and this decline has been especially pronounced for Telefónica.

In the UK, BT's share of fixed-line voice call volumes decreased by ten percentage points to 39% between 2007 and 2012, with its share being the lowest among the incumbent operators in our comparator countries. The fall in BT's share of fixed call volumes is largely due to high levels of take-up of full-LLU-based fixed voice services, such as those offered by Sky and TalkTalk. Despite experiencing a six percentage point fall in its share of fixed voice call volumes between 2007 and 2012, Australia's incumbent operator, Telstra, had the highest share of fixed voice call volumes among the comparator countries for which we had data, at 64%. This was largely due to there being a lack of competition in the fixed-services sector until 1997, when Australia's telecommunications market was formally opened up to full competition.

Figure 6.22 Incumbent operator's share of fixed voice call volumes: 2007 and 2012



Source: IDATE / industry data / Ofcom

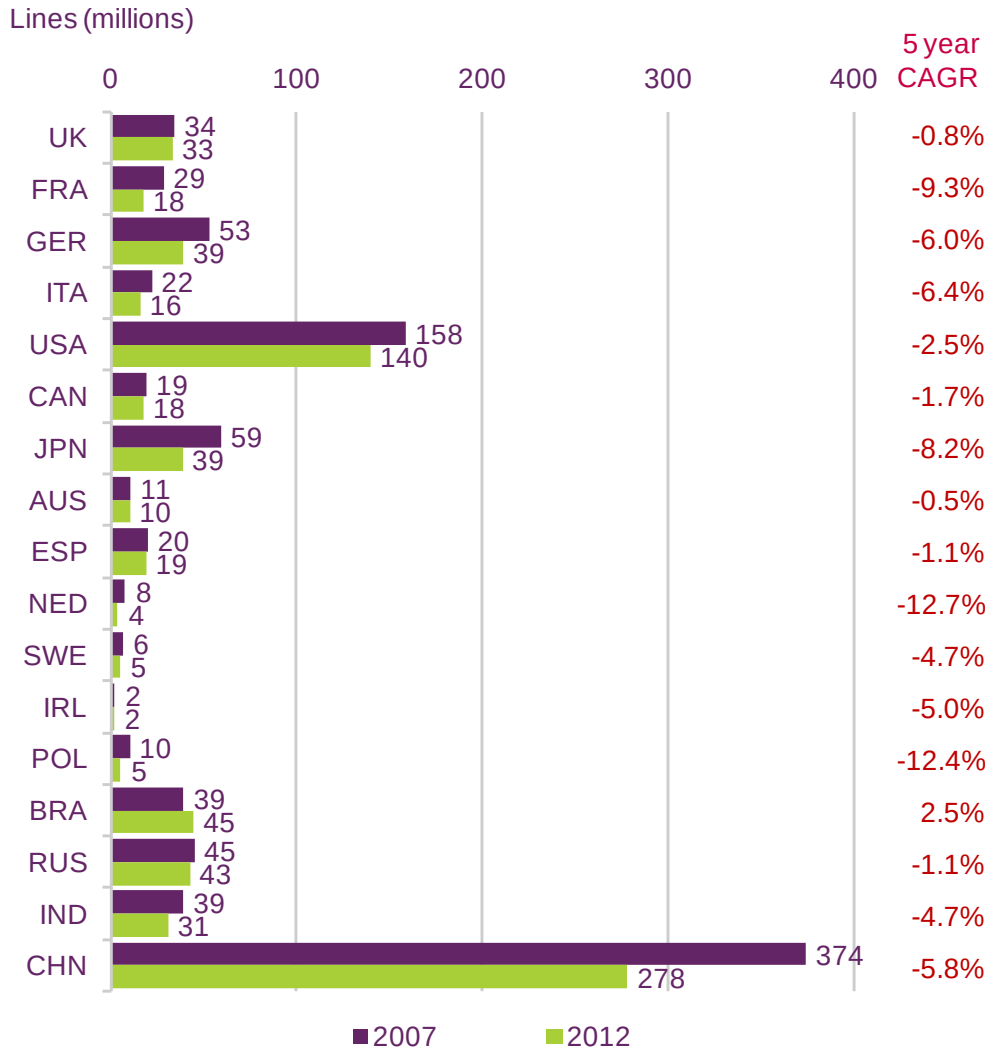
Brazil was the only comparator country where the number of fixed lines increased between 2007 and 2012

The total number of fixed exchange lines across our comparator countries fell by 20.1% to 743 million between 2007 and 2012 (Figure 6.23). Brazil was the only country which saw an increase in the number of fixed lines over this period, up by an average of 2.5% a year to 45 million exchange lines as a result of growth in the availability of fixed voice services (as a result of the deployment of fixed wireless networks),[74] along with its growing economy, falling prices and an increase in the number of households.

The fastest annual rate of decline in fixed exchange lines among our comparator countries was in the Netherlands, at 12.7%, followed by Poland at 12.4%, between 2007 and 2012. In both cases, these falls were partly a result of increasing levels of fixed-to-mobile substitution, although in the Netherlands the switch to VoIP-based fixed voice services provided over stand-alone cable broadband connections was also a contributory factor. In the UK, the number of fixed lines fell by one million to 33 million in the five years to 2012, an average annual fall of 0.8%. The fall in the number of fixed lines in the UK was largely due to a decline in the number of business lines.

[74] Fixed wireless networks use a wireless link rather than physical wiring to provide fixed voice and data services. The benefit of fixed wireless networks is that using wireless technology over the last mile makes network deployment much cheaper, as it is not necessary to run wiring to each customer's premises.

Figure 6.23 Fixed exchange lines: 2007 and 2012



Source: IDATE / industry data / Ofcom

6.2.3 Fixed broadband services

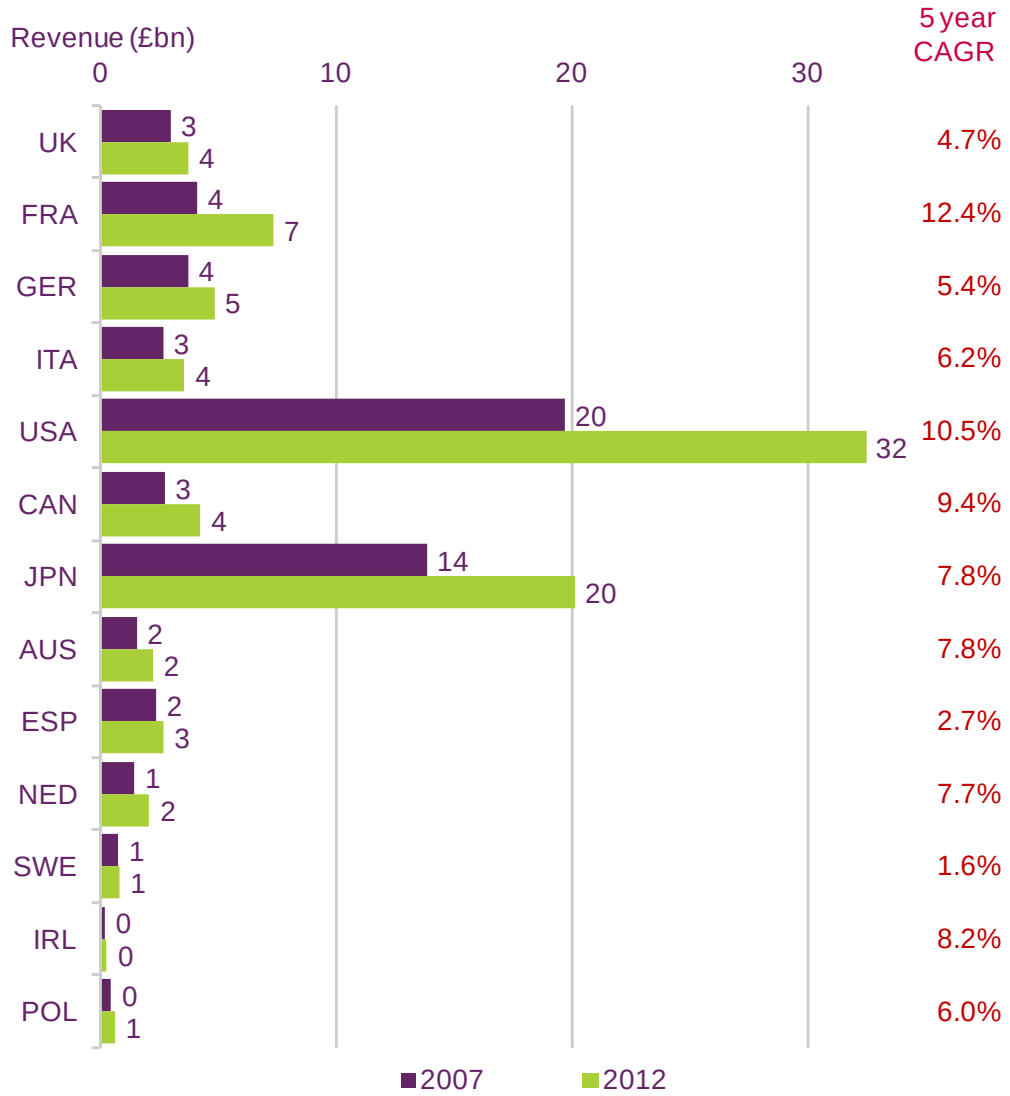
UK fixed broadband revenues grew by an average of 4.7% a year in the five years to 2012

Total fixed broadband revenues in the 13 comparator countries for which we have data increased by an annual average rate of 8.6% to £85bn in the five years to 2012 (Figure 6.24). France had the fastest average annual increase in fixed broadband revenues during this period, at 12.4%, partly as a result of a 52% increase in the number of fixed broadband connections; from 15.8 to 24.0 million during the period, but also because revenue data for France includes revenues relating to VoIP-based fixed voice and IPTV services, which are bundled with fixed broadband services.

Among the other comparator countries for which we had data, the lowest annual average fixed broadband revenue growth rates were in Sweden (where the fixed broadband market was already relatively mature in 2007), at 1.6%, and in Spain (where the average revenue per fixed broadband connection fell by a quarter over the period), at 2.7%. UK fixed broadband revenues increased at an average annual growth rate of 4.7% over the five-year period to 2012, the third-lowest growth among our comparator nations. The relatively low

increase in revenue growth in the UK over the period can be explained by falling prices (the average revenue per connection fell by 15% over this period).

Figure 6.24 Fixed broadband revenues: 2007 and 2012



Source: IDATE / industry data / Ofcom

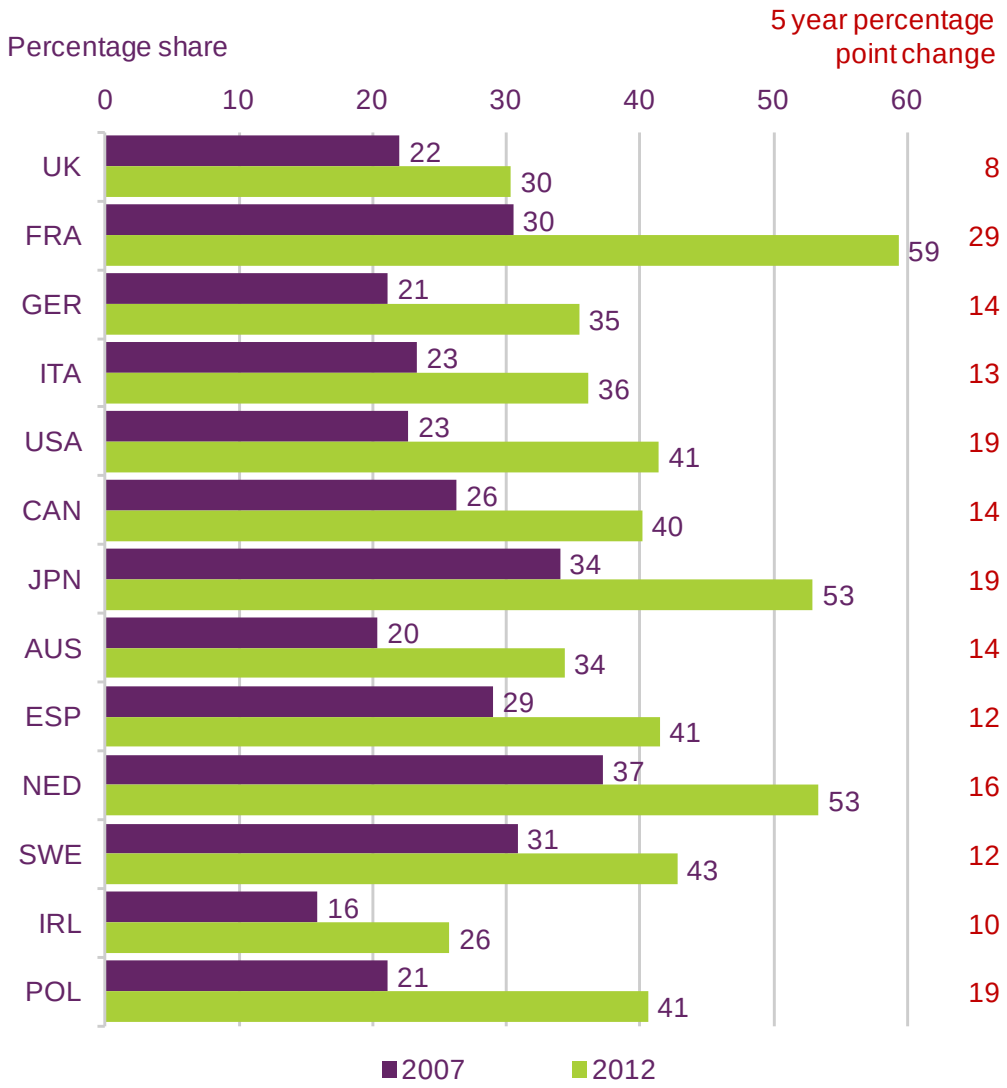
Fixed broadband revenues accounted for 30% of total UK fixed telecoms revenues in 2012

Broadband revenues accounted for 43% of total fixed telecoms revenues in 2012 across our non-BRIC comparator countries, up from 26% in 2007 (Figure 6.25). The proportion of total fixed telecoms revenues generated by fixed broadband services ranged from 26% in Ireland to 53% in Japan and the Netherlands and 59% in France (where, as mentioned previously, the figures are not directly comparable, as fixed broadband revenue data also include revenues from bundled VoIP and IPTV services). Fixed broadband tended to account for a higher proportion of fixed telecoms revenue in countries where naked DSL is available (such as France and the Netherlands), as consumers in these countries are able to purchase broadband services without needing to have a fixed line.

The UK had the second-lowest proportion of fixed telecoms revenue from fixed broadband services among our comparator countries in 2012, at 30%; it was low because the UK has low fixed broadband prices. Declining fixed broadband prices meant that the UK also had the

smallest increase in this proportion among our comparator countries in the five years to 2012, up just eight percentage points compared to increases of 19 percentage points in the US, Japan and Poland and 29 percentage points in France, where the largest increases among our comparator countries were found.

Figure 6.25 Fixed broadband as a proportion of total fixed revenues: 2007 to 2012



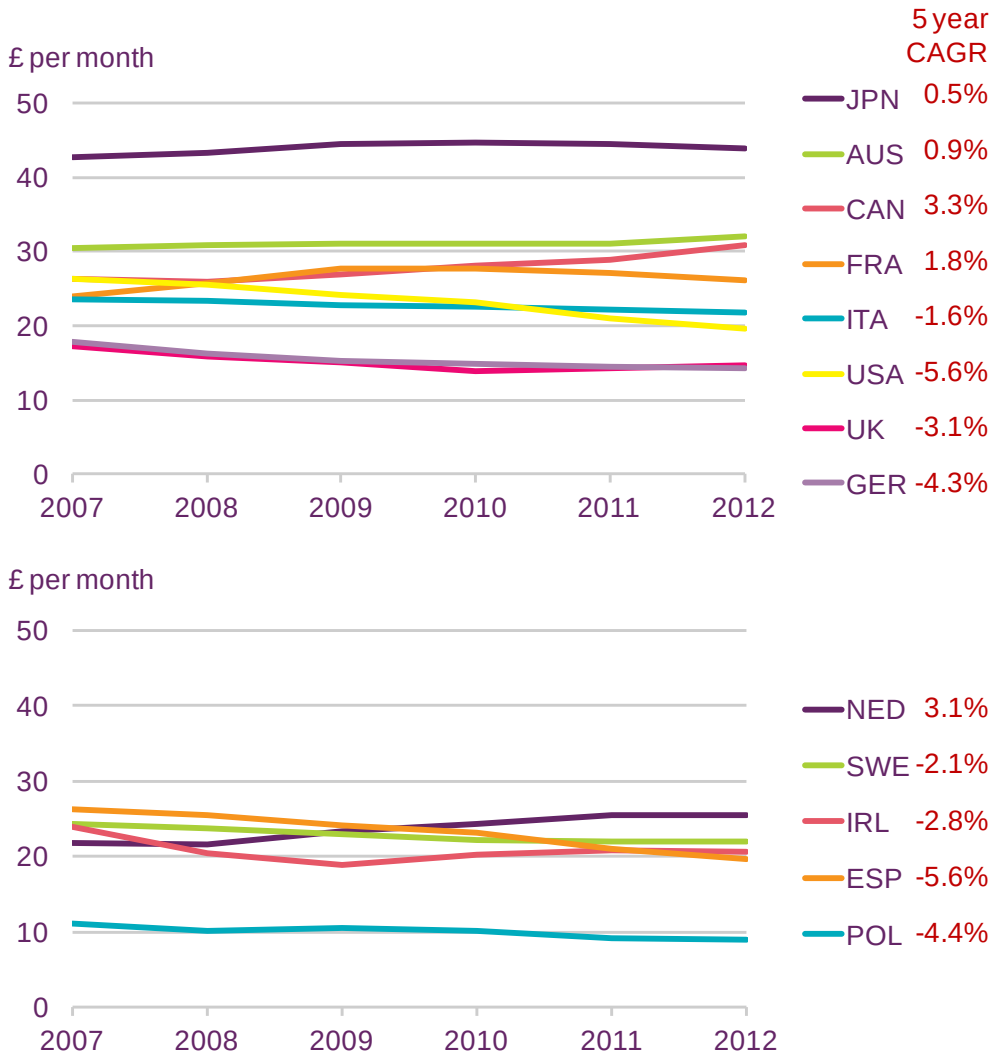
Source: IDATE / industry data / Ofcom
Note: FRA fixed broadband revenue include revenue from bundled VoIP and IPTV services

Average revenue per fixed broadband connection increased by an average of 3.1% a year in the UK between 2007 and 2012

Falling fixed broadband prices meant that average revenue per fixed broadband connection fell in most of our comparator countries between 2007 and 2012 (Figure 6.26). Among the five comparator countries where average revenue per connection increased during this period, Canada saw the highest average annual growth rate in retail broadband revenue per connection (3.3%) as a result of increased adoption of higher-bandwidth connections and the existence of tiered fixed broadband pricing based on bandwidth and use, followed by the Netherlands at 3.1%. Conversely, over the same period, the highest average annual rates of decline in average revenue per fixed broadband connection were in the US and Spain (both at 5.6% a year). In the UK, average revenue per connection fell by an average of 3.1% a year to £15 per month in the five years to 2012, although it has been increasing since 2010,

partly as a result of growth in the take-up of superfast broadband services (further information on superfast broadband services can be found in section 6.1.3 of this report).

Figure 6.26 Retail fixed broadband average revenue per connection: 2007 to 2012

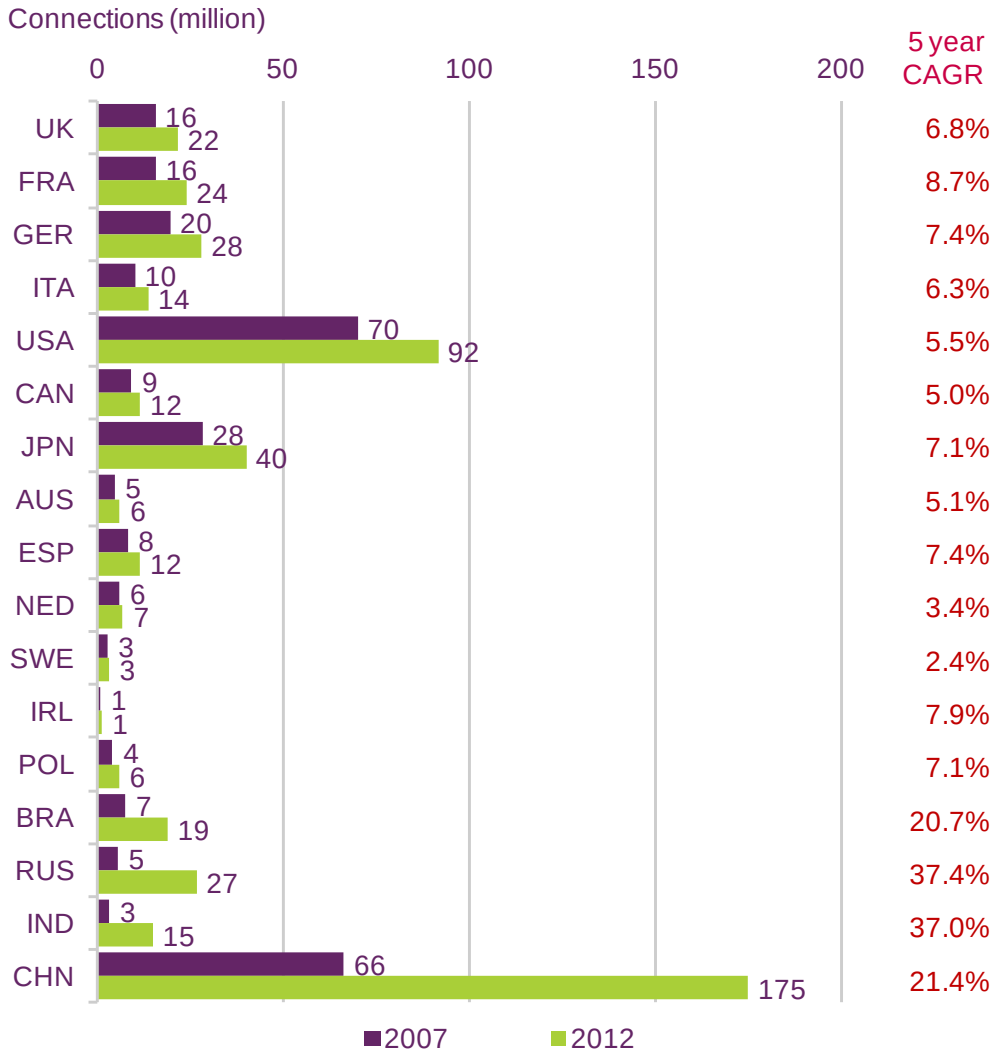


IDATE / industry data / Ofcom

The BRIC countries experienced the highest growth rates in fixed broadband connections in the five years to 2012

There were a total of 500 million fixed broadband connections across our comparator countries at the end of 2012, an increase of 223 million connections (80.7%) compared to five years previously (Figure 6.27). The average annual rate of growth in fixed broadband connections was highest in the BRIC countries in the five years to 2012, where it ranged from 20.7% in Brazil to 37.4% in Russia. The large increases in the number of fixed broadband connections among the BRIC countries are partly the result of a 'catch-up' effect, as fixed broadband penetration is much lower than in most of our other comparator countries. Among our non-BRIC countries, the highest average annual rate of growth in the number of fixed broadband connections between 2007 and 2012 was in France (8.7%), while the lowest was in Sweden (2.4%). In the UK, the total number of fixed broadband connections increased by six million to 22 million in the five years to 2012, an average annual growth rate of 6.8%).

Figure 6.27 Fixed broadband connections: 2007 to 2012



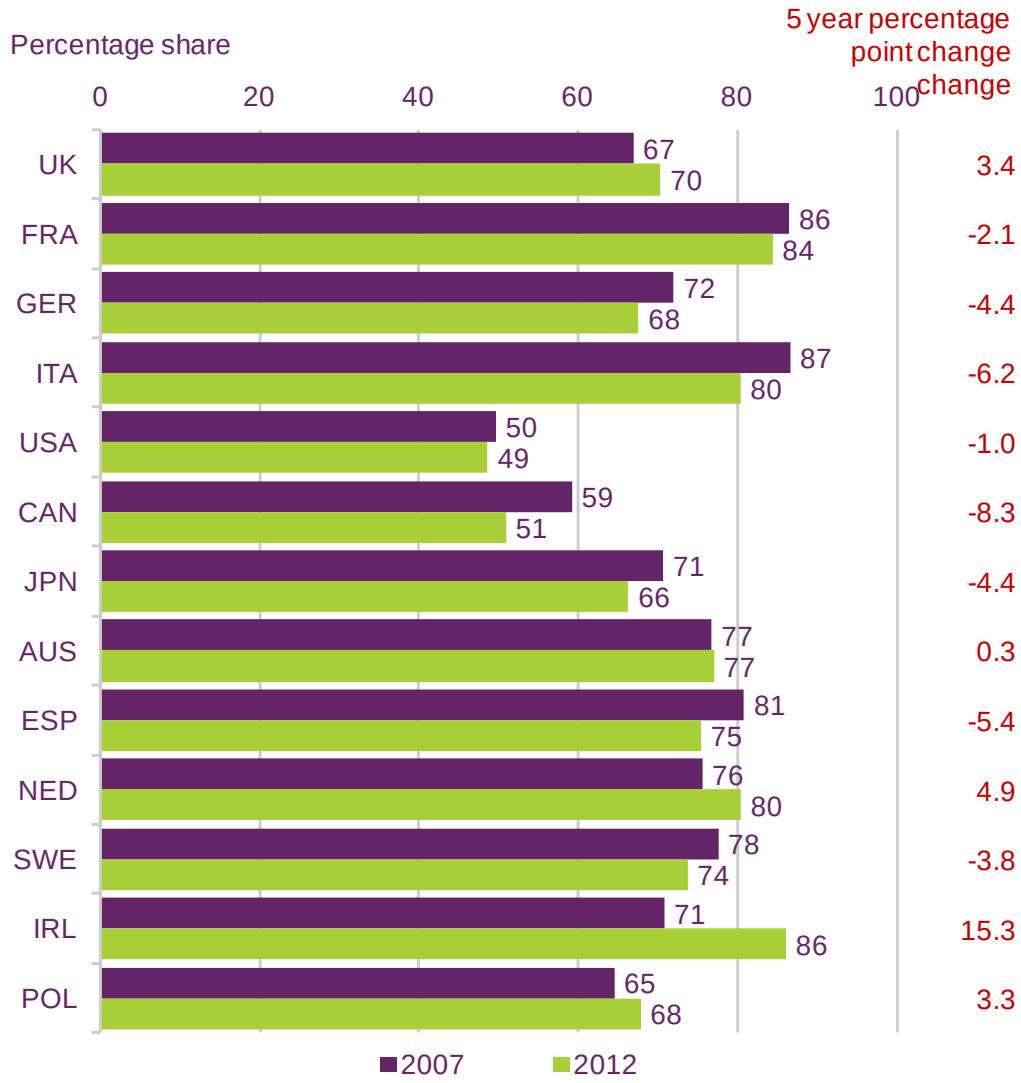
Source: IDATE / industry data / Ofcom

Ireland had the most concentrated fixed broadband market in 2012

The average combined retail connection share of the three largest broadband providers across the 13 comparator countries for which figures were available decreased by one percentage point to 64% in 2012, suggesting that retail broadband markets are becoming more competitive (Figure 6.28). Ireland had the most concentrated broadband market among our comparator countries in 2012, with its three largest ISPs (Eircom, UPC and Vodafone Ireland) having a combined share of fixed broadband connections of 86% in 2012. While Ireland's three largest ISPs had the highest fixed broadband connection share among our comparator countries in 2012, Japan's had the lowest combined share (apart from the US and Canada, where the existence of a large number of local infrastructure providers means the market share of the three largest providers is a less useful metric), at 66%.

Italy saw the largest decline in the retail connection share of the nation's three largest fixed broadband providers (Telecom Italia, Wind and FastWeb) in the five years to 2012, a fall of 6.2 percentage points to 80%; partly due to Vodafone having entered the market and gained a significant share of the market at the expense of Telecom Italia. In the UK, the connection share of the three largest fixed broadband providers was 70% at the end of 2012, a 3.4 percentage point increase compared to five years previously.

Figure 6.28 Retail connection share of the three largest fixed broadband providers: 2007 to 2012



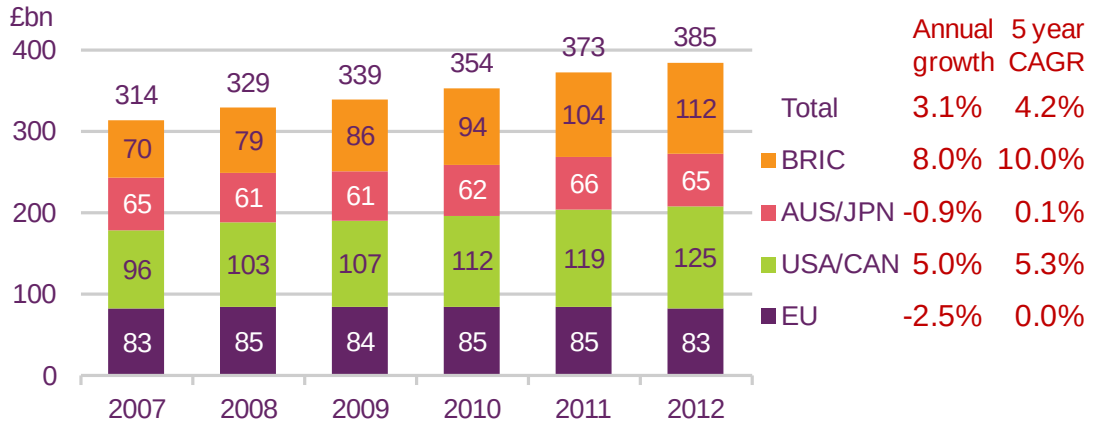
Source: IDATE / industry data / Ofcom

6.2.4 Mobile voice and data services

Total comparator country mobile revenues increased by 3.1% in 2012

Total retail mobile revenues generated in our comparator countries increased by £11bn (3.1%) to £385bn in 2012 (Figure 6.29). This increase was lower than both the 5.5% revenue growth recorded in 2011 and the 4.2% average between 2007 and 2012, suggesting that growth is slowing as markets mature. The main drivers of increasing mobile revenue in 2012 were an £8bn (8.0%) increase in mobile revenues in the BRIC countries, as the result of a 119 million (5.1%) increase in the number of mobile subscribers during the year, and a £6bn (5.0%) increase in the US/Canada, which was driven by increasing mobile internet revenues. Total mobile revenues fell among our EU comparator countries and in Australia and Japan in 2012, with the rate of decline being higher in the EU (down 2.5% or £2bn) than in Australia/Japan (down 0.9% or (£1bn). In both cases, the decline in revenues was as a result of falling prices, as the number of mobile connections, mobile internet revenues and volumes of outgoing calls and mobile messages all increased during the year.

Figure 6.29 Total comparator country retail mobile telecoms revenue, by country type: 2007 to 2012



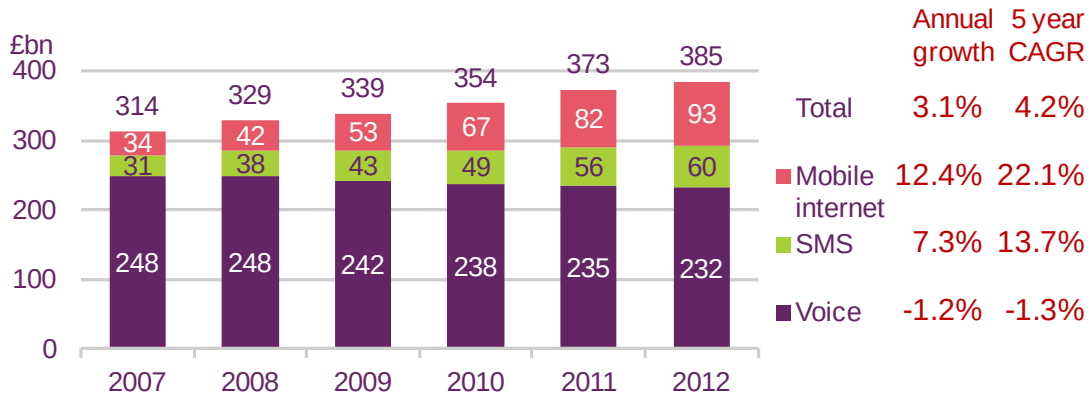
Source: IDATE / industry data / Ofcom

Mobile internet services generated a quarter of total mobile revenues in 2012

Mobile internet revenues increased by 12.4% to £93bn in 2012 as a result of increasing mobile broadband use and mobile data use on mobile handsets, in particular smartphones (as previously, mobile data revenues will be understated as revenues from monthly access fees, which frequently include an inclusive data allowance, are classed as being voice revenue in our data). Mobile internet services (which exclude mobile messaging services) generated just under a quarter (24%) of total mobile revenues in 2012, up from 22% in 2011 and just 11% in 2007 (Figure 6.30).

Total mobile voice revenues fell for the fourth successive year in 2012, down by 1.2% to £232bn as a result of falling prices (total mobile-originated voice call minutes increased by 17.3% to 12.2 trillion minutes during the year). SMS revenues increased during the year (by 7.3% to £60bn), although it is likely that this increase is because the SMS revenue figures below include mobile internet data for the BRIC countries (as total outgoing SMS message volumes in our comparator countries fell during the year). Overall, mobile data services (which include SMS and mobile internet) accounted for 39.6% of total retail mobile revenues in 2012, a 2.6 percentage point increase compared to 2011 and almost double the 2007 figure (20.9%).

Figure 6.30 Total comparator country retail mobile telecoms revenue, by sector: 2007 to 2012



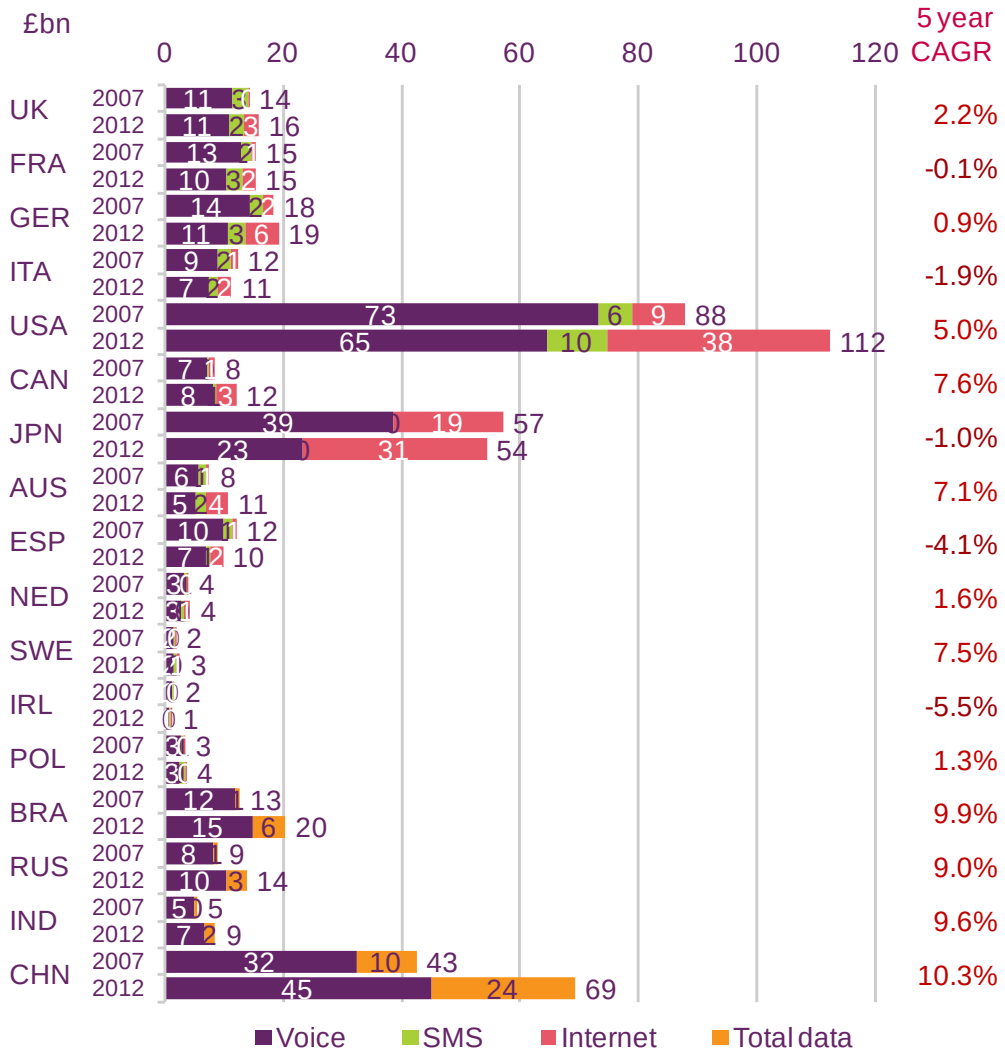
Source: IDATE / industry data / Ofcom

Sweden had the highest average mobile revenue growth between 2007 and 2012

Total retail mobile revenues among our comparator countries ranged from less than £1bn in Ireland to £112bn in the US in 2012. Revenues increased in all but five comparator countries between 2007 and 2012, the exceptions being France, Italy, Japan, Spain and Ireland, where declining revenues were due to falling prices (Figure 6.31). Canada had the highest average annual mobile revenue growth outside the BRIC countries during the five-year period, at 7.6%, due to growth in the number of mobile connections and increasing revenues from both mobile voice and data services, including mobile broadband. Mobile services generated £16bn of revenue in the UK in 2012, with the average revenue increase in the previous five-year period having been less than a third that in Canada, at 2.2% a year.

There were significant revenue shifts in some of our comparator countries in 2012, with mobile revenues falling by 10.4% in Spain and increasing by 10.5% in Brazil during the year. The main driver of falling mobile revenues in Spain is likely to have been consumers changing their spending habits in response to the economic downturn, while in Brazil increasing revenues were largely due to a 75% increase in mobile data revenue in 2012. Revenue growth in the UK was 2.8% during the year, with data revenue growth (5.1%) being higher than voice revenue growth (1.8%).

Figure 6.31 Retail mobile revenues, by service and country: 2007 and 2012

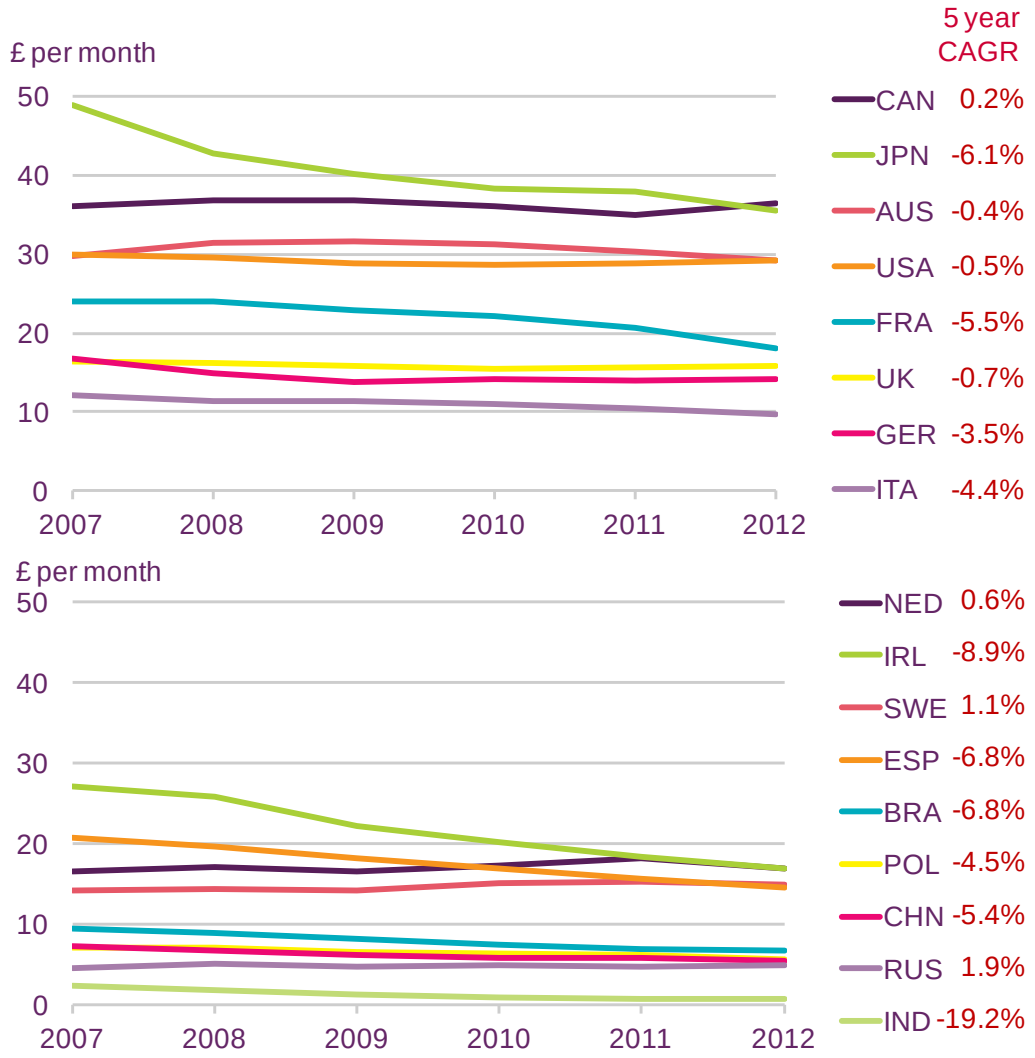


Source: IDATE / industry data / Ofcom

Canada had the highest average revenue per mobile connection in 2012

Average monthly retail revenue per mobile connection in Canada (£36.40) overtook that in Japan (£35.57) to become the highest average spend among our comparator countries in 2012 (Figure 6.32). Average revenue per connection increased by 4.0% in Canada during the year as a result of an 7.2% increase in average mobile data spend per connection, combined with a 2.5% increase in mobile voice revenues per connection, while average revenue per connection fell by 6.0% in Japan during the year. In the UK, the average revenue per mobile connection was £15.90 in 2012. This was the eighth highest value across our comparator countries that year, and 1.8% higher than in 2011. Other than Canada and the UK, the only other comparator countries where average spend per connection increased in 2012 were Germany, the US and India.

Figure 6.32 Average monthly revenue per mobile connection: 2007 to 2012



Source: IDATE / industry data / Ofcom

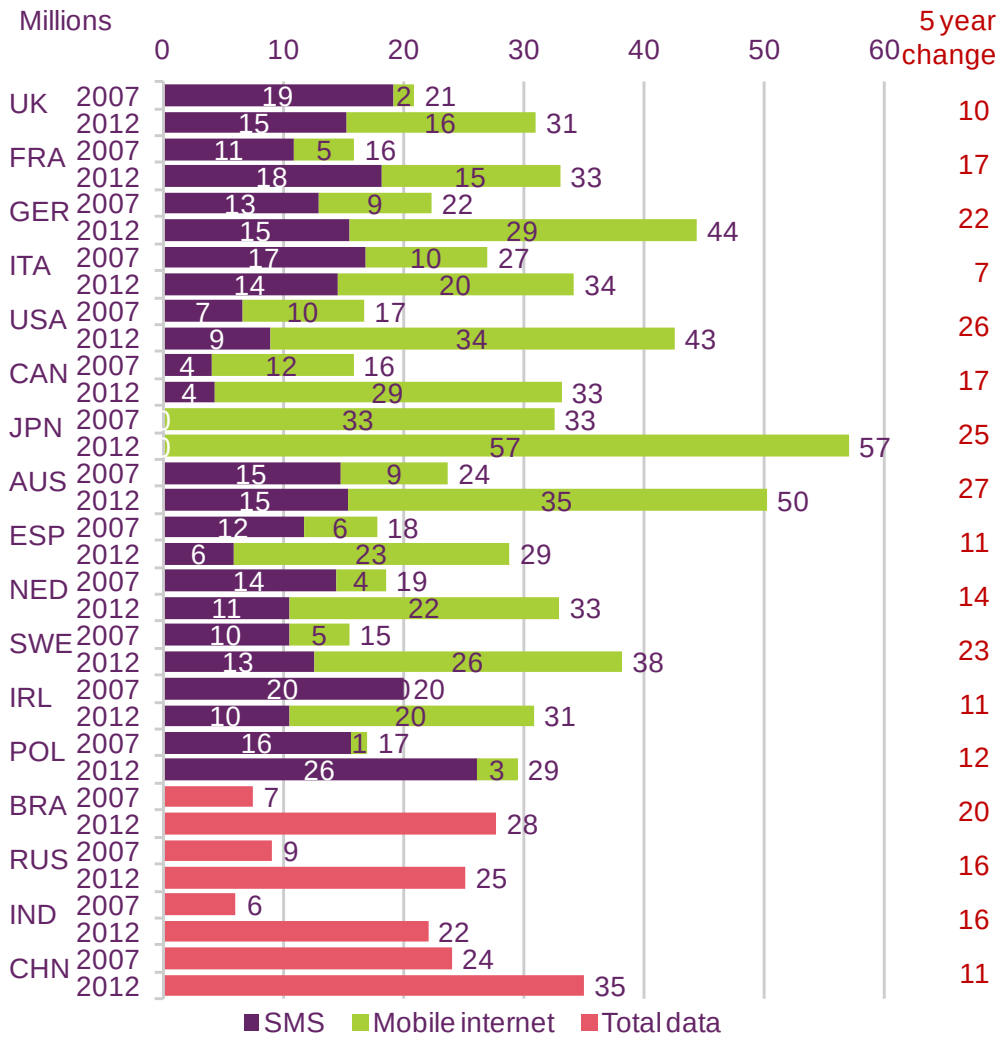
Data services contributed 31% of total UK mobile revenues in 2013

In the five years to 2012, the proportion of mobile revenues generated by mobile data services (which here include mobile internet and mobile messaging, including SMS) increased by 19 percentage points to 40% among the comparator countries for which we have figures (Figure 6.33). The figures below are likely to be understated as they exclude revenues from inclusive SMS and data allowances that are frequently bundled with monthly line rental fees.

Japan and Australia were the only comparator countries where mobile internet services contributed over half of mobile revenue in 2012 (at 57.0% and 50.2% respectively). In Japan, this was as a result of mobile data services having been established for some time, with NTT DoCoMo having launched i-mode mobile data services in 2000, while in Australia mobile broadband take-up is very high (see Figure 6.39). Conversely, data services contributed the lowest proportion of mobile revenue in India in 2012, at 22.0%. The largest increase in the proportion of mobile revenues generated by data services across all our comparator countries in the five years to 2012 was in Australia (up by 27 percentage points), followed by the US (an increase of 26 percentage points 43%). The smallest percentage growth was in

Italy, at seven percentage points, three percentage points lower than the ten percentage point increase recorded in the UK.

Figure 6.33 Data as a proportion of total mobile service revenues: 2007 and 2012



Source: IDATE / industry data / Ofcom
Note: Excludes SMS revenues. CHN, USA and CAN data for total mobile service revenues includes revenues from incoming calls

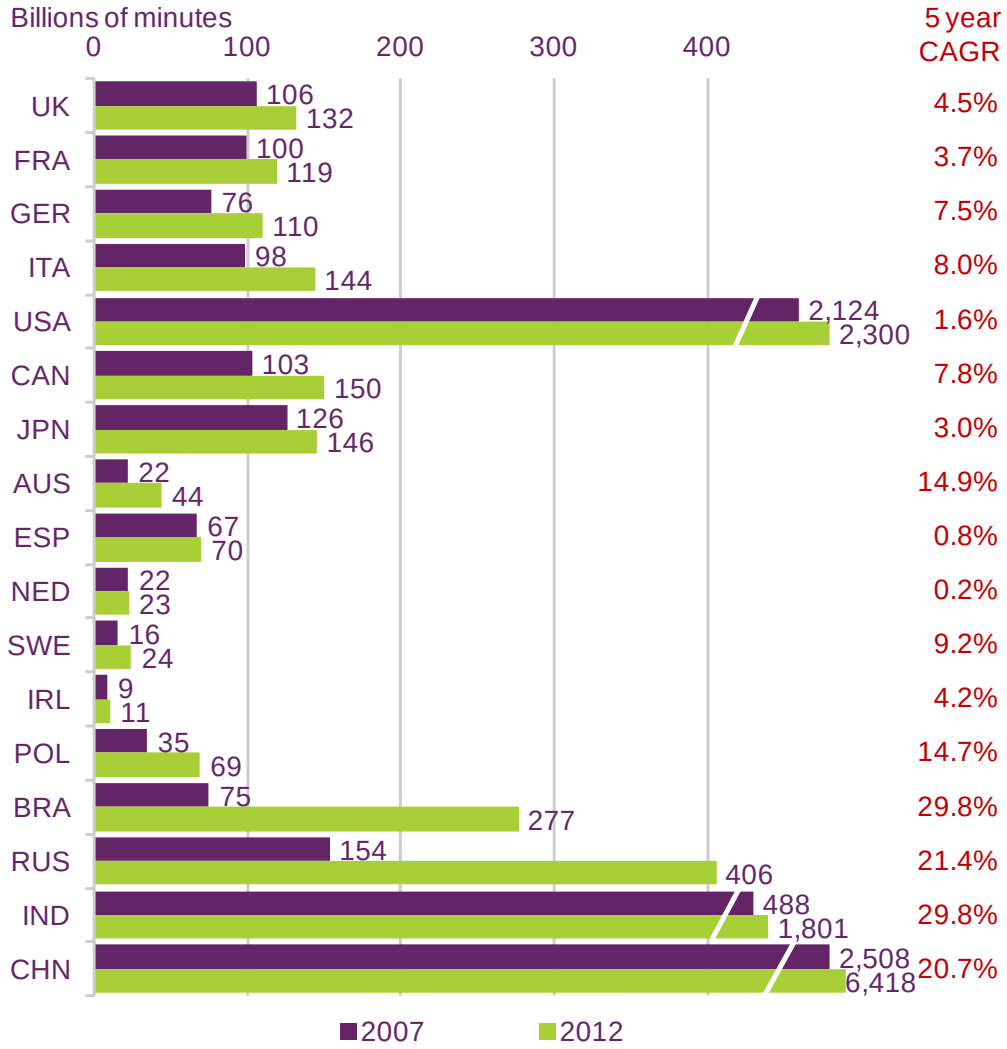
Mobile voice call volumes increased by 0.5% in the UK in 2012

Mobile voice volumes increased by 0.5% in the UK in 2012, a faster rate than the 0.2% increase recorded in 2011 (Figure 6.34). The largest decline in mobile voice call volumes was in Spain in 2012, a 2.9% fall to 70 billion minutes, which can be partly attributed to the economic situation there. In contrast, a number of non-BRIC countries showed substantial mobile call volume growth in 2012, the largest increases being in France (12.9%) and Australia (16.8%), both of which were higher than these countries' respective average annual growth rates between 2007 and 2012. It is unexpected to see such large increases in call volumes in mature telecommunications markets; however, other non-BRIC comparator countries such as Poland (8.2%), Canada (6.9%) and Italy (6.1%) also showed strong growth in mobile voice call volumes during the year.

Among the BRIC countries, mobile call volumes continued to increase rapidly, driven by increasing numbers of mobile connections. China experienced the highest growth, with an

increase of 28.3% in 2012, followed by Brazil (19.1%), India (16.2%) and Russia (13.5%). Apart from China, the rate at which mobile voice call volumes are growing is beginning to slow in the BRIC countries, with Brazil, Russia and India's mobile call volume growth rates in 2012 being lower than their average rates between 2007 and 2012.

Figure 6.34 Mobile voice call volumes: 2007 and 2012



Source: IDATE / industry data / Ofcom
Note: Figures for USA, CAN and CHN include incoming calls

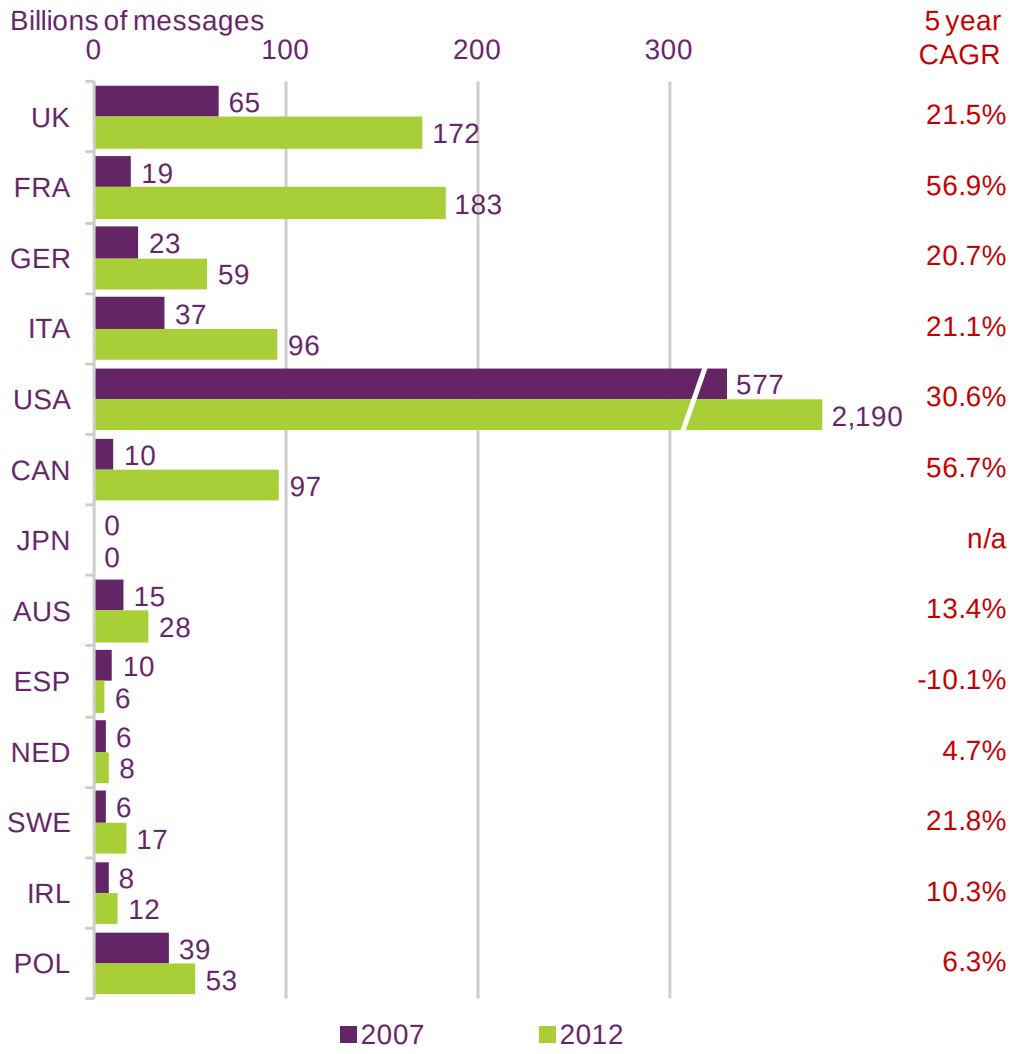
Mobile messaging volumes fell in the US, Sweden, Spain and the Netherlands in 2012

In most comparator countries, either mobile messaging volume growth is slowing, or message volumes are falling (Figure 6.35). Spain was the only comparator country where messaging volumes declined in the five years between 2007 and 2012, falling by an average of 10.1% a year over this period; SMS is relatively unattractive to consumers in Spain because prices are high (the average price of an SMS message in Spain in 2012 was 10.3 pence, compared to an average of 2.0 pence across all of our EU comparator countries). There were year-on-year declines in mobile messaging volumes in the US, Sweden, Spain and the Netherlands in 2012, with total message volumes falling by 4.9% in the US, 10.9% in Sweden, 24.6% in Spain and by 28.9% in the Netherlands.

But in other countries there was strong messaging volume growth: Canada saw a huge increase in mobile messaging, with volumes increasing from ten billion messages to 97

billion in the five years to 2012, an average annual growth rate of 56.7%, while message volumes in France increased at a compound average annual growth rate of 56.9% over the same period, the highest of any comparator country, as a result of the introduction of low-cost tariffs offering a large number of, or unlimited, inclusive messages. However, message volume growth is slowing (or the volume of outgoing messages is falling) in all of our comparator countries, as increasing smartphone take-up means that more mobile users now have access to alternatives to traditional mobile messaging, such as email and instant messaging (see Figure 6.58).

Figure 6.35 Mobile messaging volumes: 2007 and 2012



Source: IDATE / industry data / Ofcom
Note: Includes SMS and MMS messages. MMS messaging volume figures were not available for Italy, Australia and the Netherlands. Figures for the US include other forms of mobile text messaging than SMS and are not directly comparable to those for the other comparator countries.

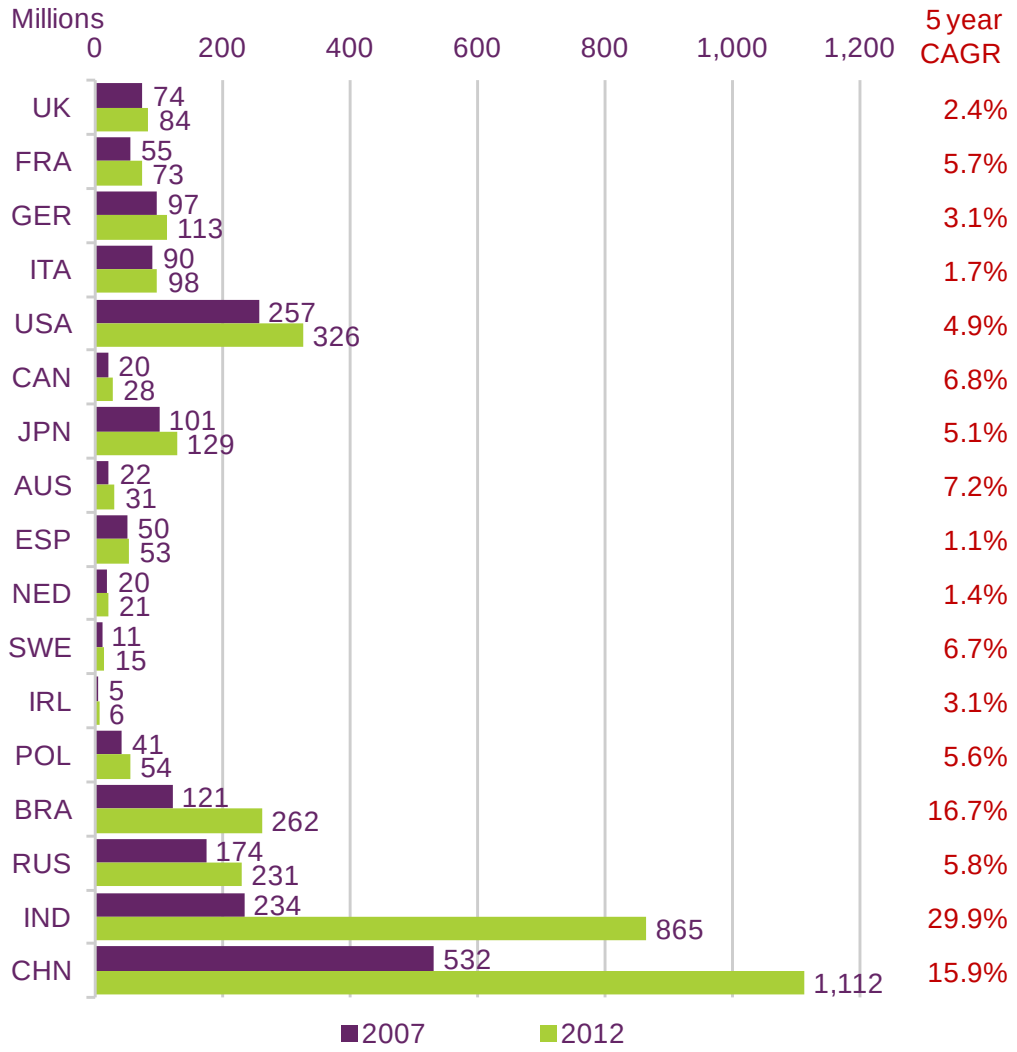
The number of mobile connections more than doubled in China between 2007 and 2012

Growth in the number of mobile connections has slowed in many comparator countries over recent years, as markets have reached maturity. In mature markets, increasing numbers of mobile connections per person has driven growth, whereas in markets that are less mature (such as those in the BRIC countries) growth is mainly a result of an increase in the number of people using mobile services. In our non-BRIC comparator countries, the average mobile

connection growth between 2007 and 2012 averaged 4.1%, with UK growing by an average of 2.4% a year, the fourth lowest rate among our comparator countries after Spain (1.1%), the Netherlands (1.4%) and Italy (1.7%).

Among the BRIC countries, the annual average growth rate over the same period was 18.4%, with China doubling its number of mobile connections from 532 million to 1.1 billion (a compound annual growth rate of 15.9%) between 2007 and 2012 (Figure 6.36). However, the rate of subscriber growth is slowing in the BRIC countries, and in India there was a 3.3% decrease in the number of mobile connections in 2012 as a result of mobile providers de-activating inactive or very low usage the SIMs. In Brazil, Russia and China mobile subscriber growth rates in 2012 were all below their respective five-year compound annual growth rates, suggesting that the mobile markets in these countries may be approaching maturity.

Figure 6.36 Mobile connections: 2007 and 2012



Source: IDATE / industry data / Ofcom

The proportion of mobile connections that are post-pay increased in most of our comparator countries in 2012

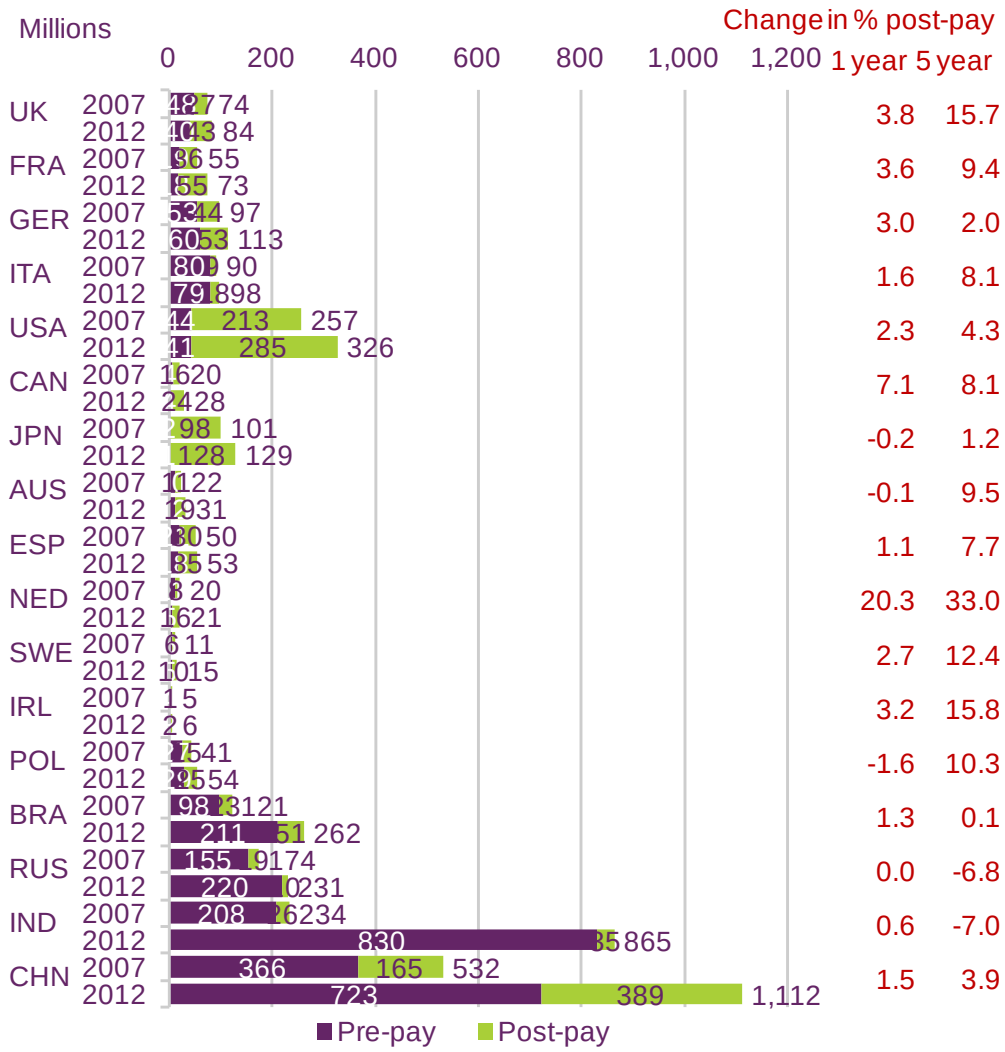
Where growth in the number of mobile connections is low, operators may aim to increase revenues per user by migrating customers onto monthly contracts, which are likely to increase customer lifetime value by encouraging higher usage and reducing churn. The proportion of mobile subscribers with post-pay (monthly) contracts, rather than pre-pay (pay-

as-you-go) connections, grew in all of our comparator countries except Poland, Japan and Australia in 2012 (Figure 6.37).

The UK was one of nine comparator countries (along with France, the US, Canada, Japan, Australia, Spain, the Netherlands and Sweden) where there were more post-pay connections than pre-pay connections at the end of 2012. In the UK, the proportion of mobile connections that are post-pay has increased since 2007, and at the end of 2012 there were more post-pay mobile connections (43 million) than pre-pay connections (40 million), the first time this had been the case in over a decade.

The proportion of total connections that were post-pay increased in all but two of our comparator countries between 2007 and 2012. In India it fell by 7.0 percentage points, and Russia it was down 6.8 percentage points. In developing markets such as these, consumers may prefer to take pre-pay mobile services as they give them more flexibility due to the lack of an ongoing financial obligation. Conversely, the largest increase in the proportion of connections that were post-pay in the five years to 2012 was a 33.0 percentage point increase, to 75%, in the Netherlands (in the UK the increase over the same period was 15.7 percentage points, to 52%).

Figure 6.37 Mobile connections, by type: 2007 and 2012



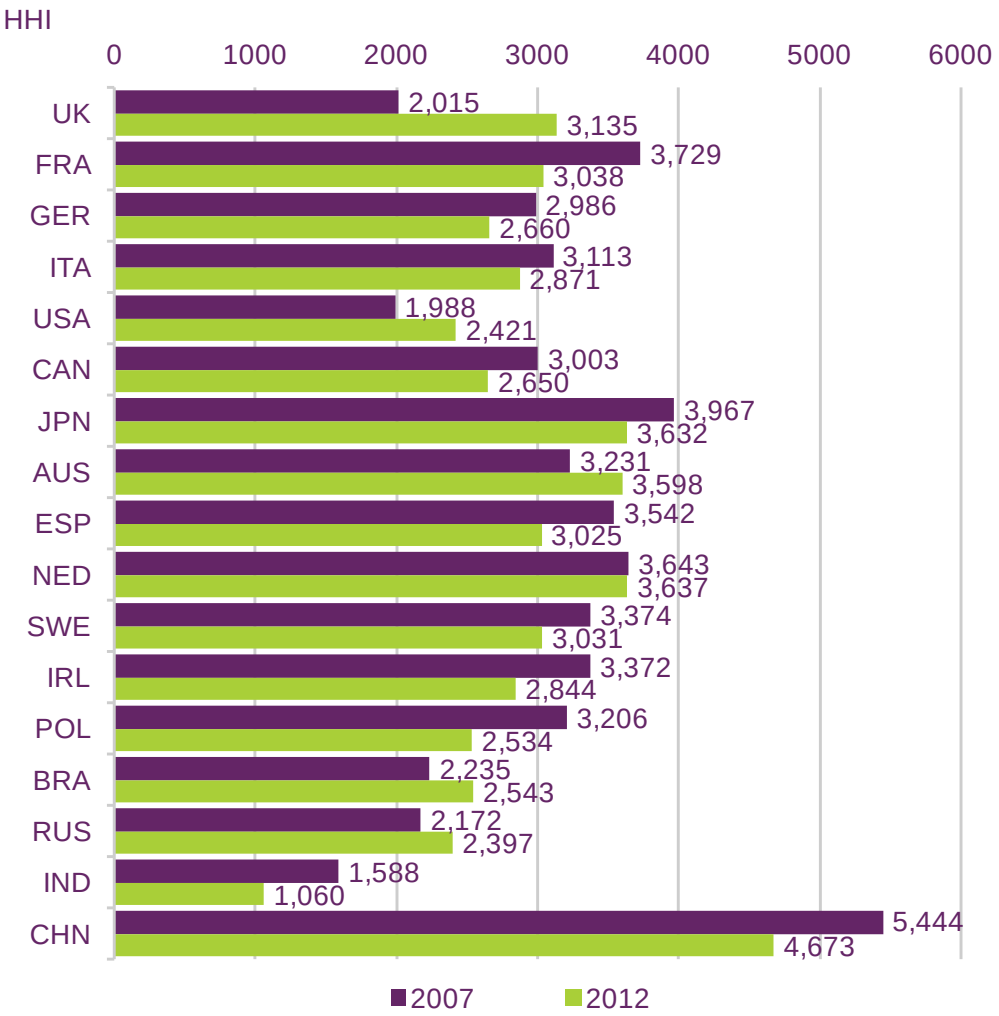
Source: IDATE / industry data / Ofcom

China had the most concentrated mobile market in 2012

The Herfindahl-Hirschman Index of market concentration (HHI) is a measure of the concentration of a market, calculated using the market share of individual operators. The HHI scale ranges from 0 for a perfectly competitive market (i.e. one with a large number of competitors with an equal small market share) to 10,000 for a single-player monopoly (Figure 6.38).

China had the most concentrated market in terms of mobile subscribers at the end of 2012, with a HHI index of 4,673. This is because only three mobile operators (China Mobile, China Unicom and China Telecom) are authorised to provide mobile services in China. Conversely, the lowest market concentration was found in India with a HHI index of 1,060, which is because India has a highly fragmented mobile market with many small regional providers. Having had the third least-concentrated mobile market at the end of 2007, the UK had the fifth most-concentrated market at the end of 2012. This increase in market concentration was a result of the merger of the UK operations of Orange and T-Mobile to form Everything Everywhere (EE) in 2010.

Figure 6.38 Herfindahl-Hirschman index of mobile concentration: 2007 and 2012

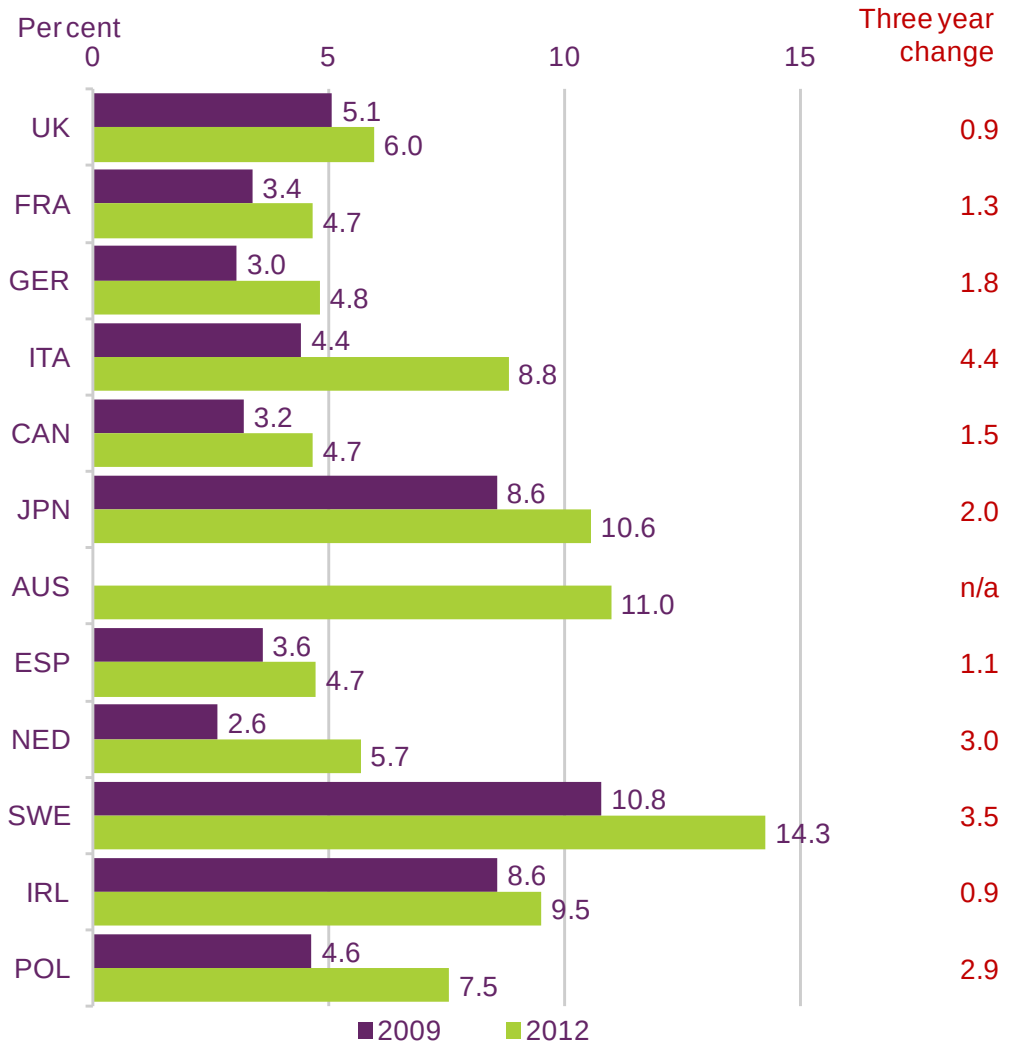


Source: IDATE

Australia had the highest proportion of mobile connections that were data-only

At the end of 2012, the proportion of total mobile connections that were dedicated mobile data connections (such as mobile broadband datacards, dongles or SIMs) ranged from 4.7% in France, Spain and Canada to 14.3% in Sweden among the comparator countries for which data were available (Figure 6.39). The fastest growth in the proportion of mobile connections that were mobile broadband in the three years to 2012 was in Italy, where it increased by 4.4 percentage points to 8.8%. In the UK there were 5.0 million active UK mobile broadband connections at the end of 2012, equivalent to 6.0% of total mobile subscriptions, compared to 4.1 million (5.1% of the total) at the end of 2009. This represents the smallest increase in the proportion of mobile connections that were dedicated mobile broadband data connections between 2009 and 2012, across our comparator countries.

Figure 6.39 Mobile broadband as a proportion of total mobile connections: 2009 and 2012



Source: IDATE / industry data / Ofcom
Note: Data for the US includes mobile data access on a mobile handset, and is therefore not directly comparable with the rest of the data shown above.

6.3 The telecoms user

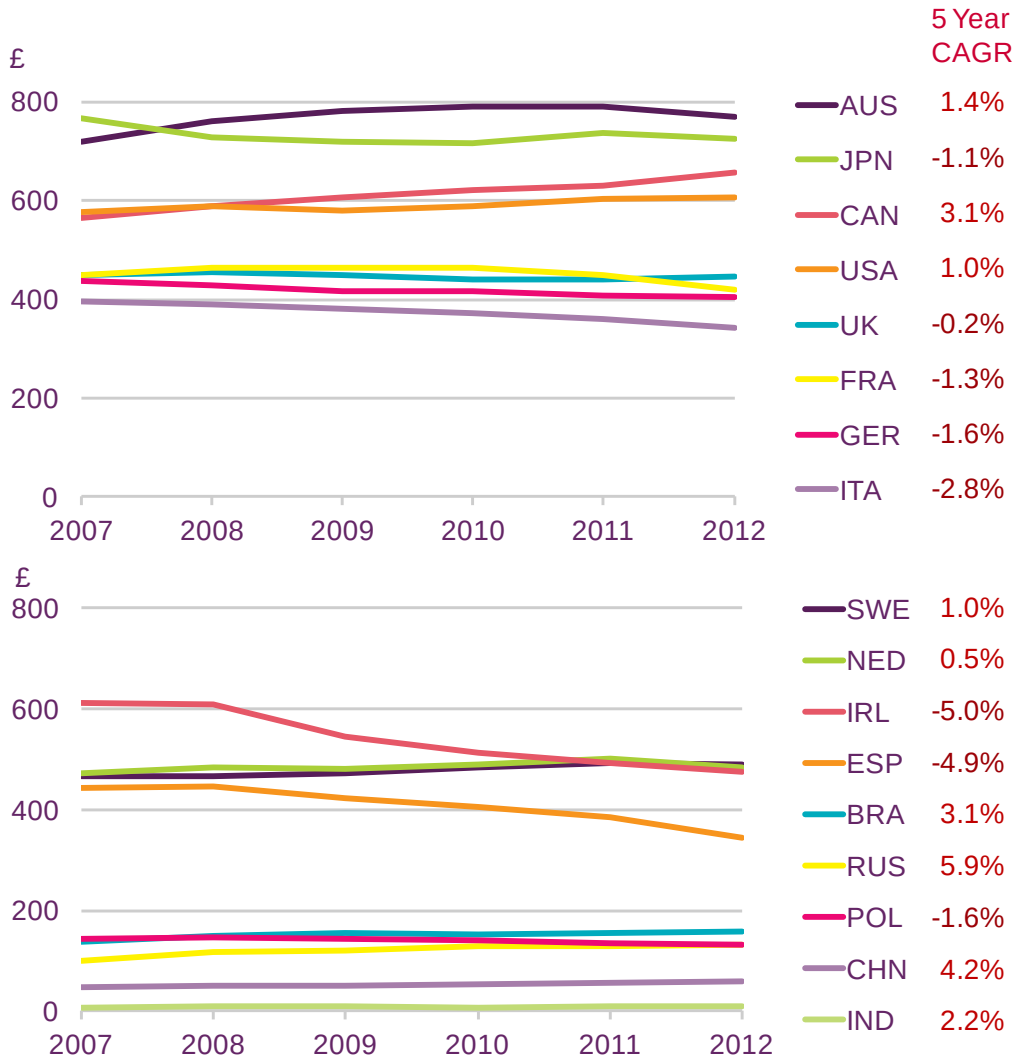
6.3.1 Overview

Average per-capita telecoms spend fell by an average of 0.2% a year in the UK in the five years to 2012

There was wide variation in average spend per head on telecoms services among our comparator countries in 2012, with average spend ranging from just £8 a year in India to almost one hundred times as much (£770 a year) in Australia (Figure 6.40). Average per-capita telecoms spend fell in eight of our comparator countries between 2007 and 2012, with the change in average spend ranging from an average annual fall of 5.0% a year in Ireland (as a result of falling mobile connections and prices) to an average increase of 5.9% a year in Russia, which was to a large extent a result of a 32% increase in the number of mobile connections during the period.

In the UK, average per-capita spend on telecoms services was £445 a year in 2012, the eighth highest among our comparator countries and £5 a year (1.0%) higher than it had been in 2011, as a result of growth in the number of mobile and fixed broadband connections, along with increasing use of mobile data services and take-up of superfast broadband. Despite this increase in 2012, average spend per head in the UK in 2012 was lower than it had been in 2007 (£450) because of declining fixed voice use and falling fixed broadband and mobile prices over the intervening period.

Figure 6.40 Total per-capita telecoms service revenue: 2007 to 2012



Source: IDATE / industry data / Ofcom
Note: Includes spend by businesses, and is therefore not representative of average consumer spend.

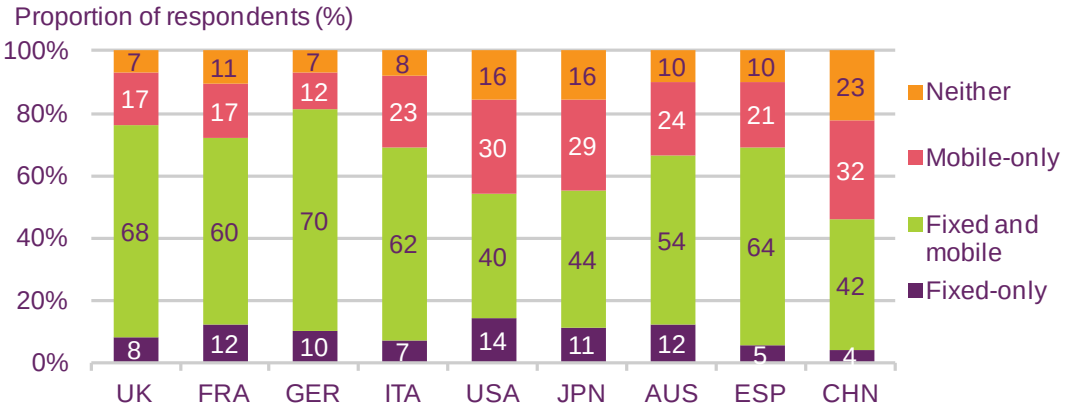
Around three in ten respondents in China, Italy and the US lived in mobile-only homes in September 2013

Ofcom research conducted in September 2013 asked respondents whether they were regular users of fixed and mobile telephony services (Figure 6.41). This research was undertaken online, so the results may not be representative of each country's population as a whole (particularly true for China, where internet access tends to be concentrated in urban areas).

China was the only country where less than half of respondents (46%) said that they used fixed telephony services regularly (i.e. at least once a week), with just under a third of respondents in China (32%) saying that they used only mobile telephony services on a regular basis, the highest proportion among the nine countries in which the research took place. In the UK, 85% of respondents said they used mobile services regularly, the joint highest proportion among our countries, along with Italy and Spain. Conversely, levels of mobile use were lowest in the US, where just 70% of respondents said that they regularly used a mobile phone.

The proportion of respondents who were regular users of both fixed and mobile telephony ranged from 40% in the US to 70% in Germany (in the UK it was 68%, the second highest proportion among our comparator countries). Conversely, the proportion of people who said that they did not regularly use either fixed or mobile telephony services ranged from 7% in the UK and Germany to 23% in China.

Figure 6.41 Regular use of fixed and mobile telephony services



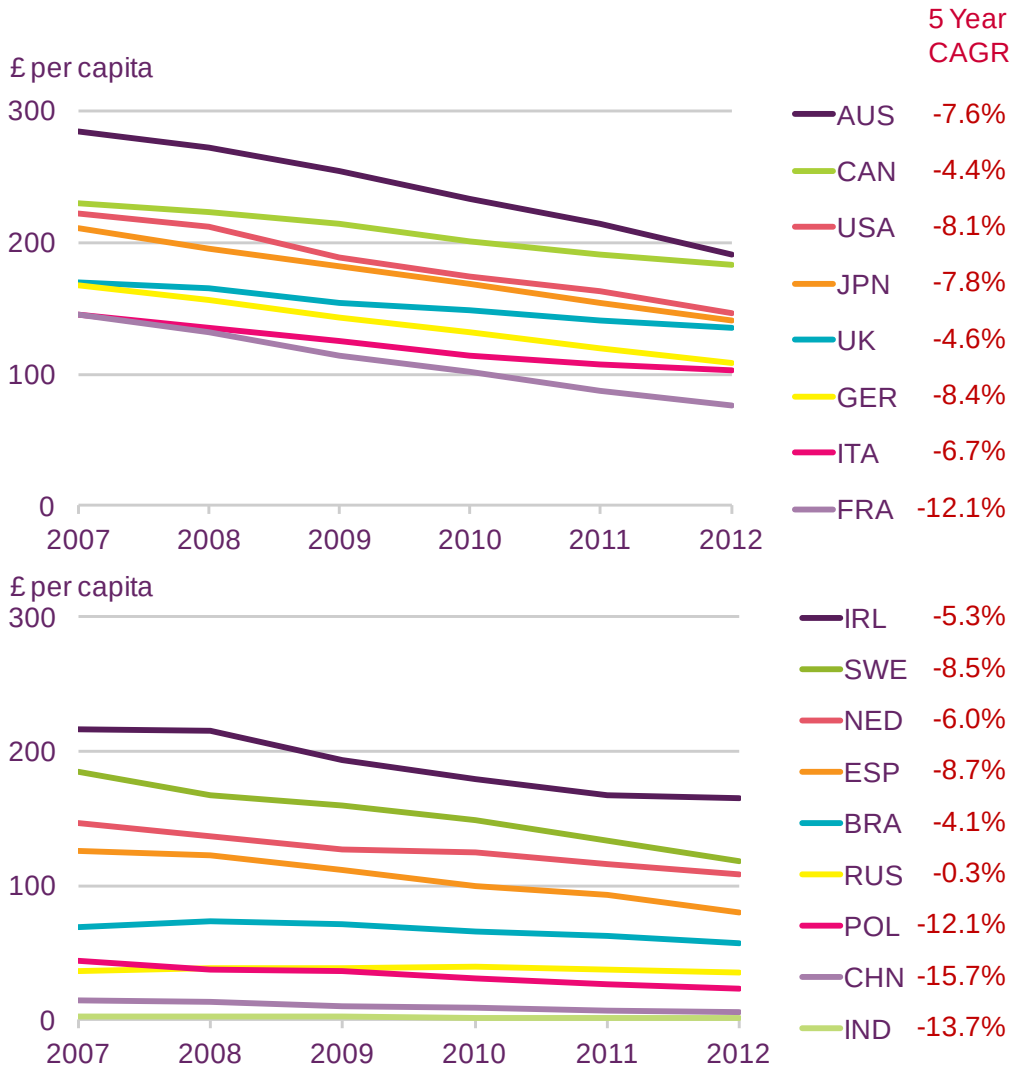
Source: Ofcom research, September 2013

6.3.2 Fixed voice services

Average per-capita fixed line spend fell across all of our comparator nations between 2007 and 2012

Average spend per head on fixed voice services fell in all of our comparator countries in the five years to 2012, with the average across all 17 countries falling by an average of 8.2% a year to £36 per person over the period (Figure 6.42). The lowest rate of decline in average per-capita spend in the five years to 2012 was in Russia, at 0.3% a year, while the rate of decline was highest in China, at 15.7% a year, due to high levels of fixed-to-mobile substitution. In 2012, average per-capita fixed voice expenditure ranged from £1 a year in India (where there were just three fixed lines per 100 people) to £191 per person in Australia (where there were 46 fixed lines per 100 people). In the UK, the average spend per person on fixed voice services was £135 in 2012, while the average annual rate of decline in the preceding five-year period was 4.6%.

Figure 6.42 Average per-capita fixed voice revenue: 2007 to 2012



Source: IDATE / industry data / Ofcom

The average cost of a fixed voice call minute was highest in Japan in 2012

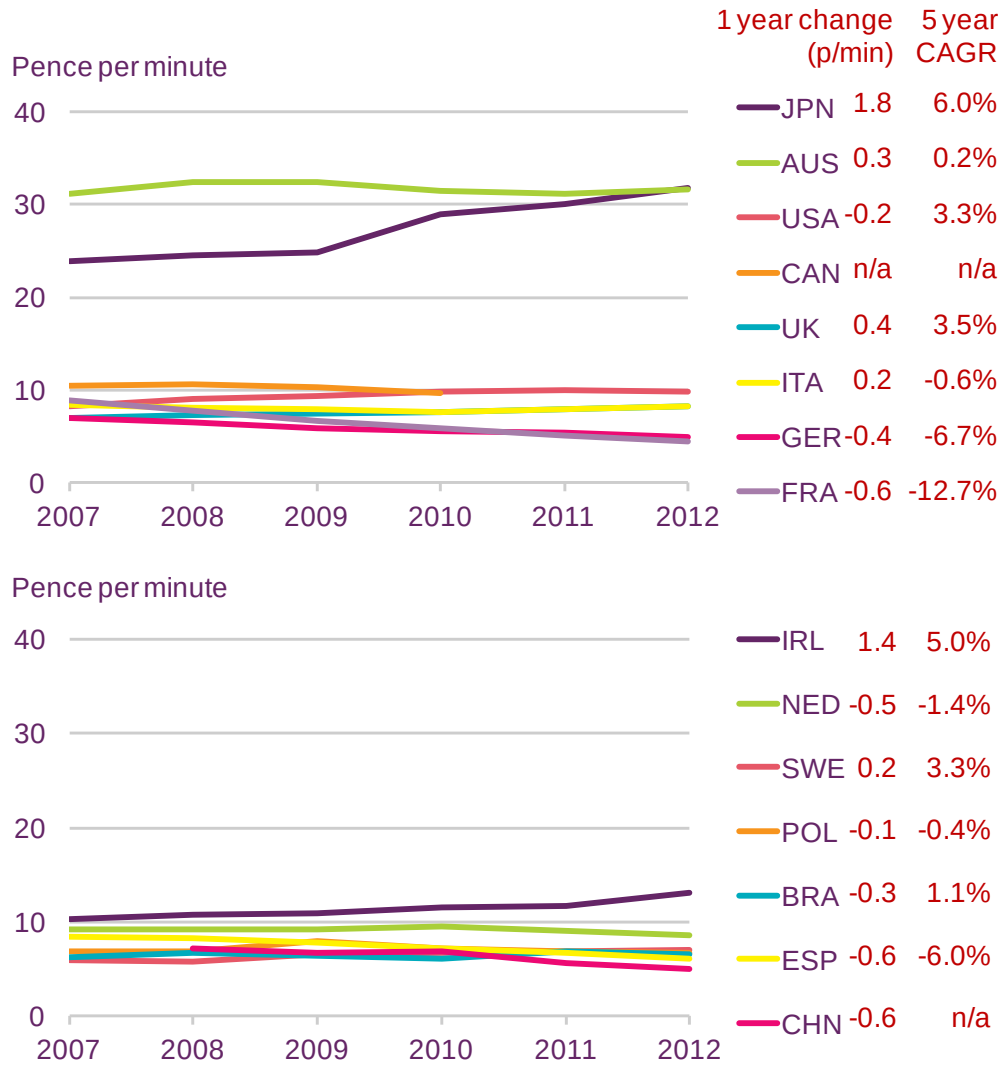
We are able to calculate the average cost of a fixed voice call minute by dividing total fixed voice revenues (including the line rental fee) by the number of outgoing call minutes from fixed phones. It should be noted that the average call cost figures below will be understated where a bundled allowance of fixed calls is included in the monthly fee for another communications service (usually fixed broadband) and none of this revenue is allocated to fixed voice services.

Japan had the highest average cost for an outgoing fixed voice call across the comparator countries for which data were available in 2012, when the average was 31.9 pence per minute (Figure 6.43). This was an increase of 1.8 pence per minute compared to 2011, which meant that the average cost of a call minute in Japan overtook that in Australia (31.6 pence per minute), where average fixed voice prices had previously been highest. The highest average rate of decline between 2007 and 2012 was in France, where the cost of a fixed call minute fell by an average of 12.7% per year, as a result of the availability of low-cost bundled VoIP-based fixed telephony services. The average cost per minute of a fixed voice call in the UK increased at an average annual growth rate of 3.5%, to 8.3 pence between 2007 and 2012, the sixth-highest average among our comparator countries. The

main driver of this increase was a significant fall in call volumes per line during this period, by 29%, to 257 minutes per month.

Further information on communications service pricing can be found in Section 2.1 of this report.

Figure 6.43 Average cost of a fixed voice call minute: 2007 to 2012



Source: IDATE / industry data / Ofcom

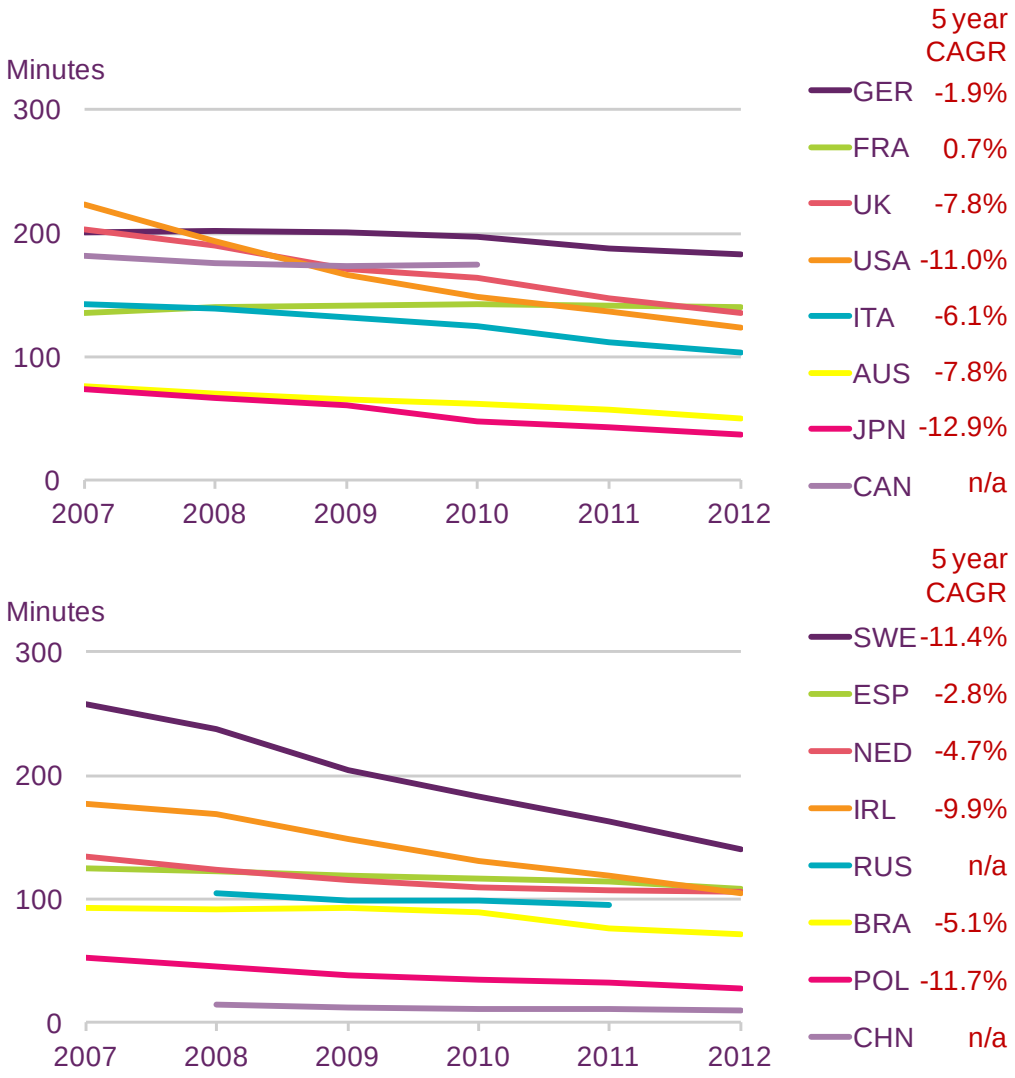
France had the only increase in average per-capita monthly fixed voice call minutes between 2007 and 2012

France was the only comparator country where the average volume of fixed-originated voice calls per head increased between 2007 and 2012, growing by an average of 0.7% a year to 140 minutes per person per month (Figure 6.44). This was despite falling per-capita outbound fixed call figures from 2010 onwards, which offset the increases in average use recorded between 2007 and 2010. The average volume of outgoing fixed-line calls per person was lowest (among those comparator countries for which we had data) in China, at ten minutes per month in 2012. It was highest in Germany at 183 minutes per month in 2012, while in the UK, the average person made 135 minutes of outgoing fixed voice calls

per month in 2012, the fourth highest figure after Germany, France and Sweden. Average use in the UK in 2012 was 8.2% lower than the 147 minutes per person per month figure for 2011, and 33% lower than the 203-minute average recorded in 2007.

Germany, where the fixed market has proved to be comparatively resilient, and the use of mobile services is comparatively low, particularly among businesses, had the lowest average annual decline in per-capita fixed call volumes between 2007 and 2012, at 1.9%. In comparison, Japan had the largest average annual decline in per-capita fixed voice call use in the five years to 2012, at 12.9%, because voice calls are comparatively expensive in Japan, and consumers are using IP-based forms of communication such as push-to-talk, instant messaging and social networks as alternatives to voice calls.

Figure 6.44 Monthly fixed voice call minutes per head: 2007 to 2012



Source: IDATE / industry data / Ofcom

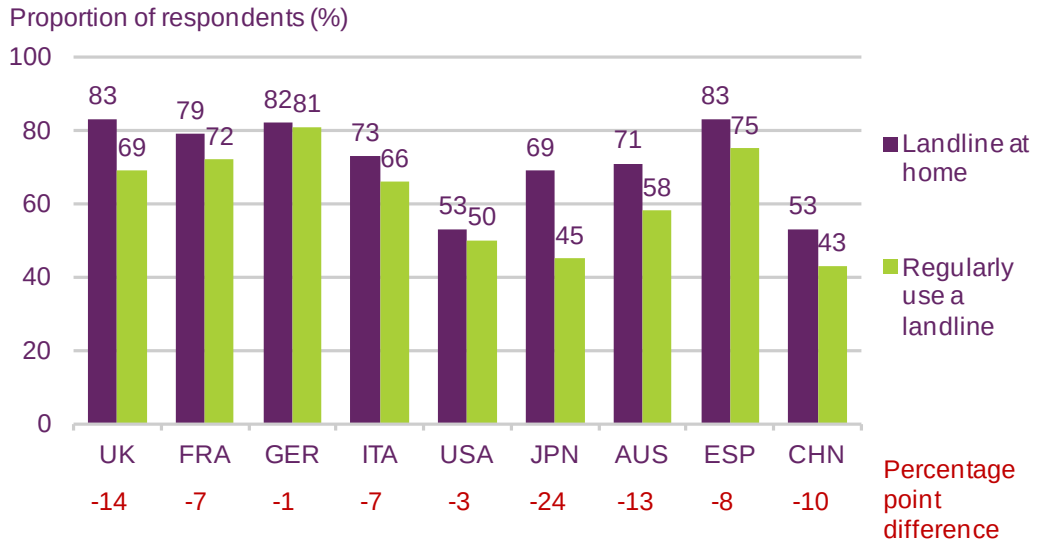
Fourteen per cent of people in the UK with a home phone do not use landline services regularly

In many countries, a landline is required in order to be able to access fixed broadband services (in the UK, Virgin Media, whose cable network passes just under half of UK premises, is the only ISP that offers broadband which does not need a fixed line). As a

result, some consumers with a fixed broadband connection may have a fixed voice telephony line that they never, or rarely, use. Ofcom research in September 2012 asked consumers in nine of our comparator countries whether they had a landline at home, and if they were regular users of fixed telephony services.

The proportion of respondents with a landline at home ranged from 53% in the US and China to 83% in the UK and Spain, while the proportion who said that they regularly used a landline ranged from 43% in China to 81% in Germany (in the UK it was 69%). Japan had the largest difference between the proportions of people who had a home landline and who used landline services regularly, at 24 percentage points, while in the UK the difference was 14 percentage points, the second largest among our nine countries. The smallest difference was in Germany, at just one percentage point.

Figure 6.45 Household take-up and personal use of fixed telephony services



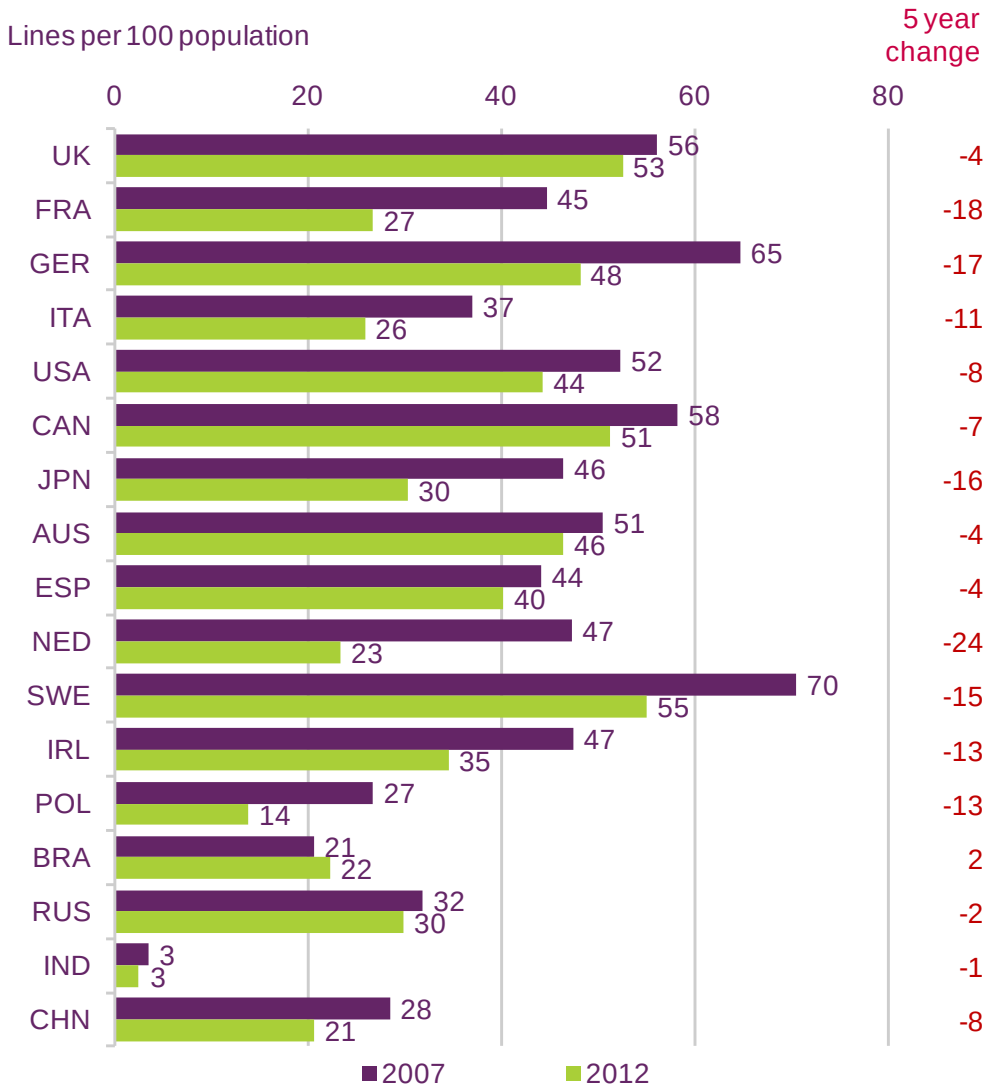
Source: Ofcom research, September 2013
Base: All respondents

Brazil was the only country to have seen an increase in fixed voice connections per 100 people between 2007 and 2012

Brazil was the only comparator country where the number of fixed lines per 100 people (including business and residential lines) increased in the five years to 2012, with a rise of two lines per 100 people to 22 per 100 over the period (Figure 6.46). This increase was partly due to the growing availability of fixed telephony services, a result of the deployment of fixed-wireless networks. In the UK there were 53 fixed lines per 100 people at the end of December 2012, a fall of four per 100 compared to five years previously. The figure for the UK was the second highest among our comparator nations after Sweden, where there were 55 fixed lines per 100 people at the end of 2012.

The lowest numbers of fixed-line connections per 100 people among our comparator countries were in India (three per 100) and Poland (14 per 100) in 2012, in both cases largely due to the low availability of fixed telecoms networks. The largest fall in the number of fixed lines per 100 people in the five years to 2012 among our comparator countries was in the Netherlands (down from 47 lines to 23). This decrease was primarily due to continued growth in the use of managed VoIP services over naked DSL and cable (Figure 6.19 shows that VoIP contributed 27% of total retail fixed voice revenues for the Netherlands in 2012).

Figure 6.46 Fixed telephony lines per 100 population: 2007 and 2012



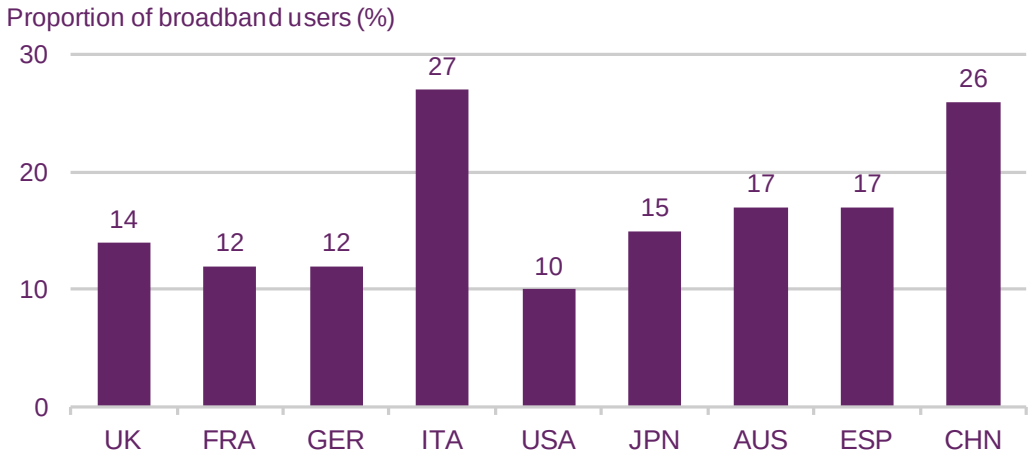
Source: IDATE / industry data / Ofcom

Over a quarter of fixed broadband users in Italy and China regularly make voice calls over their connection

Ofcom research indicates that fixed broadband users in Italy and China were more likely to regularly (i.e. at least once a week) use their connection to make VoIP calls than those in the other comparator countries where the research was conducted (Figure 6.47). In both Italy (27%) and China (26%), over a quarter of fixed broadband users made voice calls over their connections, more than twice the proportions in the US (10%), France and Germany (both 12%), where the use of VoIP was lowest. It should be noted that these figures may be understated, as some users of managed VoIP services (i.e. where an ISP provides a voice service over the broadband connection) may not be aware that they are using a VoIP service.

In the UK, 14% of fixed broadband users were regular users of VoIP, the fourth lowest proportion among the countries for which we have data. VoIP use has historically been quite low in the UK, partly as a result of the UK's comparatively low fixed and mobile voice call prices, with fixed and mobile tariffs typically offering unlimited calls for some call types, or a large number of inclusive call minutes.

Figure 6.47 Proportion of fixed broadband users who regularly use their connection to make voice calls



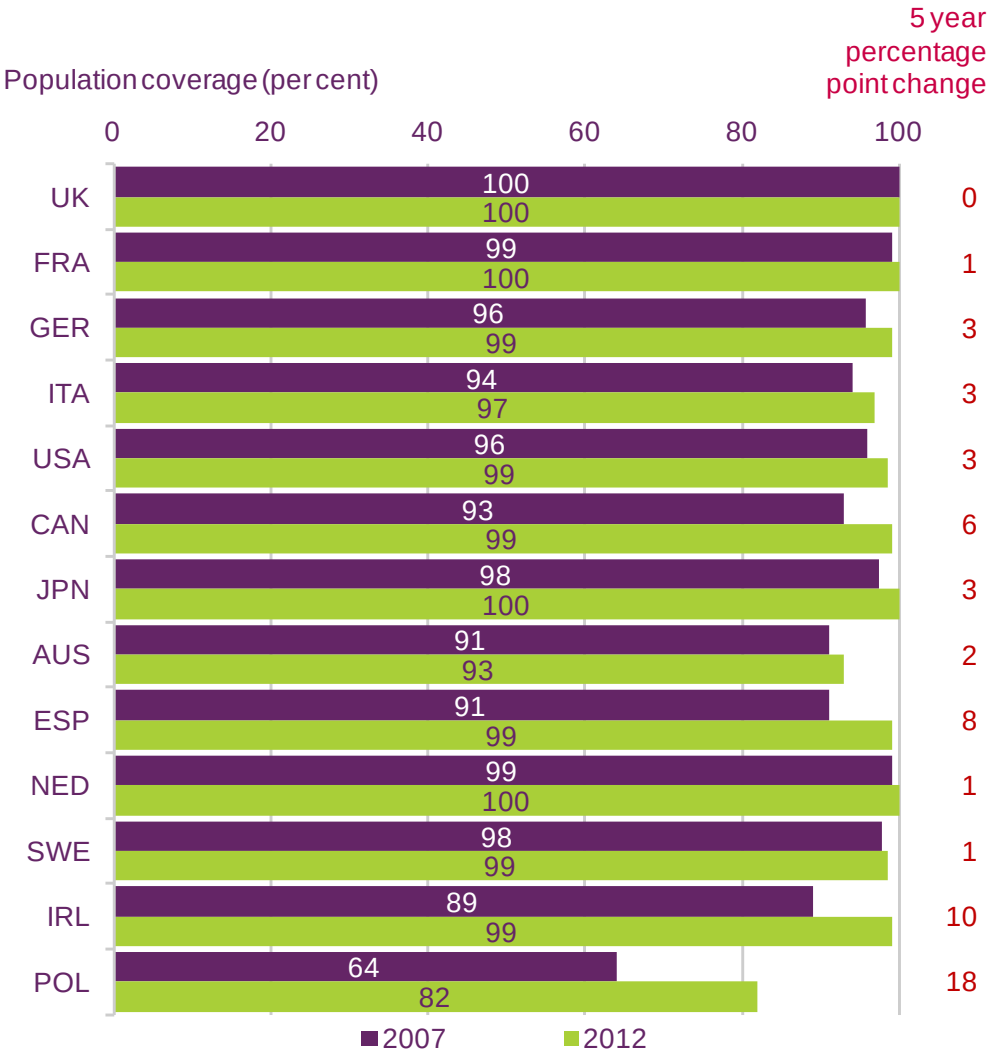
Source: Ofcom research, September 2013
Base: All those with a fixed broadband connection

6.3.3 Fixed broadband services

The majority of comparator countries had fixed broadband coverage of 97% or more in 2012

Most people in our comparator nations could access fixed broadband services at the end of 2012, with Australia (93%) and Poland (82%) being the only countries where less than 95% of the population could receive them (Figure 6.48). In the UK, virtually all of the population have been able to access ADSL-based fixed broadband services for a number of years, and fixed broadband availability was similarly high in France, Japan and the Netherlands at the end of 2012. Poland and Ireland saw the highest percentage increase in fixed broadband availability over the five-year period to 2012, with the proportion of the population living in areas where fixed broadband was available increasing by 18 percentage points in Poland and by ten percentage points (to 99%) in Ireland.

Figure 6.48 Fixed broadband availability: 2007 and 2012



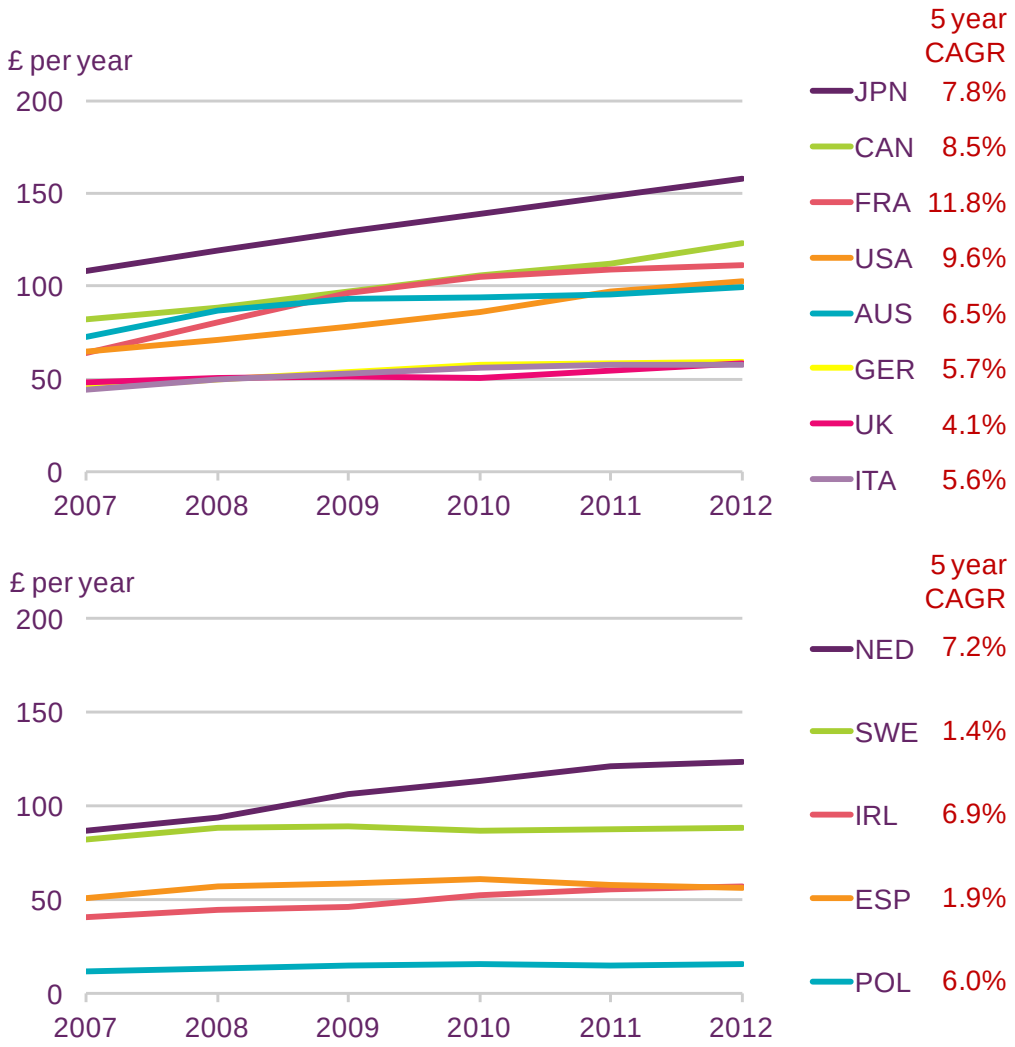
Source: IDATE / industry data / Ofcom

France had the fastest average annual increase in per-capita fixed broadband revenue between 2007 and 2012

The average expenditure per head on fixed broadband services increased in all of the comparator countries for which data were available in the five years to 2012 (Figure 6.49). The largest increase over this period was in France, with an average annual growth rate of 11.8%, partly due to the inclusion of revenues from bundled VoIP and IPTV services in fixed broadband revenues. Conversely, the smallest average annual increase between 2007 and 2012 was in Sweden, at 1.4%, because Sweden's fixed broadband market was already relatively mature in 2007.

Average per-capita fixed broadband spend in 2012 was highest in Japan (where there is widespread adoption of high-speed fibre-based services), at £158. The lowest spend was in Poland, at £13, where the fixed broadband market is less developed, and the proportion of lower-speed connections is high (as shown in Figure 6.4, 59% of connections in Poland had headline speeds of 'up to' 8Mbit/s or less at the end of 2012).

Figure 6.49 Average per-capita fixed broadband revenue: 2007 to 2012



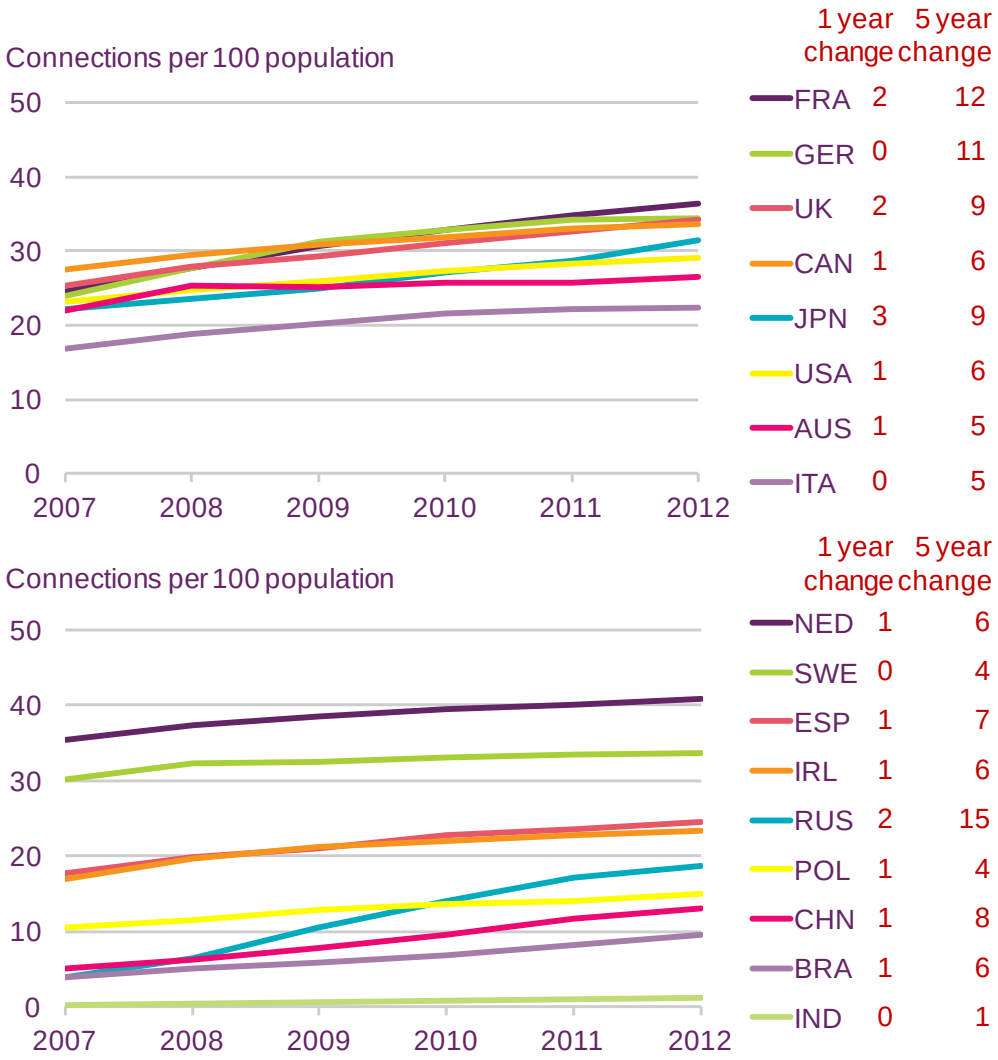
Source: IDATE / industry data / Ofcom

The BRIC countries had the highest percentage increases in fixed broadband connections per 100 people in the five-year period to 2012

The number of fixed broadband connections per 100 people in 2012 ranged from just one per 100 people in India to 41 in the Netherlands among our 17 comparator countries (Figure 6.50). Fixed broadband take-up in the Netherlands has been the highest among our comparator countries for some time, while India's comparatively low figure take-up is due to the availability of fixed broadband services being concentrated in urban areas (its large rural population is unable to access services), as well as the affordability of services and the devices required to use them.

In the UK, there were 34 fixed broadband connections per 100 people at the end of 2012, the joint fourth highest figure after the Netherlands, France (with 36 connections per 100 people) and Germany (35 per 100). Russia had the largest increase in the number of fixed broadband connections per 100 people among our 17 comparator countries between 2007 and 2012, up from four to 19 connections per 100 people.

Figure 6.50 Fixed broadband connections per 100 population: 2007 to 2012



Source: IDATE / industry data / Ofcom

6.3.4 Mobile voice and data services

Over 90% of the population in Sweden and the US could receive 4G LTE mobile services at the end of 2012

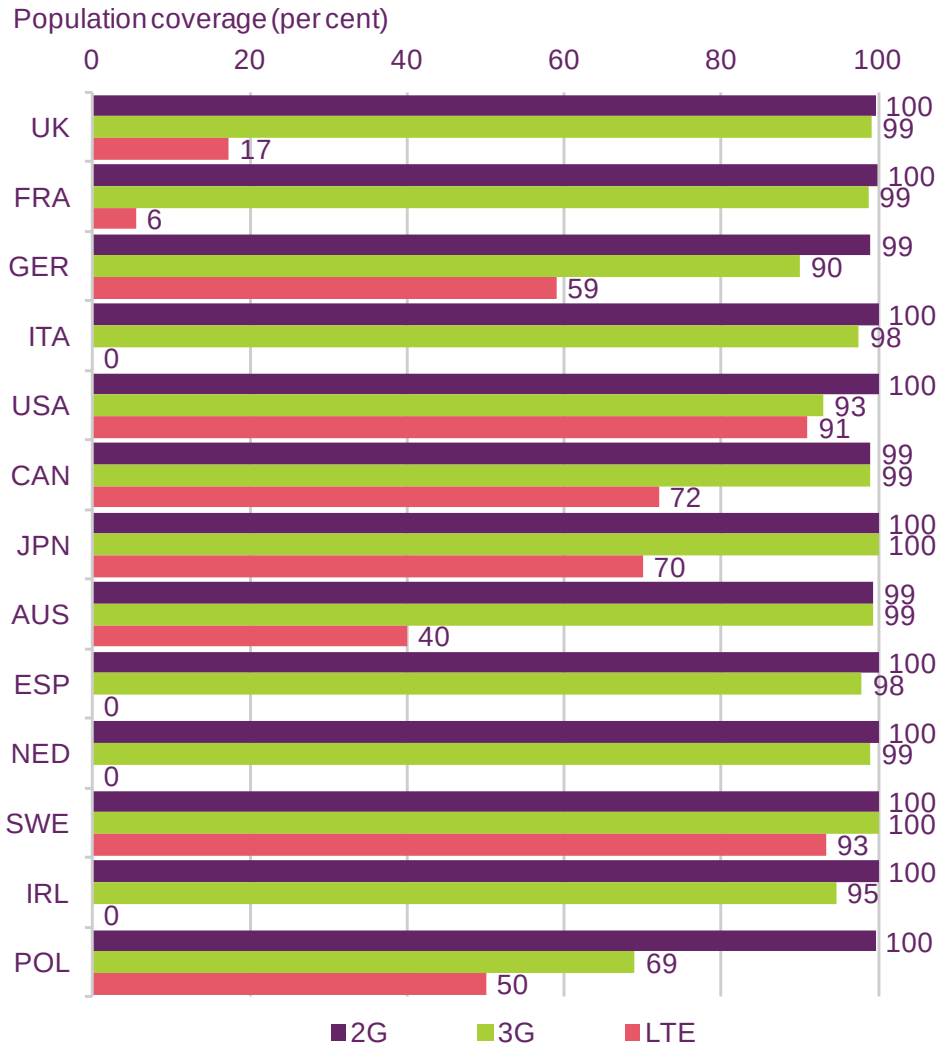
By the end of 2012, almost all people living in the comparator countries for which data were available lived in areas where mobile services of some description were available (Figure 6.51). According to data provided by IDATE, the proportion of the population living in areas where 2G mobile services were available was around 100% in all of these countries except Germany, Canada and Australia, where it was slightly lower, at 99%. Third-generation (3G) mobile population coverage was also high in most countries, at 95% or higher in all of the countries for which data were available, except Poland, Germany and the US, at 69%, 90% and 93% respectively (in the UK it was 99%).

3G availability was lower than average in Poland, due to mobile network operators moving directly to LTE and skipping 3G deployment, while in Germany one reason why 3G availability is comparatively low is that each licence holder has an obligation to cover only at least 50% of the population" (with no guidance regarding overlapping). In the US, the

availability figures below exclude CDMA EV-DO rev A and EVDO1x coverage, and if these technologies are taken into account, 3G coverage was around 99%.

The differences between countries in the proportions of the population that are able to receive 4G long term evolution (LTE) mobile services, were much more marked. While LTE services were available to over 90% of people living in Sweden and the US, services had not yet launched in Italy, Spain and the Netherlands. In the UK, where EE was the sole provider of 4G LTE services between October 2012 and August 2013, IDATE estimates that 17% of the population were able to receive a 4G service at the end of 2012. In October 2013 EE announced that its 4G LTE network covered 60% of the UK population, and that it planned to cover 98% of the UK population by the end of 2014,[75] while Vodafone,[76] O2[77] and Three[78] plan to have similar coverage by 2015. Further information on 4G mobile services can be found in section 1.5 of this report.

Figure 6.51 2G, 3G and LTE mobile network availability: end of 2012



Source: IDATE

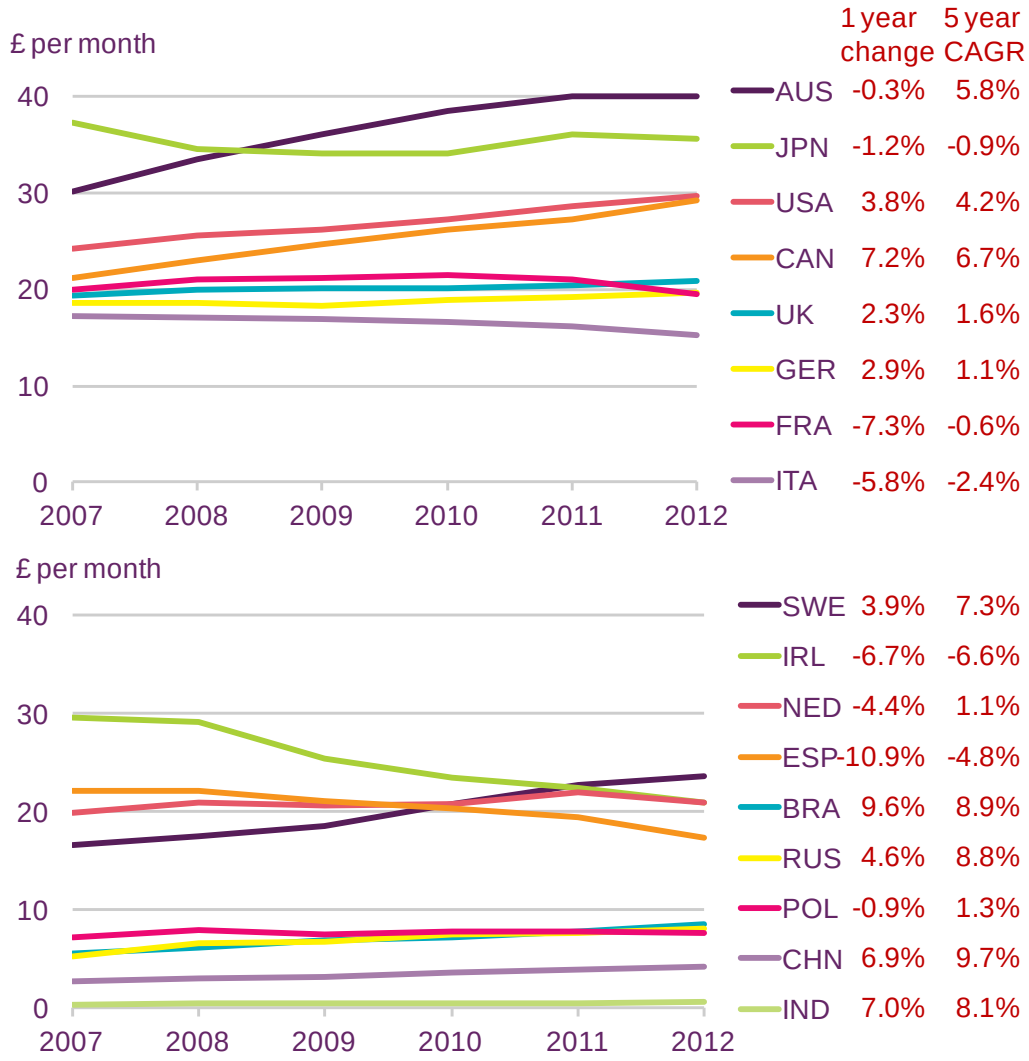
[75] https://explore.ee.co.uk/our-company/newsroom/ee-unveils-the-best-value-4g-plans-in-europe-on-the-world-s-fastest-network-0
[76] http://www.vodafone.co.uk/cs/groups/configfiles/documents/contentdocuments/vftst044690.pdf
[77] http://www.o2.co.uk/network/future
[78] http://blog.three.co.uk/2013/08/29/get-ready-for-4g/

Average per-capita mobile spend increased by 2.3% in the UK in 2012

Average monthly spend per head on mobile services fell in eight of our 17 comparator countries in 2012 (Figure 6.52). The main driver of declining per-capita mobile spend in these countries is falling prices (although average call minutes and SMS use fell in some countries, as is shown in Figure 6.56 and Figure 6.57), which were partly offset by increasing revenues from mobile internet services as a result of growth in the number of dedicated mobile data connections and increasing smartphone take-up.

Among those countries where average mobile spend declined in 2012, the fall ranged from a 0.3% fall to £40 a month in Australia (where average spend was highest in 2012) to a 10.9% fall in Spain (where average per-capita monthly outgoing mobile call minutes and average SMS messages fell by 3.5% and 25.1% respectively during the year). In the UK (where average per-capita call and message use both fell slightly during the year), average monthly mobile spend was £21 per person per month in 2012, a 2.3% increase compared to 2011 and the eighth highest average across our comparator countries, among which average per-capita spend was lowest in India, at just £1 per month.

Figure 6.52 Average per-capita monthly retail mobile revenue: 2007 to 2012



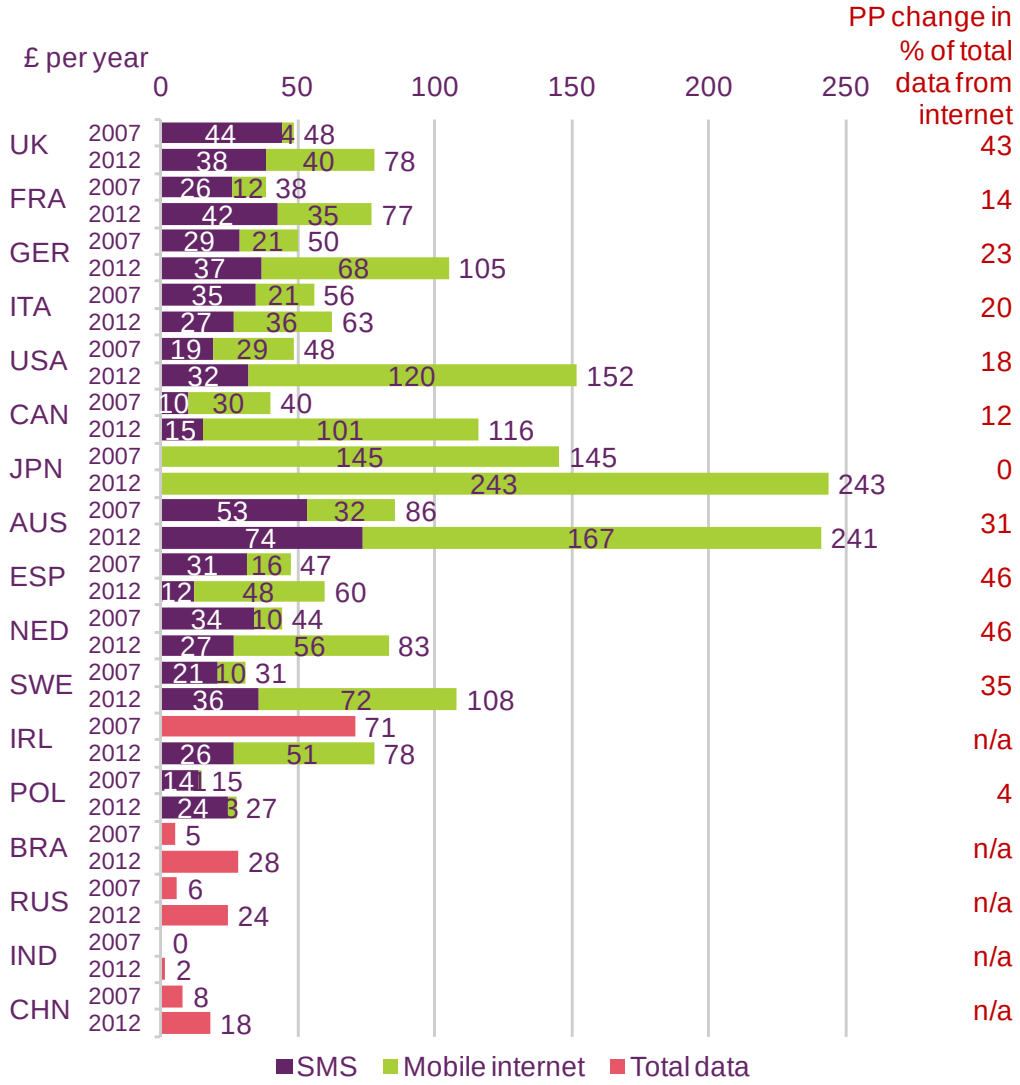
Source: IDATE / industry data / Ofcom

Average per-capita mobile data spend increased in all of our comparator countries between 2007 and 2012

Average spend per head on mobile data services (which includes SMS messaging and other mobile data services, referred to as 'mobile internet') increased in all of our comparator countries in the five years to 2012 (Figure 6.53). As previously, the figures below will be understated as they exclude revenues relating to SMS and data allowances that are bundled with monthly line rental fees. While average per-capita spend on SMS messaging increased in seven of the 13 comparator countries for which data were available in the five years to 2012 (it fell by 14% in the UK) the main driver of increasing mobile data spend was a rise in mobile internet use as a result of growing smartphone and mobile broadband use.

In 2012, the average per-capita spend on mobile internet services (which excludes SMS) ranged from £3 a year in Poland, where the availability of 3G networks is low (see Figure 6.51) to £243 a year in Japan, among the countries for which the split was available (in the UK it was £40 a year, although this figure will be understated as it excludes revenues from bundled data services). The proportion of total mobile data spend that was generated by mobile internet services ranged from 11% in Poland to 100% in Japan in 2012 (in the UK it was 51%), while the change in this proportion over the previous five years ranged from no change in Japan (where SMS is not commonly used) to 46 percentage point increases (to 80% and 68% respectively) in Spain and the Netherlands.

Figure 6.53 Per-capita mobile data average revenue: 2007 and 2012



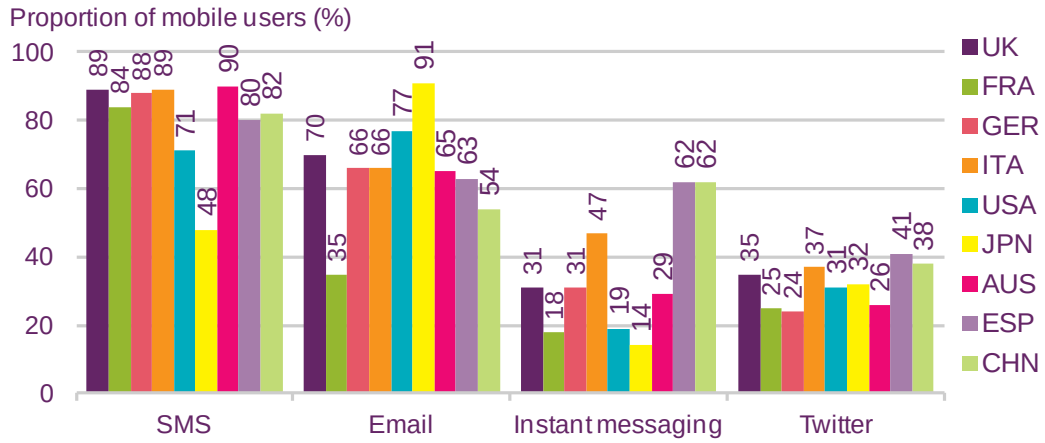
Source: IDATE / industry data / Ofcom

Increasing smartphone take-up has resulted in widespread use of mobile data services

Figure 6.54 shows the proportion of mobile users in nine of our comparator countries who used a number of common mobile data services. SMS use was widespread in most countries, with Japan being the only nation where less than half of mobile users used SMS. In fact, SMS is rarely used in Japan at all, and it is probable that the 48% figure shown below is overstated, possibly because respondents have confused it with another form of text-based mobile communication. Consumers in Japan tend to use email rather than SMS, and this is reflected in Japan having the highest use of email on mobile devices across our comparator countries, at 91%.

Claimed use of instant messaging services on mobiles were highest in Spain and China (both 62%); these levels of use were at least twice those in all of the other countries for which figures were available except Italy (47%). The proportion of mobile users who said that they used Twitter to post messages ('tweet') ranged from 24% in Germany to 41% in Spain (in the UK it was 35%).

Figure 6.54 Use of data services on mobile phones



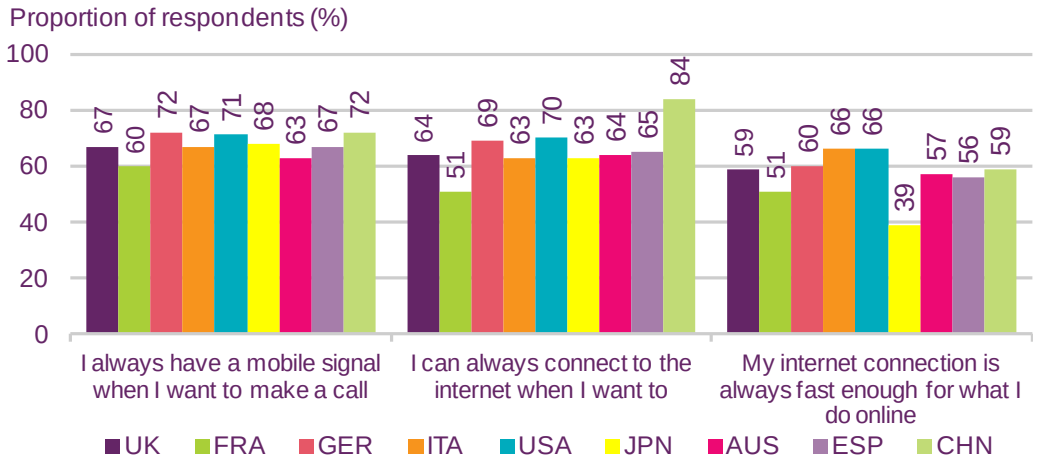
Source: Ofcom research, September 2013
Base: All respondents with a mobile phone

There is little variation by country in smartphone users' ability to access mobile services

Ofcom research asked mobile users in nine of our comparator countries about their ability to connect to their mobile network. There was relatively little variation in the percentage of mobile users who said they always had a mobile signal when they wanted to make a call, ranging from 60% in France to 72% in Germany and China. It should be noted that the research was undertaken online, meaning that the results for China (where household internet take-up tends to be concentrated in large cities) may not to be representative of the country as a whole.

France had the lowest percentage of smartphone users who said that they could always connect to the internet using their mobile phone when they wanted to, at 51% (among the other comparator countries this proportion ranged from 63% in Italy and Japan to 84% in China). Japan was the only country where less than half of mobile subscribers (39%) said that their mobile internet connection was fast enough for their needs, while this proportion was highest in Italy and the US, in both cases at 66%.

Figure 6.55 Smartphone connectivity



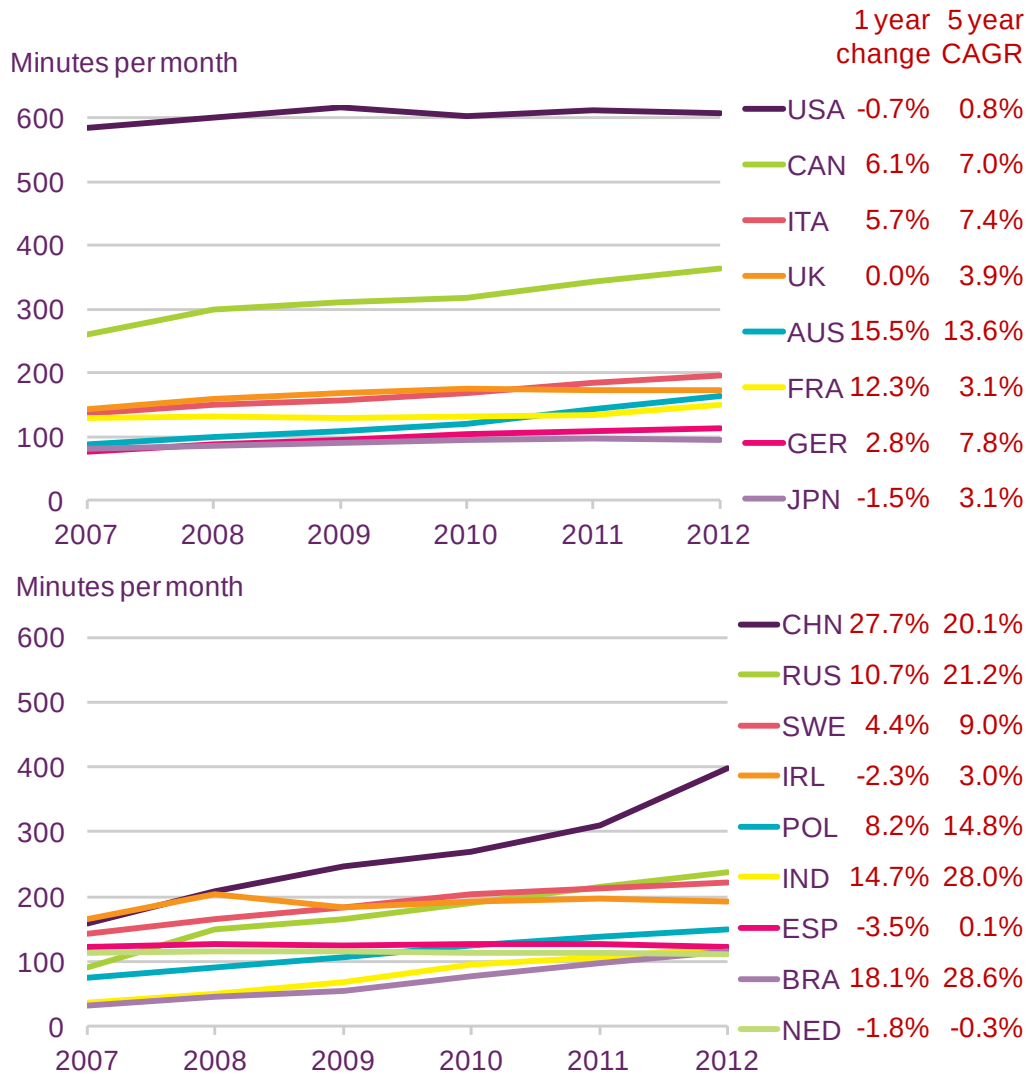
Source: Ofcom research, September 2013
Base: All respondents with a smartphone
Note: "I always have a mobile signal..." figures include all mobile phone users.

The UK was one of six comparator countries where average per-capita mobile call minutes fell in 2012

Average monthly outgoing mobile call minutes per head were highest in the US, Canada and China in 2012, as figures for these countries also include incoming call minutes (Figure 6.56).

Among the countries for which separate outgoing mobile call volume figures were available, average per-capita minutes ranged from 95 per month in Japan (where data-based services such as email and instant messaging are frequently used as a substitute for traditional voice calls) to 237 per month in Russia (where mobile voice prices and fixed voice use are low). In the UK people made an average of 174 minutes of outgoing fixed voice call minutes per month, the fifth highest figure among the countries compared). Average per-capita call minutes fell in five comparator countries in 2012, although these falls were relatively small, ranging from 0.7% in the US to 3.5% in Spain (average use was unchanged in the UK during the year).

Figure 6.56 Average per-capita monthly mobile voice call minutes: 2007 to 2012



Source: IDATE / industry data / Ofcom
Note: Figures for USA, CAN and CHN also include incoming call minutes

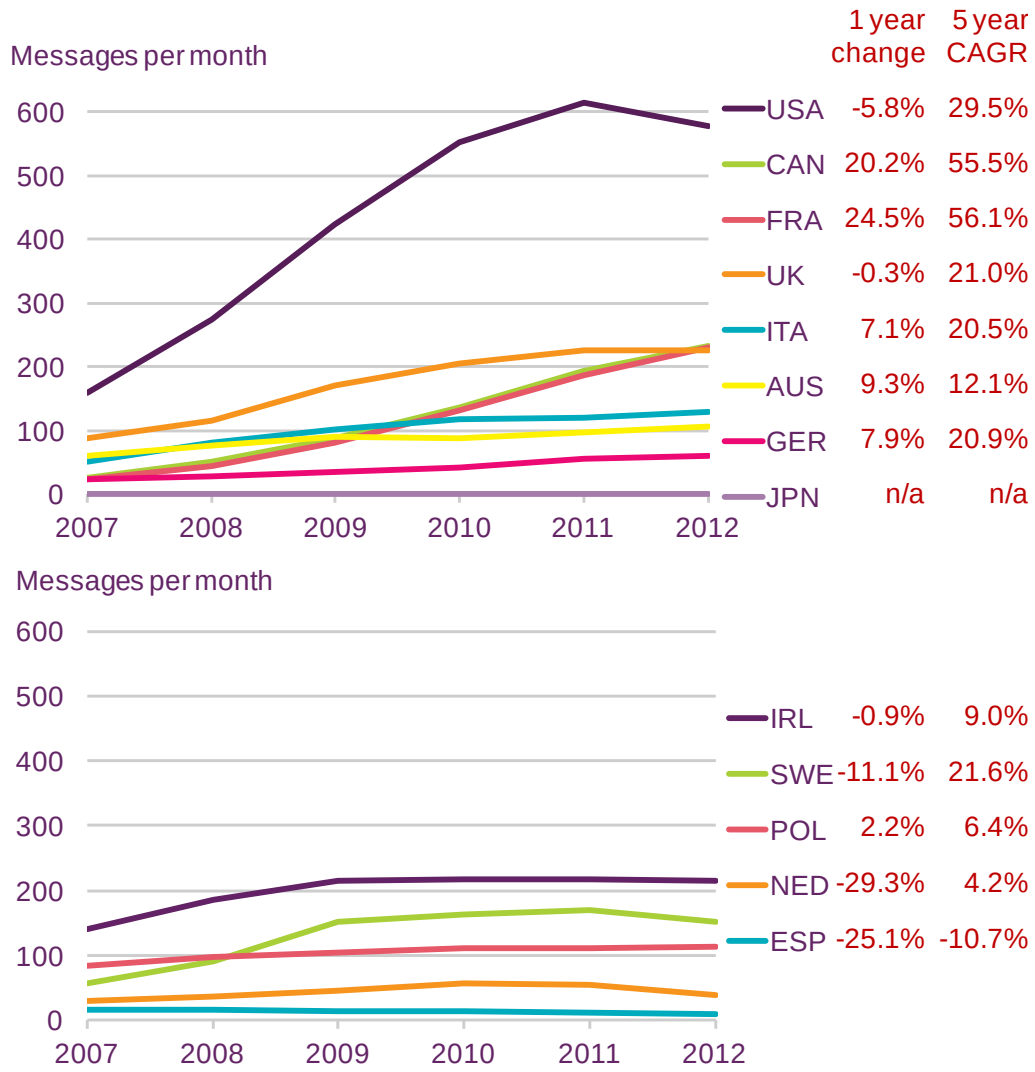
People in the US sent more than twice as many mobile messages per month than those in any other comparator country in 2012

Average monthly mobile messages per head showed wide variation among our comparator countries in 2012, ranging from zero per month in Japan to 579 per month in the US, where the message volume data includes forms of mobile text messaging other than SMS (Figure 6.57).[79] Average per-capita mobile messaging fell in six of our comparator countries, including the UK, in 2012, with the main reason being increased smartphone take-up, as these devices enable consumers to use other forms of communication (such as email, instant messaging, over-the-top messaging services such as *WhatsApp* and *Viber,* and the messaging services on social networking sites) as alternatives to SMS (see Figure 6.58).

The rate of decline in average per-capita SMS use was highest in Spain in 2012, at 25.1%, although lower average use in Spain (as a result of high SMS prices) meant that the fall was equivalent to only three messages per person per month. In terms of messages sent, the largest fall in 2012 was in the US (a decline of 35 messages per person per month, or 5.8%) while in the UK it was just one message per person (0.3%) to 226 messages per month, the fourth highest usage level among our comparator countries. France had the largest increase in average SMS use per person during 2012, up by 46 messages per month (24.5%) to 232 per person, as a result of the increasing availability of tariffs with large numbers of inclusive SMS messages.

[79] SMS was the text messaging standard introduced with GSM, while other modes are used with other mobile technologies.

Figure 6.57 Average per-capita monthly mobile text messages: 2007 to 2012



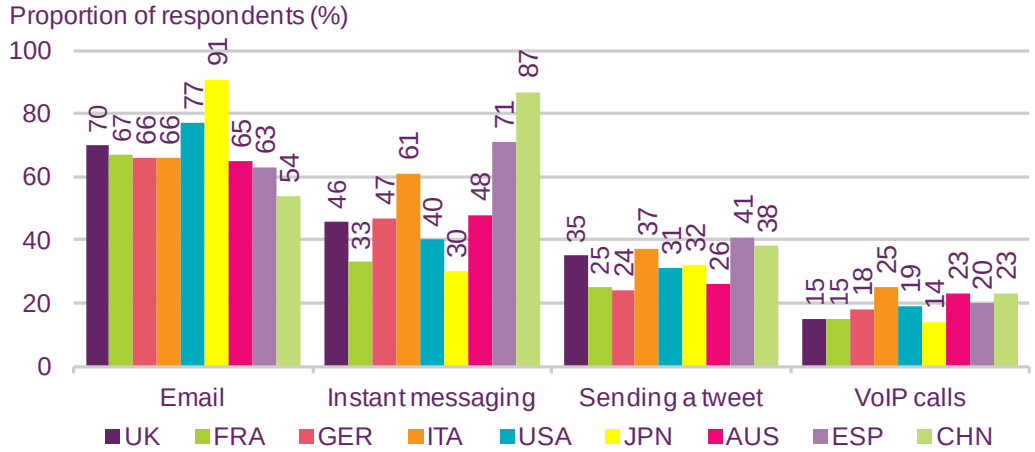
Source: IDATE / industry data / Ofcom

Over 90% of mobile internet users in Japan use their mobile to send and receive emails

Ofcom research asked mobile internet users in nine of our comparator countries about which methods of communication, other than voice calls and SMS/MMS, they used their mobile handsets for (Figure 6.58). In all nine of these countries, more than half of mobile internet users said that they used their mobile handset to send and receive emails, with this proportion ranging from 54% in China to 91% in Japan (in the UK it was 70%).

The proportion of mobile data users who said that they used their handset to send and receive email was higher than for any of the other activities outlined below in all countries except Spain and China, where the use of instant messaging (IM) services was more prevalent. In Spain 71% of respondents used IM, while in China the proportion was even higher, at 87%. Use of micro-blogging site Twitter, and voice VoIP calls on a mobile handset, tended to be lower than use of email and IM, with Twitter use ranging from 24% of mobile data users in Germany to 41% in Spain, and mobile VoIP use ranging from 14% in Japan to 25% in Italy.

Figure 6.58 Activities undertaken on a mobile phone



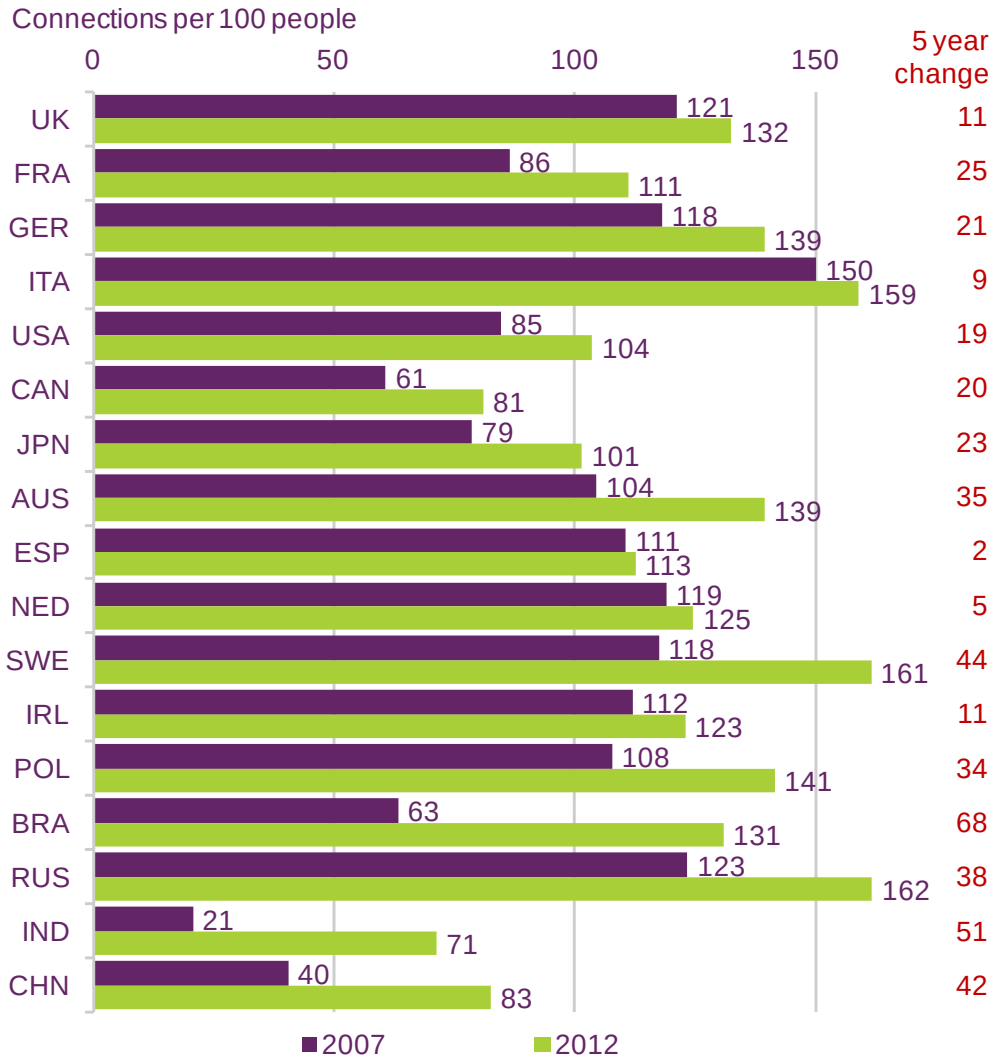
Source: Ofcom research, September 2013
Base: All respondents who access the internet on a mobile phone

Russia, Sweden and Italy had more than 1.5 mobile connections per person at the end of 2012

The prevalence of consumers having more than one mobile SIM (for example, one handset for personal use and another provided by their employer; or a separate mobile handset and dedicated mobile data connection; or a number of different pre-pay SIM cards) resulted in there being more than one mobile connection per person in all of our comparator countries except China and India at the end of 2012 (Figure 6.59).

Russia, where many people have more than one pre-pay mobile connection, had the highest number of mobile connections per person at the end of 2012, at 162 per 100, closely followed by Sweden (where mobile broadband penetration is comparatively high, as shown in Figure 6.60) at 161 per 100. Russia was one of five comparator countries (along with Spain, India, Ireland and Germany) where the number of mobile connections per 100 people fell in 2012, with the largest fall being a decline of 13, to 125 connections per 100 people in Spain, as a result of people changing their consumption habits in response to the economic downturn. In the UK there were 132 mobile connections per 100 people at the end of 2012, an increase of one connection per 100 people compared to 2011.

Figure 6.59 Mobile connections per 100 people: 2007 and 2012



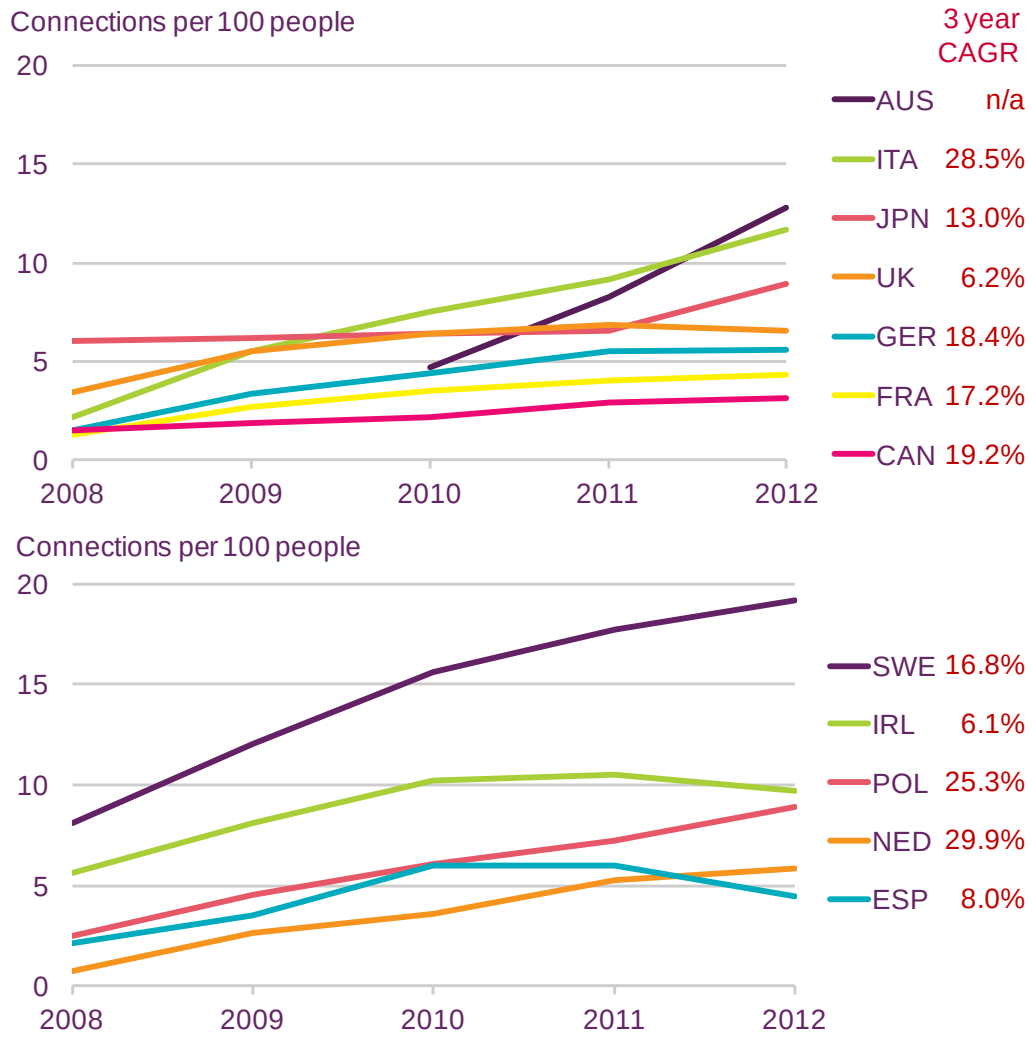
Source: IDATE / industry data / Ofcom

Use of data-only mobile broadband connections was highest in Sweden in 2012

Figure 6.60 shows the number of dedicated data-only mobile broadband connections (such as mobile 'dongles', datacards or tablet connections) per 100 people across our comparator countries. Sweden had the highest number of connections per 100 people at the end of 2012, at 19 per 100 people. Use was also high in Australia and Italy, where there were 13 and 12 connections per 100 people respectively, while take-up was lowest in Canada at just three connections per 100 people.

High mobile broadband take-up in Sweden is due to the growth in the number of LTE connections (LTE services were launched in 2009 in Sweden, much earlier than in any other EU country). In comparison, the low level of mobile broadband penetration in Canada is due to high mobile data prices and the late deployment of 3G. Mobile broadband penetration fell for the first time in three of our comparator countries in 2012 (Spain, down by two connections to four connections per 100 people, Ireland; down one to ten connections per 100 and the UK, where it fell by less than one connection per 100, to seven per 100). These falls are probably because consumers are using the internet on smartphones to access data services on the go, rather than using dedicated mobile data connections.

Figure 6.60 Mobile broadband connections per 100 people: 2008 to 2012



Source: IDATE / industry data / Ofcom
Note: Figures for the US include mobile data access on a mobile handset

6.4 Communications infrastructure availability in high-density areas

In its 2013/14 Annual Plan, Ofcom committed to undertake further research into the effect of communications infrastructure availability on high-density areas, including cities and towns. We will use this research, together with the conclusions of our work on the availability of communications services in the nations, which we published on 16 May 2013[80] and which looked primarily at the provision of services in rural areas, to help us understand the needs of different parts of the UK regarding communications services, how the market has delivered, and the impact of selected public interventions.

As part of this research, Ofcom commissioned 11 case studies of UK cities, identifying the availability of communications services and the factors driving this. The key findings of this research were published in Ofcom's Communications Market Report on 1 August 2013 alongside the full report, which can be found on Ofcom's website.[81]

6.4.1 Background

Following this report, Ofcom commissioned further research to examine the availability of communications services in six international cities across four continents. This research provides an assessment of the extent to which people living in these cities benefit from communications technologies, infrastructure and services, and what non-commercial factors, if any, are driving these differences.

The relevant cities are listed below, and were chosen to represent a range of urban populations across the world.

- Chicago, USA
- Hamburg, Germany
- Lagos, Nigeria
- Milan, Italy
- Seoul, South Korea
- Warsaw, Poland

The full report can be found on Ofcom's website.[82]

6.4.2 Summary of key findings

- **First generation broadband services providing speeds of over 2Mbit/s are widely available in all cities with the exception of Lagos**. Development of both the fixed telephony and fixed broadband markets in Nigeria has been hampered by poor management of telecoms infrastructure, unreliable power supply and low personal computer penetration.

[80] http://stakeholders.ofcom.org.uk/market-data-research/market-data/economic-geography/
[81] http://stakeholders.ofcom.org.uk/market-data-research/market-data/communications-market-reports/cmr13/uk/
[82] http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr13/icmr/cities-infrastructure-cmr13.pdf

- **Next-generation access (NGA) broadband services capable of providing over 30Mbit/s download speeds are increasingly becoming available**. With the exception of Lagos, more than half of the population of every city are able to access an NGA service.

Figure 6.61 First-generation and NGA broadband coverage in five of the six cities

City	First-generation broadband coverage	Current NGA broadband coverage
Chicago	99%	98%
Hamburg	100%	95%
Milan	100%	55% (as at end 2011)
Seoul	100%	Over 90%
Warsaw	100%	>95%

Source: Analysys Mason

The other main findings of the report are set out below.

- Copper network DSL infrastructure remains the dominant architecture for fixed broadband networks.
- The majority of the operators (especially the incumbents) in most of the cities have maintained their market share utilising DSL infrastructure and also have plans to upgrade their networks to VDSL-based fibre-to-the-cabinet (FTTC) infrastructure
- Availability of NGA fibre-to-the-home (FTTH) infrastructure is also increasing with operators in Hamburg, Milan, Seoul and Warsaw extending their FTTH network
- Cable infrastructure plays an important role in the availability of high-speed broadband infrastructure, although Lagos and Milan are exceptions as they have no cable network deployments
- All the cities have launched, or plan to launch public sector based Wi-Fi initiatives to provide either free or subsidised Wi-Fi access to residents and/or visitors
- 4G services are available from at least two mobile network operators in all six international cities
- Public policy and intervention initiatives have influenced, or continue to influence, availability of infrastructure and encouragement of take-up of communications services in all cities. For example, the Gigabit Squared Chicago initiative aims to deploy NGA in nine demonstration neighbourhoods, connected together with the excess fibre capacity that will be leased from the City's own fibre network. In Seoul, residents will have benefitted from the government certification scheme, set up in 1999, for buildings with over 20 households and 3,300sqm, providing potential householders with a clear indication of the standard of the in-building cabling, and the likely broadband speeds that it can support.