OFFICE OF COMMUNICATIONS

The International Communications Market 2006

Research Document

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Foreword

This is the first Ofcom research publication to focus specifically on the international communications market, reflecting the increasing impact of global issues on the UK commercial and regulatory communications agenda.

The communications sector now forms an important part of most economies in the developed world. In 2005, the global communications market generated estimated revenues of around £840bn. In Europe, the Lisbon Agenda has set a target of making the EU the world's most dynamic and competitive knowledge-based economy by 2010. A successful and innovative communications sector has a vital role to play in helping to achieve this goal.

This report does not seek to draw policy conclusions, but rather to serve as an evidence base from which to evaluate developments in the sector. We consider levels of availability and adoption of communications services and how they are used by consumers in six major countries (France, Germany, Italy, the US, Japan and China) in addition to the UK. We also look at a further five nations (Netherlands, Poland, Ireland, Sweden and Spain) where comparable data is available.

We examine the size and make-up of each sector in each country and look at the areas which are growing fastest. We also explore the technological and regulatory environment in which operators provide services.

We have commissioned new research into the way in which consumers use converged and online services and have conducted a price benchmarking exercise, using a new methodology which aims to capture the impact of bundled communications services and also the cost of equipment ownership.

The report meets Ofcom's regulatory principle to research markets constantly; it was also a key commitment in the 2006/7 annual plan as part of our aim of understanding the sector and our stakeholders. But the report also comes in response to what stakeholders have told us. Many of you have asked that we extend our understanding of the sector to encompass a broader international perspective. The report complements other research published by Ofcom during 2006, and forms part of the Communications Market series – which includes the UK Communications Market (published in August 2006), The Communications Market: Nations and Regions (April 2006), and ad hoc reports covering specific sectors and topics.

We hope that this report will help to provide a global context for the workings of the UK communications sector and prove a valuable resource for stakeholders, contributing to a greater understanding of the international communications market.

This is the first time we have written such a report; we very much welcome feedback and further engagement on the topics it raises to help us improve it for the future.

Ed Richards, Chief Executive

Key points: The International Communications Market

- Worldwide communications revenue totalled approximately £840bn in 2005 (equating to around £129 for each person on the planet), having grown at an average annual nominal rate of 5.9% since 2001.

- The UK spends more than any of the developed western economies considered in this report on consuming communications services – in 2005 communications spend accounted for 4.1% of GDP.

- Convergence is becoming a global phenomenon, but it is being manifested at different paces and in many different ways. The UK is at the vanguard of bundled services, with over one third of households taking two or more communications services from one provider. However, converged platform services like VoIP and IPTV are taking off in countries like France, Italy and Japan at a much faster rate than in the UK.

- There is evidence that increasing convergence of communications services is beginning to have an impact on traditional media consumption. In all of the countries studied in the primary research commissioned for this report, around a third of consumers with broadband at home reported watching less TV and over one in four said that they spent less time reading newspapers.

- Across the world, 18-24 year olds are leading the transition to convergence, and this is especially the case in the UK, where more broadband users downloaded television programmes and clips over the internet than users in any other country in our survey.

- With broadband becoming more widespread, the internet has become an increasingly important source of advertising expenditure; in the UK, nearly 10% of all advertising spend is on the internet, the highest of any of the countries we studied.

- In the price benchmarking exercise conducted for this report, UK prices are at the low end of the countries analysed across a range of household consumption patterns.

- Despite current relatively low levels of take-up among many services, China is fast emerging as a major participant in the global communications market; our data also suggest that Chinese consumers are above-average users of advanced converged services such as IPTV and broadband video/audio.

Key points: Telecoms

- In 2005 total global telecoms revenues were £649bn (equating to £100 of revenue per person on the planet), representing average annual growth of 5.7% in nominal terms since 2001.
- Growth in telecoms is being driven by mobile service revenues rather than fixed; however new telecoms services like voice over IP (VoIP) are increasingly making inroads in countries like France and Japan.
- After Italy, the UK has the highest number of mobile subscribers per 100 population of the countries studied in this report.
- Mobile virtual network operators (MVNOs) have widely varying market strength – in the UK, where MVNOs partnered with network operators as early as 1999, they accounted for 13% of subscribers in 2005; in other countries such as Italy there were no MVNOs.
- By the end of 2005, around 7% of the UK's mobile subscriptions were 3G-enabled, contrasting with only just over 1% in the US, but over 30% in Japan.
- Broadband is widely available in all countries participating in the study – but in the UK availability was among the highest at over 95%.
- The UK has also seen one of the fastest growths in broadband connections – increasing from one per hundred households in 2001 to 39 in 2005. The UK currently has higher take-up than France, Germany and Japan, but still lags Spain, the Netherlands and Sweden.
- DSL is becoming the most prevalent broadband connection method across most of the countries in our analysis: this reflects services offered by an increasing number of providers benefiting form a combination of wholesale provision from network incumbents and local loop unbundling.
- The UK and the Republic of Ireland lead in WiFi communications among the countries considered, with around 18 hot-spots per 100 people.
- Broadband-enabled consumers are increasingly using the internet to download films, audio tracks, news and other TV programmes in large quantities across all the countries in our research, with China showing particularly high use.

Key points: Television

- Global television revenues reached £164bn in 2005 (equating to £25 per person), having grown at 7.2% per annum in nominal terms for four years, making it the fastest-growing sector within the communications industry.

- In 2005, the US had by far the largest television industry in revenue terms, attracting £75bn. Japan, came second in the same year with £19.5bn followed by the UK with £10bn. However the UK is second to the US on a per capita basis, at £164 against £253 for the US.

- The UK leads the world for penetration of digital television at over 70% of households, against 54% in the US.

- Chinese viewers benefit from the largest number of analogue terrestrial free-to-view channels (16), while the UK has the fewest with five.

- The UK is one of the most successful countries for exporting programmes and formats – in 2004 64 formats and nearly 3800 hours of programmes were sold internationally.

- Public service broadcasters are coming under increasing funding pressure around the world; however support for PSBs is still high, especially in the UK.

- Young people are having an increasingly disruptive effect on TV viewing across the globe. In the countries surveyed, around one third of those with broadband access claimed they were watching less TV. Declining TV reach among younger people is an international phenomenon.

- All countries in the survey have made commitments to digital switchover. Sweden and Germany have already begun a geographically phased process which they aim to complete by 2007 and 2009 respectively. The remaining countries have set completion dates between 2009 and 2012.

Key points: Radio

- Global radio revenues (including public funding) totalled £25bn in 2005 (or around £4 per person), of which £18bn came from advertising. Growth has been generally lower than for telecoms or television – at around 3.8% per year in nominal terms since 2001.

- The US is by far the largest market for radio, with annual revenues of £11bn in 2005; Japan is second with revenues of £1.9m. Together the US and Japan account for over 50% of the radio revenues of the twelve countries studied in this report. The UK is the fourth largest market with revenues of £1.2bn in 2005.

- The proportion of total advertising spent on radio varies substantially by country. In the US, 11.5% of all display advertising expenditure goes on radio; in the UK it is less than 4%.

- Radio listening is more popular in the UK than in any other country in this study – with weekly listening per capita averaging nearly 23 hours. The share of listening to PSB stations is also higher in the UK than anywhere else – at around 55% of total listening.

- Digital radio is increasing in popularity. The UK leads in the roll-out of DAB, with 85% coverage and over 200 stations available.

- The internet is having a positive impact on radio listening with around one third of adult broadband users among the countries we surveyed listening to online radio every week. Less than one in five adults claims to be listening to less radio offline as a result of being connected to broadband.

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1 Overview

1.1 Introduction

1.1.1 The scope and structure of this report

This is the first in a series of regular reports which aim to provide a robust and statistically-driven international context for the UK communications sector.

It forms part of Ofcom's Communications Market Report (CMR) range, which includes regular publications covering the UK as a whole, the UK's nations and regions, and ad hoc reports covering specific sectors and topics.

The document seeks to provide an overview of the telecoms, television and radio sectors for a range of countries, considering each from an industry and consumer perspective. It offers a round-up of recent developments alongside some more general context.

The report draws comparisons between the UK and six key countries - France, Germany, Italy, the US, Japan and China. Where we feel it adds significantly to the analysis, we also look at five other nations - the Netherlands, Poland, the Republic of Ireland[1], Sweden and Spain. (To assist the reader, we keep all twelve countries in this order in bar charts throughout the document).

These were selected from a number of candidate countries as those that provide an interesting contrast to the UK, owing to their different stages of development and regulatory approaches, but also those where the information available to us is accurate and up to date.

Most data cover the 2005 calendar year, with five year historical time series where applicable, using nominal figures. In the price benchmarking we have used PPP (Purchasing Power Parity) in order to remove the effects of short-term exchange rate fluctuations in our comparisons. This is necessary to avoid reporting a comparison of consumer experience among countries which is driven more by exchange rate movements than by the underlying position of the respective consumers. For other data sets, such as statistics on revenues, we have used current exchange rates. This is because for comparisons at a point in time, rather than assessments of long term relativities, we believe the current exchange rate is more relevant. We do not offer market forecasts and seek to avoid value judgements except where clearly supported by the data.

The document follows the structure of the UK Communications Market Report, starting with an Overview, which draws out two key themes which span the report – convergence, and the consumption habits of the 18-24 age-range – and then consolidates the information contained in the rest of the document to place the UK in context.

It then provides three main sections - Telecoms, Television and Radio - each providing information on:

- Industry size, structure and financing;
- Availability, take-up and use of products and services; and
- Consumer attitudes and behaviour.

[1] Please note that for reasons of brevity, the use of the terms 'Ireland' and 'The Republic of Ireland' throughout this document are interchangeable, and both refer to the Republic of Ireland.

At the back of the report there is a quick reference section with background information on the economies, demographics and political and regulatory structures of the key comparator countries covered.

Finally, we include appendices detailing the methodology behind the international consumer survey and the price benchmarking exercise.

1.1.2 The rationale for the Communications Market International Report

The report meets Ofcom's regulatory principle of researching markets constantly; it was also a key commitment in the 2006/7 Annual Plan as part of our aim of understanding the sector and our stakeholders. Following a survey conducted into views on the UK CMR earlier this year, we found strong UK stakeholder demand for more Ofcom research reports, with a particular interest expressed in coverage of international issues.

We believe that the desire for a deeper understanding of the international arena is driven by the ongoing globalisation of communications services and business models, and the growing exposure of UK operators to developments abroad, from both a market and regulatory perspective.

Although there are a variety of broadcasting and telecoms market reports available, none captures the combination of industry analysis, service coverage and consumption data, alongside an examination of consumer behaviour across the whole sector, which we feel is required to provide a comprehensive context for the UK communications market.

In addition, there appears to be a particular gap in comparative cross-country analysis of the use of new converged and online services; we have commissioned original research to help improve understanding of consumer behaviour in this pivotal and growing area.

A related issue is the importance of trying to benchmark communications service prices internationally in a meaningful way, to help describe the market in each country. Existing studies do not take account of the price implications of bundled services (for example the "free" broadband offers available from fixed line, mobile and pay television operators in the UK") or the cost of equipment ownership. We have tried to address these.

We aim to provide an objective assessment of these issues with a contextual narrative, using primary data where possible.

1.1.3 The methodology used to compile this report

The document was written using a mixture of desk research and conversations with industry bodies, operators, regulators and commentators. The data were gathered with the support of research and consultancy firm IDATE, which supplied additional market information, helped to verify sources and provided market estimates where necessary. In addition, we commissioned Synovate to conduct original research into one key area where we found little information available; the provision of communications services via the internet. We focused this research on broadband users (using an online survey with 2,781 respondents) in order to gain insight into the habits of those more easily able to take advantage of data-intensive download services.

We have also conducted a new price benchmarking exercise which aims to take into account the cost of hardware ownership and to incorporate the tariffs available to consumers who take 'bundles' of communications services. This work looks at the prices available from the incumbent operator and its main competitors (it does not purport to offer an exhaustive

list of tariffs) for each of our key comparator countries for the typical consumption patterns of a selection of household types. A full explanation of the methodology can be found in Appendix A. This benchmarking study was compiled with the assistance of Bristol York consultancy. Starting in 2007, we aim to conduct a wide-ranging discussion with interested parties to expand and evolve both the methodology and the output; we welcome all input and suggestions.

We endeavour to ensure that the data in this report are comprehensive and the most accurate currently available. However, with a document so wide in scope, and with reliance on third parties for some data, there will always be omissions and occasional inaccuracies; Ofcom welcomes comment on the content and style of its Communications Market reports to help inform future publications. Suggestions and queries should be sent to: market.intelligence@ofcom.org.uk.

The information set out in this report does not represent any proposal or conclusion by Ofcom in respect of the current or future definition of markets and/or the assessment of licence applications or significant market power or dominant position for the purposes of the Communications Act 2003, the Competition Act 1998 or other relevant legislation. This report should not be seen as recommending best buys and should not be relied upon when making any purchase decisions. Ofcom has conducted its own checks on the data in this report and while we consider it to be correct, Ofcom makes no representation or warranty, express or implied, with respect to information contained here and accepts no liability in respect of any of the results published, statements made, or any subsequent decisions taken by any person in reliance on the report.

1.1.4 Acknowledgements

We would like to thank the following organisations which have granted us permission to use their data: AMR International Limited, Analysys, the British Broadcasting Corporation, DigiTag, the Department of Trade & Industry, the European Audiovisual Observatory, the European Broadcasting Union and the individual Members of the EBU Information and Statistics Network, Eureca Research, Euronomitor, Global Insight, Informa, Law Business Research Ltd, Japan Broadcasting Corporation (NHK), Médiamétrie/Eurodata TV, Ovum, PBS, PricewaterhouseCoopers, Screen Digest, and the World Advertising Research Center Ltd.

1.2 Key themes

1.2.1 Convergence as a global trend

Ten or fifteen years ago, the construction of an international communications report would have been a reasonably straightforward affair. Nearly all of the main communications metrics were easily measurable, and reflected accurately the way in which consumers used services. We could have looked to the main PSTN fixed-line telephone network statistics (almost always the incumbent in each country) to examine the voice call patterns from consumers within the home. Analysis of the mobile operators (of which there were typically around two per geography) would have provided an accurate picture of the ways in which consumers used voice services when outside the home. The internet was still in its infancy and there was virtually no residential broadband service: we could therefore capture use of the internet by monitoring dial-up calls to internet service providers (again, the vast majority of this traffic would be carried by the incumbent fixed-line operator). And pay TV services were provided over a limited number of platforms with a small number of price points.

By 2006, however, the act of measuring and analysing consumer behaviour in the communications market has become far more complex. New sectors, products and services have sprung up; new operators have become established in all major sectors; both traditional and new services are being delivered to consumers over multiple platforms. This combination of new products, operators and delivery channels has combined to fuel the process known as convergence.

Convergence is a widely-used and wide-ranging phrase, and can take many forms:

- **Device convergence** allows consumers to access many different services from the same device, even if they are delivered over different platforms (an example might be a mobile phone with an integrated FM radio).

- **Billing convergence** means that consumers can receive many different services on the same bill and possibly deal with one customer support centre; this type of convergence also allows operators to offer bundled pricing of products, as a means to attract and retain multi-service customers (for example a combined cable TV/fixed-line bundle).

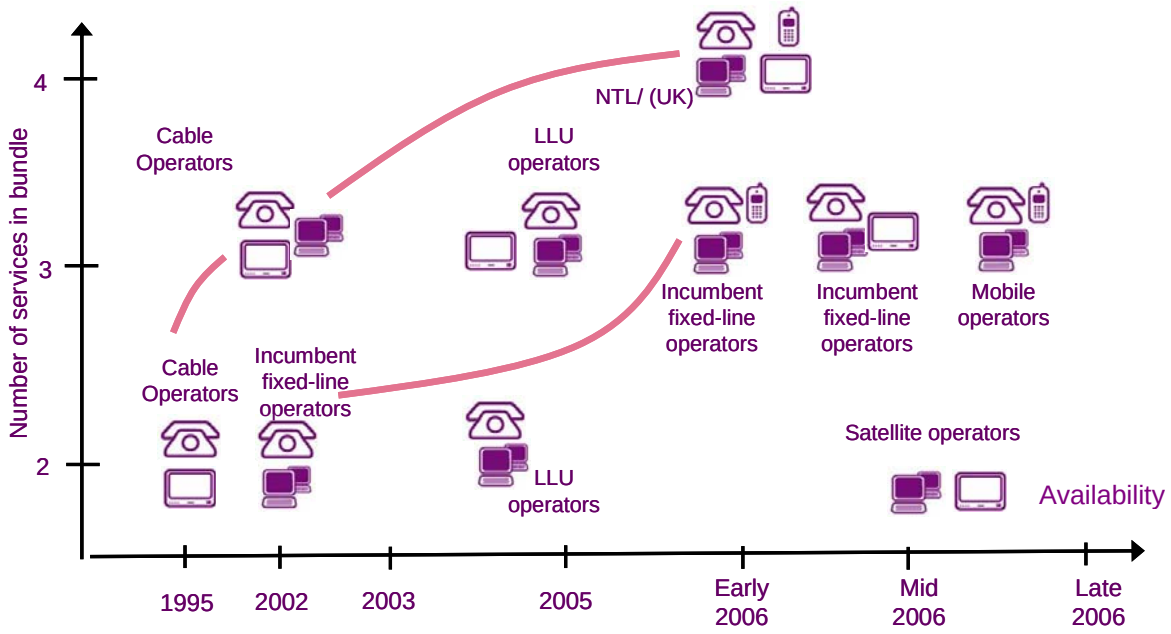
- **Platform convergence** is the most advanced – and fastest-growing – form of convergence. It enables consumers to access multiple products and services over a single platform, and often over one device, with a single operator relationship. Examples of this include voice over internet protocol (VoIP) telephony – both fixed and mobile – and TV over mobile devices.

Operators around the world are spending a lot of resource and effort in trialling and rolling out these new converged services, not only because they believe there is growing consumer demand but also because it can open windows for dynamic new operators to gain technology leadership and acquire customers from the traditional communications providers.

Figure 1.1 below charts the evolution of bundled communications services. The initial forms of cross-service bundles were provided over cable platforms. In the UK, the cable networks that were built in the early 1990s were among the first widespread networks to feature extensive fibre and both coaxial and twisted-pair copper connections to the customer. This meant that the UK cable operators were among the first in the world to be able to offer true bundles, comprising cable TV and fixed-line telephony.

In the mid 1990s, US and UK cable operators also began offering internet services over their cable networks, in conjunction with their existing cable TV offering. By 2002, incumbent fixed-line telephone operators began to offer DSL broadband internet alongside fixed voice. Then in 2005, some fixed-line operators started to offer mobile services in addition, using either their own networks or in conjunction with other mobile operators as Mobile Virtual Network Operators (MVNOs).

Figure 1.1: Evolution of bundled services across the world



Source: Ofcom

A step change in service bundling came in 2004 and 2005. As the traditional fixed-line operators in Europe opened their networks to service competitors in a generally deregulatory environment via local loop unbundling (LLU), new operators used these networks to offer consumers innovative bundled services. The pioneers of these new bundles (which included Fastweb in Italy and Free in France) were the first to offer TV via broadband, in addition to fixed-line voice and broadband internet – and all via the twisted copper cable that feeds into virtually every household in the developed world. This meant that multiple service delivery was available for the first time with relatively little additional investment required by either the operator or the consumer. In those countries where such services have gained market share, the incumbents have tended to respond with similar offers.

In addition to the totally new LLU operators, other communications providers with roots in different sectors have used unbundling to graft fixed-line, broadband and/or TV onto their traditional offerings. For example, in the UK mobile operator O2 acquired LLU player Be, putting it in a position to offer mobile/broadband/fixed bundled services, and the satellite TV operator BSkyB purchased LLU provider Easynet, which could allow it to expand its product offering, and also to bundling broadband services.

Of the major countries that we have analysed for this report, the UK demonstrated the most advanced availability and take-up of bundled services, with almost 35% penetration, owing largely to the head start enjoyed by the cable operators, and supplemented by DSL/voice bundles over the fixed-line network. France and Italy followed, due to the success of new LLU operators. In France, for example, around 1.8 million households (over 7% of all households) took combined Internet Protocol TV (IPTV), broadband and voice services from

Free by mid-2006, and in Italy, Fastweb had around 800,000 IPTV/broadband customers by the same time. In Germany and Japan, bundling has yet to make such a significant impact.

Key enablers of convergence

A number of critical enablers have driven the growth of convergence products and services over the past year. These include the following:

- **Falling costs of distribution:** the prices of broadband and mobile connectivity have both fallen significantly since 2005. In broadband, the drop has been particularly dramatic, while downlink access speeds have risen concurrently, meaning that consumers are getting a richer broadband experience for less money.

- **Increased penetration of broadband:** the number of consumers with broadband connections (especially connections above 2Mbit/s) has grown rapidly over the past two years. In many major world economies, well over 40% of consumers have both a mobile subscription and access to broadband.

- **Falling cost and physical size of storage capacity:** hard disk technology has evolved rapidly, meaning that digital storage has become ever more compact and exponentially cheaper. For example, consumers can now obtain 2GB hard disk USB key fobs, and Apple's new iPod digital music players store up to 80GB of content in a device no larger than a cigarette packet.

- **Lower barriers to entry for operators**: Innovation in convergence has undoubtedly been stimulated by the increasing ease of market entry for new operators. It is now relatively simple for any operator to not only have an internet presence, but also to act as an internet service provider (via either LLU or a bit-stream product), and to offer mobile services through either an MVNO operation or mobile partnership.

- **Digitisation:** an increasing range of services and content (for example TV, radio, telephone calls, photographs, music etc.) are now routinely stored digitally and transported digitally using packet-based networks. To the components involved such as storage and transport media, user terminals and network equipment, all such digital signals look the same. This allows for increasing levels of platform substitution or consolidation at a technical level – an important driver of convergence.

All of these factors have helped stimulate investment in new products and services, which in turn have helped drive take-up and adoption of converged applications. Another enabler could be the introduction of 'home hub' products and services, whereby operators provide a domestic centralised communications device able to manage a mixture of TV, broadband and telephony services. This hub can typically connect to multiple devices, including PCs, TVs, PVRs, games consoles and mobile handsets, thereby enabling consumers to access and store digital media seamlessly, wherever they are in the home.

Examples of new convergence services

A number of innovative convergence products and services have been introduced since 2005. The predominant current examples of convergent services include:

- **TV over broadband:** This encompasses both the IPTV model of packaged, encoded provision of digital TV services using the DSL platform (e.g. Free in France, or Homechoice in UK), and also the placing of TV content online by broadcasters, for viewing over any broadband connection. Examples of this include Channel 4 in the UK,

which simulcasts all of its proprietary content online, or ABC in the US, which offers online versions of many of its most popular shows.

- **TV over mobile:** During 2005 and 2006, most major mobile operators with 3G spectrum introduced TV services over their networks. Users typically subscribe to a package of TV programming (which increasingly includes 'live' scheduled programming) for a monthly charge, with caps on usage. While the use of 3G spectrum for TV is both technically and commercially feasible, many operators are examining the possibility of using other areas of spectrum and other broadcast-based technologies to deliver TV to customers over multi-mode devices. In the UK, O2 has trialled TV using the DVB-H platform and spectrum, with its trial customers using a dual-mode GSM/DVB-H handset. Virgin Mobile has recently launched a mobile handset in the UK which receives broadcast TV using DAB spectrum.

- **Fixed-mobile convergence:** Many telecoms operators have either trialled or commercially introduced fixed-mobile convergence services during 2005 and 2006. These services typically use a dual-platform handset combining a regular GSM mobile phone with another, shorter range, wireless technology. Most of the time, the handset uses GSM, with the short range wireless used to route calls via a customer's broadband connection while at home or in the office, potentially saving them money. Bluetooth is one option for the second wireless connection, as used by *BT Fusion* in the UK. WiFi is the other option as used by the Orange *Unique* service, launched in France and the UK in 2006. As well as the home/office case, WiFi-based solutions could also be used to bypass the GSM network when in range of public WiFi hotspots, which are becoming ever more numerous in most countries.

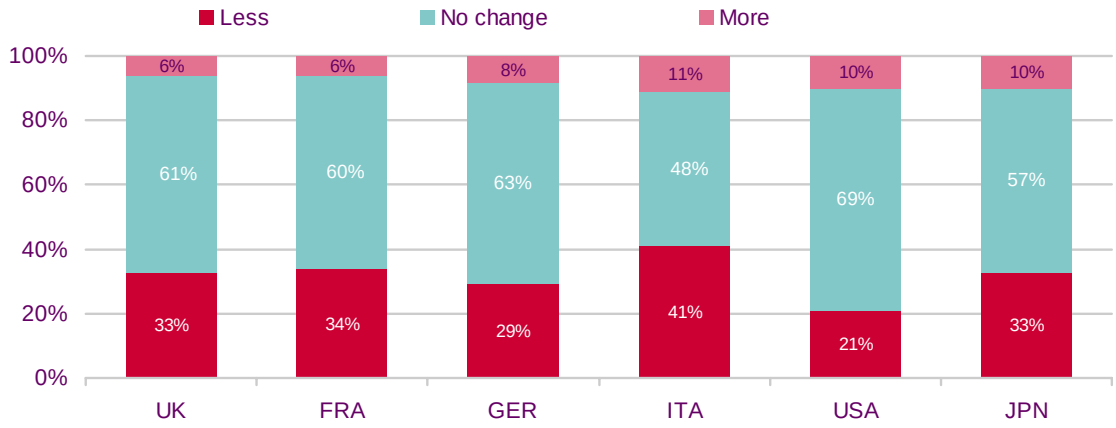
- **Unified software platforms and applications across multiple platforms:** Software and applications developers are currently investing heavily in multi-platform operability solutions; these enable consumers to move seamlessly between different devices or access technologies with a single identity and sign-on, and common applications. An example of this form of convergence is Microsoft's *Windows Live* environment, which allows users to access the msn platform, email, instant messaging, and, in the near future, TV and other content services, over multiple devices (home computer, mobile device, TV) with a single identity.

Evidence suggests that the convergence of content and services, particularly when delivered over a broadband internet platform, has to some extent altered consumer behaviours towards 'traditional' platforms and delivery mechanisms. For example, the research we commissioned for this publication shows that significant numbers of broadband-enabled consumers indicated that they watched less television via their normal TV sets since they acquired an internet connection (Figure 1.2). In Italy, this figure was the highest at 41%, with only 11% saying that they watched more 'traditional' TV. In the UK, 33% said they watched less TV, while only 6% said they had increased their viewing.

Figure 1.2: Changes in offline TV viewing since first using the internet

% adults with broadband at home

Since you started using the internet, which if any of the following activities do you believe you undertake more or less often OFFLINE? Watching television.



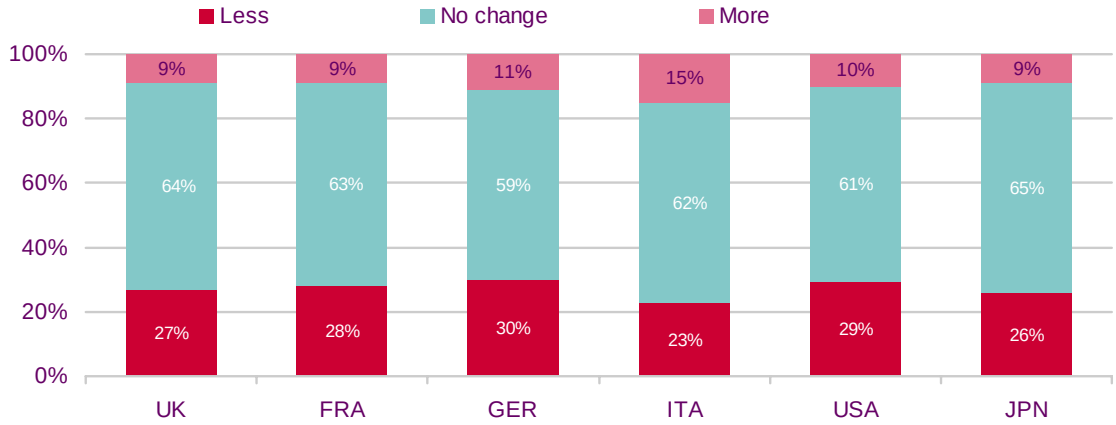
Source: Ofcom research, fieldwork carried out by Synovate in October 2006

Similarly, our research showed that the delivery of news, sport and feature content over the internet was having an impact on readership of national newspapers (Figure 1.3). Between 23% (Italy) and 30% (Germany) respondents said that they read national newspapers less since going online, with only small numbers saying they read more.

Figure 1.3: Changes in national newspaper readership since first using the internet

% adults with broadband at home

Since you started using the internet, which if any of the following activities do you believe you undertake more or less often OFFLINE? Reading a national newspaper.



Source: Ofcom research, fieldwork carried out by Synovate in October 2006

1.2.2 Young adults are leading the march towards convergence

Our international consumer research also confirms a trend reported in the UK 2006 Communications Market Report; that young people in many other countries are at the vanguard of new communications behaviours and activities. According to our international

online survey of broadband users, the internet is becoming a mainstream platform for media consumption among the young, who demonstrate much higher levels of engagement with different types of online content than older age groups.

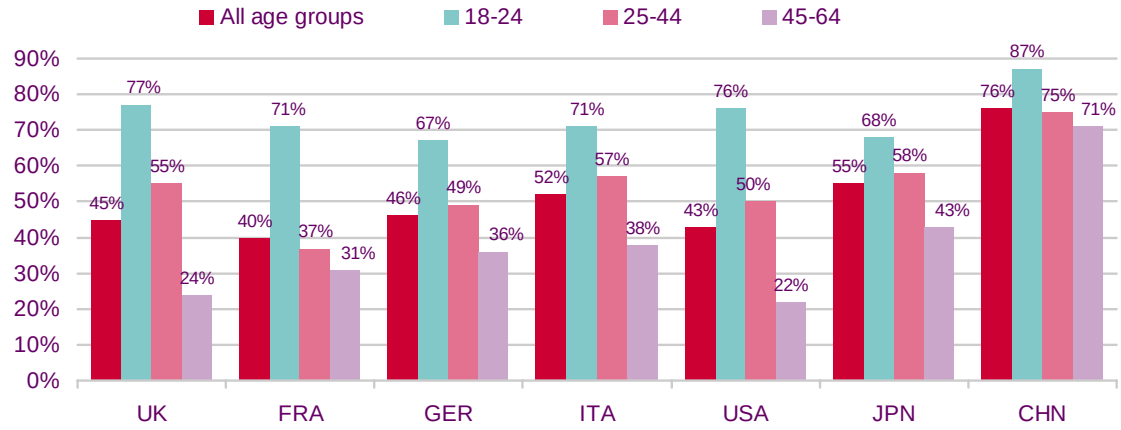
Figure 1.4 shows that, while the proportion who have downloaded or watched music videos online generally ranges between 40% and 55% in the countries surveyed, usage rises to 67%-87% for broadband users in the 18-24 age group.

Generational gaps in online music video use were highest in the US, the UK and France, all showing take-up by 18-24 year olds of at least 30 percentage points higher than the average across all age groups.

Figure 1.4: Watching music videos online

Have you ever watched or downloaded music videos to your PC?

% adults with broadband at home



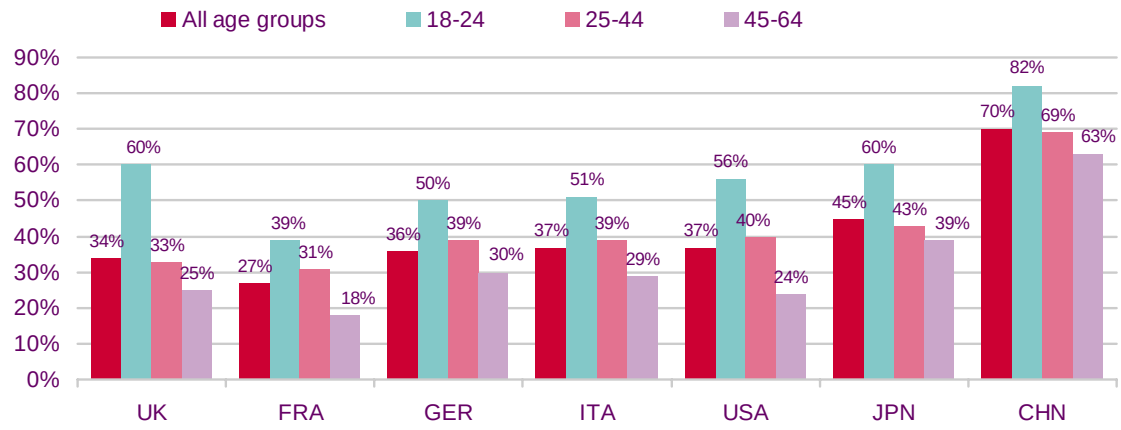
Source: Ofcom research, fieldwork carried out by Synovate in October 2006
Note: in Japan and China, broadband users surveyed were 18-54 years old

Whereas the high level of music video downloading among the youngest age group is unsurprising, as this is the primary target audience for the genre, a similar pattern can also be seen with television content; as age increases, again, reported usage decreases (Figure 1.5). While, in most countries, 30% - 40% of broadband users report having watched TV clips or whole TV programmes via their PCs, this rises to half or over for 18-24 year olds in all countries except France, where consumption among the broadband population as a whole is also relatively low. China again stands out, with a much higher proportion of broadband users downloading TV content than other countries.

Figure 1.5: Watching TV programmes online

Have you ever watched or downloaded clips from TV programmes or whole TV programmes via your PC?

% adults with broadband at home



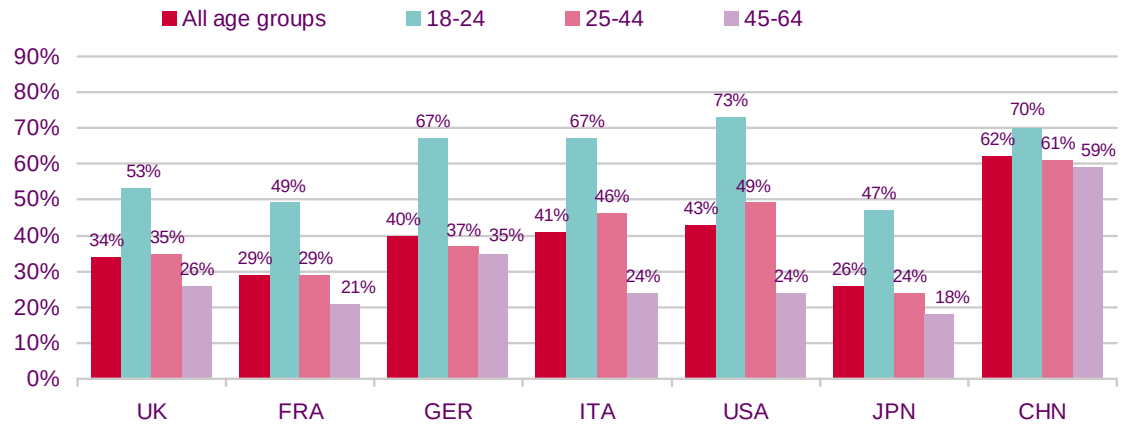
Source: Ofcom research, fieldwork carried out by Synovate in October 2006
Note: in Japan and China, broadband users surveyed were 18-54 years old

The appetite for digital content among young adults is not limited to traditional media formats; it extends to material produced by fellow internet users, where the generational differences are even more noticeable (Figure 1.6). Our findings suggest that user-generated video content is especially popular with young people in the US, China, Germany and Italy, where around two thirds of 18-24 year old broadband users surveyed reported downloading videos made by other people. This compares with averages for the total broadband population of 43% in the US, 40% in Germany and 41% in Italy.

Figure 1.6: Watching user-generated content online

Have you ever watched or downloaded videos made by other people via your PC?

% adults with broadband at home



Source: Ofcom research, fieldwork carried out by Synovate in October 2006
Note: in Japan and China, broadband users surveyed were 18-54 years old

Online news is something of an exception to the patterns observed in our survey. Although in most countries a slightly higher proportion of 18-24 year olds reported watching or downloading news clips via their broadband connection than all broadband users, the differences between age groups are not as pronounced as for other types of video content

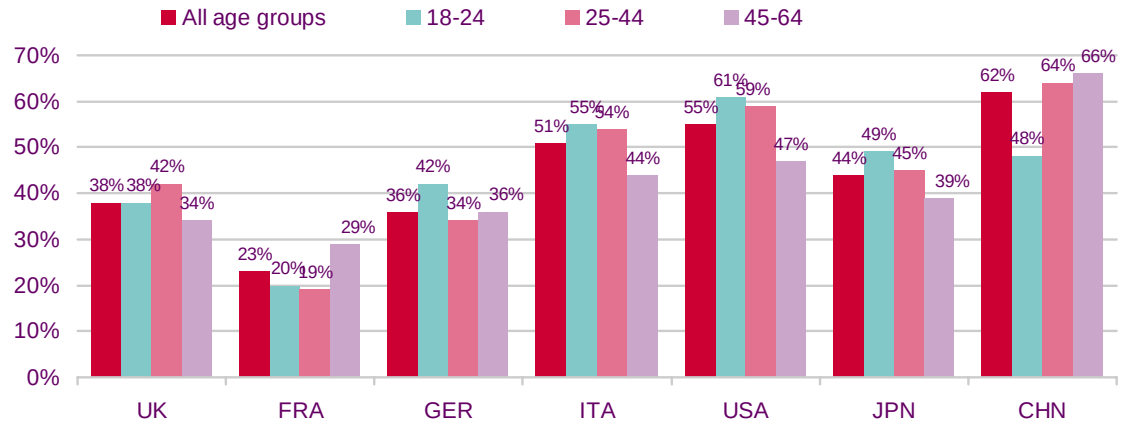
(Figure 1.7). Our findings indicate that, breaking this trend, in France and China a higher proportion of older users report having watched or downloaded news clips than 18-24 year olds. In the UK, the take-up of online news by broadband users in the youngest age group matches that of the overall user base.

The findings suggest news to be a more uniform online genre, equally consumed by different age groups. This may be, at least in part, explained by the fact that news is present on most ISP portals and homepages likely to serve as browser starting pages – it is easier to 'bump into' online than other content types and so may be habitually used by broadband users of different ages. In addition, older people may be generally more interested in news than other genres and therefore make greater efforts to seek it online.

Figure 1.7: Watching news programmes online

Have you ever watched or downloaded news clips via your PC?

% adults with broadband at home



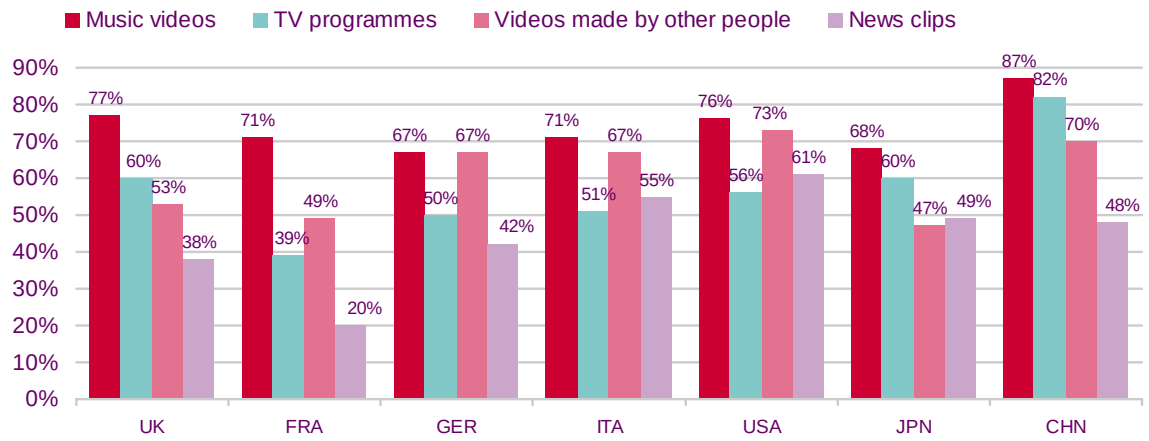
Source: Ofcom research, fieldwork carried out by Synovate in October 2006
Note: in Japan and China, broadband users surveyed were 18-55 years old

When plotting the use of different types of video content accessed by 18-24 year old broadband users, it becomes clear that music downloads are by far the most popular type of online video genre for this age group (Figure 1.8). Perhaps unexpectedly, user-generated content rates second in the US, Italy, Germany and France, where it is more popular than online television viewing among young adults. These findings may suggest that, while the internet does offer an opportunity for traditional TV market players to maintain their reach within this age group, content produced by ordinary people is a serious competitor for online attention.

Figure 1.8: Use of online media content by 18 – 24 year olds

Have you ever watched or downloaded any of the following via your PC?

% 18-24 year olds with broadband at home



Source: Ofcom research, fieldwork carried out by Synovate in October 2006

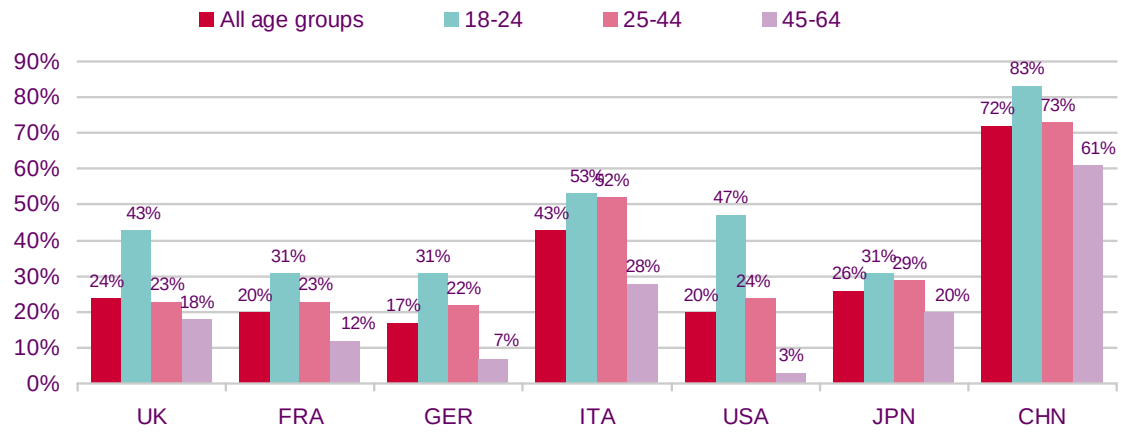
Young adults are not only enthusiastic users of online content, they appear much more likely to share the files they own or acquire content from other users via file-sharing communities. Such communities are based on 'peer-to-peer' (P2P) applications, which allow users to search other members' hard discs for files and download them to their own computers via a broadband connection, eliminating the need for a central server for storing and distributing content. P2P networks have been a subject of controversy in recent years, with many commentators suggesting that the ease of unauthorised file-sharing over such networks poses a threat to traditional content distribution models.

Our survey shows that almost every other broadband user in the 18-24 age group in the US is a member of a file-sharing community, compared to one in five for all age groups (Figure 1.9). In the UK, nearly twice as many 18-24 year old broadband users participate in such communities as those in the 25-44 age group. Interestingly, the usage gaps between age groups are lowest in China, Japan and Italy - countries where overall file-sharing is comparatively high.

Figure 1.9: Membership of file-sharing (P2P) communities

Are you a member of an online community or network designed specifically to allow you to download other people's files, and allow them to download yours?

% adults with broadband at home



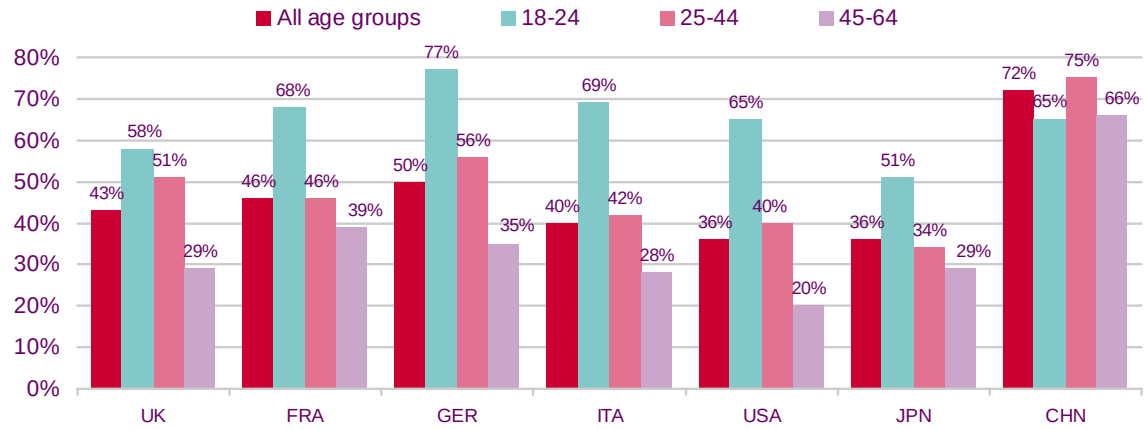
Source: Ofcom research, fieldwork carried out by Synovate in October 2006
Note: in Japan and China, broadband users surveyed were 18-54 years old

Our 2006 UK Communications Market research on young people in the UK has highlighted the growing role of the internet as an integral part of the social fabric for many young adults today, with the majority using it as a tool for interacting with peers and meeting new people via online communities, often referred to as 'social networking'. Our international survey of broadband users indicates a similar trend in many other countries. Figure 1.10 below shows that in all countries other than China, many more 18-24 year olds have used websites as a means of keeping in touch with people than is the case for the overall population. Germany had the highest level of use among this age group, at 77%, followed by Italy and France with almost seven in ten.

Figure 1.10: Use of websites to keep in touch with people

Have you ever used sites where you can chat with people you know or contact people you have lost touch with?

% adults with broadband at home



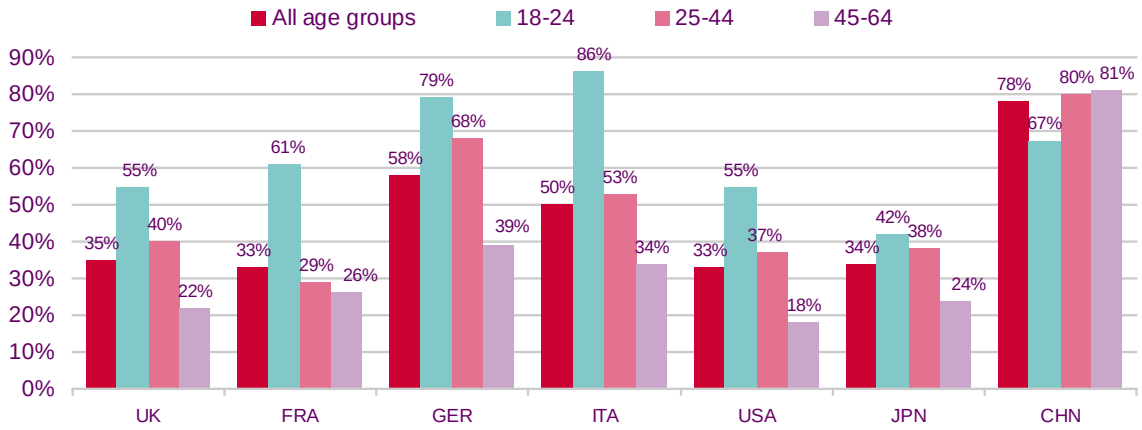
Source: Ofcom research, fieldwork carried out by Synovate in October 2006
Note: in Japan and China, broadband users surveyed were 18-54 years old

Similarly, young broadband users are much more likely to meet people online than users in other age groups (Figure 1.11). Italy, again, shows a very high level of use, with nearly nine in ten 18-24 year olds reporting having used websites to meet new people, compared to half of the general population. Getting to know people online is also common among German broadband users in the youngest age group, with 79% claiming to have used such websites, compared to a 58% average across all age groups.

Figure 1.11: Use of websites to meet new people

Have you ever used sites where you can meet and chat to new people?

% adults with broadband at home



Source: Ofcom research, fieldwork carried out by Synovate in October 2006
Note: in Japan and China, broadband users surveyed were 18-54 years old

1.3 The UK in context

In this section we summarise the information that appears in much of this report to show how the UK sits alongside our comparator countries in terms of availability, take-up, services and pricing.

Figure 1.12: Key communications market indicators

Telecoms	UK	France	Germany	Italy	USA	Japan	China
Telecoms service revenues	£24.8bn	£21.6bn	£31.9bn	£25.4bn	£126.4bn	£75.4bn	£36.4bn
Telecoms revenues per capita	£410	£356	£387	£436	£426	£591	£28
Fixed lines per 100 population	56.2	54.6	65.8	45.8	59.6	50.8	26.9
Mobile connections per 100 pop	108	77	96	123	70	71	29
Share of mobile post-pay	34%	64%	50%	9%	92%	97%	37%
3G connections per 100 pop	7.6	3.4	2.4	18.5	0.1	22.5	0.0
Broadband connections per 100 households	39.3	37.5	28.3	30.9	38.0	43.9	11.6
DSL as % of broadband connections	73.3	94.0	97.2	94.8	42.2	64.8	71.8
WiFi hotspots per 100,000 pop	17.6	16.2	10.5	3.0	8.8	5.3	0.2

Television	UK	France	Germany	Italy	US	Japan	China
Total industry revenue	£9.9bn	£6.9bn	£8.4bn	£5.4bn	£74.7bn	£19.5bn	£4.5bn
Revs per capita	£164	£114	£102	£94	£253	£154	£4
Advertising	*£59*	*£37*	*£36*	*£55*	*£131*	*£83*	*£2*
Subscription	*£65*	*£47*	*£29*	*£21*	*£121*	*£45*	*£2*
Public funding	*£40*	*£30*	*£37*	*£18*	*£1*	*£26*	*£0*
TV households	25m	24m	39m	21m	110m	48m	341m
Annual licence fee	£132	£80	£140	£68	No fee	£74	No fee
Largest TV platform Proportion of homes (%)	DSat 34%	ATT 58%	ACab 57%	ATT 66%	ACab 41%	ACab 33%	ATT 63%
ATT channels	5	7	13	9	6	7	16
Viewing per capita (mins/day)	219 min	206 min	211 min	237 min	271 min	281 min	154 min
Share of three largest channels (%)	55%	67%	41%	56%	25%	54%	20%
DSO completion date	2012	2011	2009	2012	2009	2011	no date

Radio	UK	France	Germany	Italy	US	Japan	China
Total industry revenue	£1.2bn	£1.1bn	£2.2bn	£0.8bn	£11.0bn	£1.9bn	£0.2bn
Revs per capita	£21	£18	£26	£14	£39	£15	£0.13
% public funding	50%	55%	80%	56%	0.8%	53%	0%
Number of licensed stations	327	437	327	118	8903	300	308
Listening per head per day	195 mins	177 mins	171 mins	125 mins	167 mins	122 mins	89 mins
Four top station share	41%	39%	51%	28%	n/a	n/a	n/a

1.3.1. Digital platforms are becoming widely available throughout the world

In the 2006 UK Communications Market Report we highlighted the growing availability of a variety of digital broadcast, telecoms and online services. This is clearly a pattern being mirrored across the globe.

Television programmes can now be watched online and via mobiles in several countries including the US, Germany, France and the UK, while digital satellite and cable television platforms are available in the majority of territories in our analysis. The timing and speed of digital terrestrial television (DTT) adoption has varied by country; the platform was launched in the late 1990s in the US, the UK and Sweden. At the end of 2005, Sweden had the most extensive DTT coverage for a single multiplex (93% of the population), while Spain and the UK followed with around 80%. China, Poland and the Republic of Ireland have yet to launch DTT. (Coverage by all six multiplexes available in the UK currently stands at 73%).

Digital radio services are also available across the globe, delivered over a range of platforms and technologies. Digital Audio Broadcasting (DAB) was first launched in the UK in 1995, and then in Germany in 1999. At present, DAB services can also be accessed in Italy, China and Japan, although roll-out has stalled in Sweden, where there were complaints of insufficient availability of receivers. Germany and the UK have the highest DAB population coverage of the countries examined (85% and 82% respectively), while China has the lowest (2%), although it has announced plans to launch a wider roll-out in time for the 2008 Beijing Olympics. Digital satellite radio was launched in the US in 1998, with subscription-based services from Sirius and XM, which offer some advertising-free stations.

Digital Satellite radio is also available in Africa, South East Asia and parts of Europe through Worldspace, which has announced its intention to expand to the US and Europe. As the US military was using the spectrum which is required by the DAB broadcast protocol, the country developed an alternative standard, introducing Hybrid Digital (HD) radio in 2002. Thus far, there has been little adoption of HD radio in other countries, but it is expanding within the US and now broadcasts 1,015 stations.

In mid-2003, 16 stations broadcasting via Digital Radio Mondiale (DRM) technology went to air during the World Radiocommunications Conference in Geneva. Over 100 services now broadcast using this technology across Europe, the US, China and North Africa. In addition, the internet is emerging as an important delivery platform for audio, offering live radio, radio-on-demand and downloadable programmes.

Broadband availability was high among all of the territories for which figures were available. Sweden and Germany had the lowest availability; however, 90% of their citizens were still able to subscribe to broadband services. A report published in March 2006 by Ovum and the DTI showed that the UK had the highest broadband availability of the countries in our analysis, at just lower than 100%; according to BT, 99.6% of UK premises are now connected to a DSL-enable telephone exchange at 512kbit/s or above.

With the exception of China, fixed-line telephony is available to almost every household in each country in this study, while mobile networks typically cover around 90% of the population. 3G mobile networks are currently being rolled out in many nations and comparable availability measures have not yet been developed, although the UK appears to have one of the more extensive networks.

The number of WiFi hotspots, which offer localised internet access, has recently started to grow, with hotspots now available in most major cities in the developed world. The US offers the largest number, 26,002 in Q1 2006, followed by the UK, France, Germany and Japan, with between 6,796 and 10,667 each. When measured by population, however, the Republic

of Ireland and the UK have the most saturated hotspots market, with around 18 per 100,000 people, followed by France (16), Germany (11) and the US (9).

1.3.2 Proliferation of TV channels, radio stations and new services

Digital technology has brought greater choice in broadcast services in the UK and as a nation we remain at the vanguard of many new digital technologies and services. However, innovation is springing up all over the world and most countries are following a pattern of fixed to mobile substitution and rapid DSL broadband growth.

The switch to digital has increased the number of radio services offered in most countries, with 300 - 500 stations now the norm, while the US has almost 9,000. Similarly in television, digital satellite and cable platforms in several countries offer upwards of 250 channels. Many of these are pay services, but digital technology has also increased the number of free-to-view channels available, particularly on terrestrial television. In France six channels were previously broadcast using analogue signals but this rose to 18 with the advent of DTT, while in the UK five terrestrial channels became more than 30.

Traditional analogue broadcasters are adapting their business models in many countries, launching new pay channels, for example NBC with *Bravo* and *CNBC* in the US, or moving existing channels from pay to free platforms, as Channel 4 did with *Film 4* in the UK. In addition, new services are emerging that exploit the opportunities afforded by digital technology, thereby generating alternative revenue streams. Pay-per-view (PPV) was widely deployed in the early days of digital television, and now content delivered on demand and internet protocol television (IPTV) services are beginning to take shape.

High definition television (HDTV or HD) is also becoming widely available across the globe. Japan launched the first service in 1985 on analogue terrestrial television and the US broadcast the first digital HD service in 2000, offering 30 national HD channels by 2005. In Europe, the technical viability of offering HD via DTT is currently being explored, with pilots launched in Sweden in 2005 and in London in mid-2006.

Given the infancy of HDTV, levels of consumer interest remain relatively untested and business models are still unfolding. Some interesting developments are, however, emerging; in Germany, for instance, Premiere has introduced new tariffs which make it less costly to access HD services.

In telecoms, services that have emerged recently include Voice over Internet Protocol (VoIP), which is already having an impact in many markets; in Japan 9% of the population use the internet to make calls to fixed lines. In addition, a range of advanced mobile services are now available in several territories, including the UK, which can automatically determine the location of a caller and provide a list of nearby retailers of specified types.

1.3.3 Take-up of digital services is growing in most countries

The combination of increased availability, greater choice of services and innovative new communications products has been widely embraced in the UK. But, to varying degrees, digital take-up is increasing in all of the countries in this analysis.

Television reception methods vary by country, but digital take-up is increasing

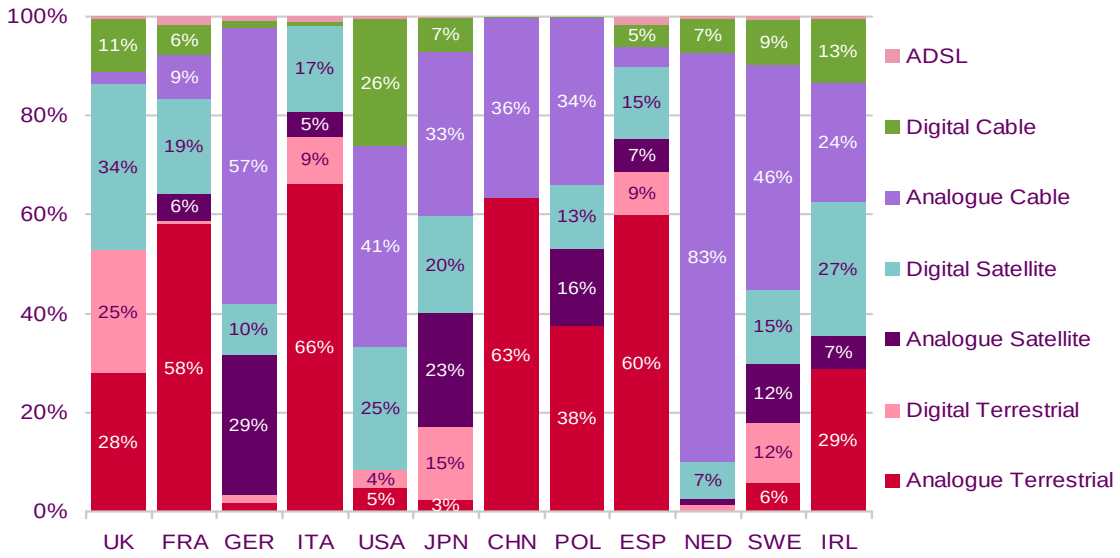
Countries vary significantly in their adoption of different delivery platforms (Figure 1.13). The UK, the US and Japan rely most heavily on digital distribution (via satellite, cable and DTT), as the drive to digital switchover gathers pace. A majority of homes in some countries,

however, still rely on analogue terrestrial television (ATT), for example Italy (66%), China (63%), Spain (60%) and France (58%). Digital terrestrial television has been introduced in the majority of countries in our review, although not yet in the Republic of Ireland, Poland and China.

Unlike the UK and France, countries such as the Netherlands, the US, Germany and Sweden rely predominantly on cable distribution, both digital and analogue, with over half of their homes using the platform.

Figure 1.13: Reception devices connected to the main television set

Proportion of homes (%)



Source: IDATE

While a number of countries, such as France, Italy and the UK, rely more on free-to-view services than pay, others, most notably the US, have a majority of pay subscribers. (In Germany and the Netherlands, cable operators offer 'utility access' to 'free-to-view' channels for a small monthly fee; this is sometimes counted as 'pay TV' but does not conform to our definition, which concerns the provision of 'premium' channels).

As with television, radio sets are widely available in most homes. France has an average of six sets per household, the UK has five, while China has one. Given the comparatively recent emergence of digital radio platforms, little cross-country data on DAB take-up is available, although 3.5 million sets had been sold in the UK as at August 2006, equating to around 11 per cent of households. Meanwhile, high-powered satellite radio, delivering services to dedicated sets which contain embedded conditional access without the need for a reception dish (though still requiring an antenna), appears to be gaining ground in the US. Sirius and XM had attracted around 12 million subscribers by July 2006, while Worldspace has a little over 100,000 subscribers in Africa, South East Asia and parts of Europe.

Users are substituting mobile for fixed-line telephones

The number of fixed lines has been declining slowly in the majority of countries we have examined, while the number of mobile subscriptions has been increasing. The decline was largest in the US, where fixed lines were down 6% between 2000-2005, which was offset by a 63% rise in mobile subscriptions over the period. Germany and the UK had fixed-line falls of 14% and 11%, and mobile increases of 43% and 46%, respectively.

China bucks this trend, with around a 50% rise in the number of fixed lines between 2001 and 2005. This stems from the relatively low base of lines installed before 2000 – and even in 2005, with the largest number of lines (267 million) in the world, China has the lowest fixed line penetration at 27 lines per hundred population. This contrasts with Sweden, which had the highest number of lines per hundred people of the countries surveyed at 69 and the UK, which falls slightly above average (56 lines).

Similarly, the sheer size of the Chinese population meant it had the most mobile subscriptions (374 million) but had among the lowest population penetrations (29%) of the countries examined. By 2005, Italy, Spain, Ireland and the UK all had more mobile subscriptions than inhabitants, implying a growing number of users with multiple subscriptions. This is partly because of a rise in the take-up of secondary business mobiles but could also be the result of consumers using alternative pre-pay subscriptions at different times of the day according to tariff availability.

There is significant variation between countries in the ratio of pre-pay (pay-as-you-go) to post-pay (contract) mobile use. For instance, in 2005 over 90% of Italians pre-paid for their mobiles, whereas nearly all Japanese and Americans used post-pay contracts. In the UK, nearly 70% of mobile users had pre-pay contracts.

3G mobile services appear to be gaining ground now in many countries – NTT DoCoMo in Japan was the first to launch a large-scale commercial offering and has nearly three times as many subscriptions (29 million) as Italy which was second with 10.8 million in 2005. Germany counted over five million and the UK around 4.6 million, while China has yet to launch 3G services.

When measuring 3G as a proportion of total mobile connections a similar picture emerges, with Japan leading with a share of 32%, ahead of Italy at 15% - the UK stands at 9%. In population terms, however, the penetration gap narrows – with Japan at 22.7% and Italy at 18.6%, and the UK lower with 10%.

Broadband penetration is rapidly increasing, particularly DSL

Broadband take-up is also increasing rapidly across the countries examined; the US had the largest number of connections at 44.9 million in 2005, closely followed by China with 40 million (up from just one million in 2001). The UK had ten million broadband connections by 2005, growing at a rate of 27% between 2001 and 2005.

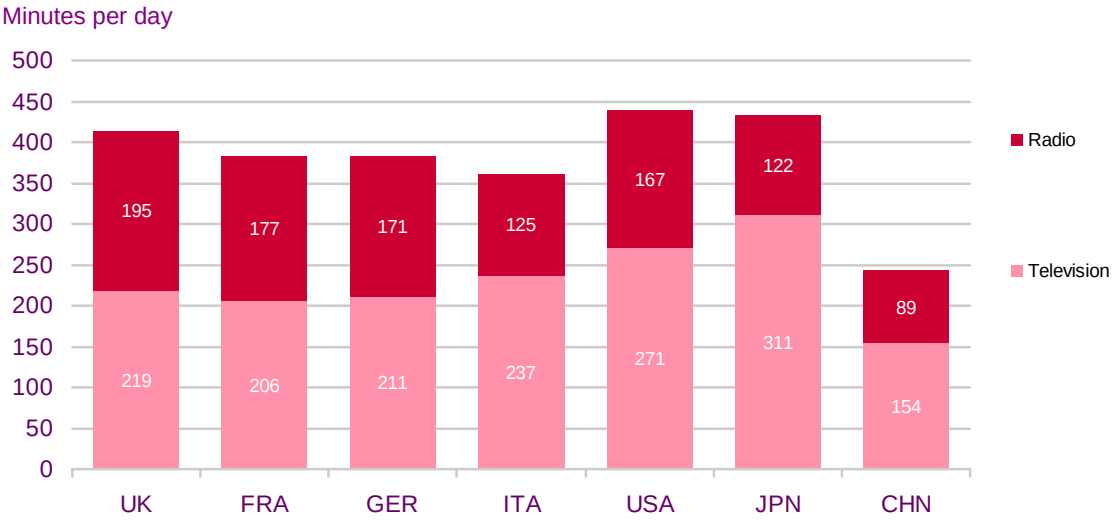
The penetration of broadband connections per 100 people similarly grew between 2001 and 2005. The Netherlands saw the greatest increase in connections (49% over the period), followed by Japan and the UK (both 38%). The countries with the highest penetration rates were the Netherlands (58%), Sweden (45%) and Japan (44%).

The platform over which broadband internet is received varies significantly by country, although there is a trend away from using cable modems and towards DSL, largely owing to wholesale price decreases for bitstream or LLU, thereby encouraging competitive broadband operators to enter the DSL market. In Germany, Deutsche Telekom, which originally owned both the cable and fixed line networks, chose to invest in the latter – and practically all broadband connections there were via DSL in 2005, as were around 94% of those in France and Italy. By contrast, cable still has a strong role in the US (55% of connections), the Netherlands (39%), Poland (35%) and the UK (27%).

1.3.4 Watching TV programmes remains a key leisure activity

Television and radio consumption varies by country but everywhere broadcasting plays a hugely significant role in the leisure activities of the average citizen (Figure 1.14). The Japanese and Americans view the most, at 311 and 271 minutes per day respectively, whereas China consumes the least at 154 minutes (2.6 hours). The UK, too, has relatively high viewing of TV at 219 minutes, and leads the group of countries in this analysis in terms of radio listening at 195 minutes per day, followed by France (177 minutes) and Germany (171 minutes). The Chinese listen the least (89 minutes), reflecting the lower penetration of radio sets.

Figure 1.14: Daily consumption of broadcasting services



Source: Ofcom

Consumers spend far less time talking on the telephone than watching TV or listening to the radio. However, consumption is growing here too; between 2001 and 2005 mobile call volumes grew rapidly, fuelled by both increasing numbers of subscriptions and a rise in use per subscriber, with average use of between four and eight minutes per day across the countries covered. Fixed call volumes remained broadly flat, despite falling prices, leading to average landline use of between one and four minutes.

1.3.5 A new approach to international price benchmarking

As part of our original research for this publication, we conducted a price benchmarking analysis using a new methodology. We believe our approach better reflects the prices consumers actually pay, because it takes into account both bundled service packages and connection/equipment costs.

Basic methodology

For our benchmarking project, we constructed four household types, each with different usage and device ownership patterns:

- **Household 1** consisted of two high users, with high use of voice within the home, two above-average-use mobile contracts, high-speed broadband, premium pay TV with sports and movies. This household also owned a premium LCD flat screen TV and a regular TV, and both a high-end home computer and a second basic PC.

- **Household 2** represented a family of two adults and two teenage children, with average home voice usage, one contract mobile service and two pre-pay, basic pay TV and basic broadband. This household owned two PCs and three TVs (one of them premium).

- **Household 3** was a lower user household, with low in-home voice usage, one pre-pay mobile, dial-up internet and free-to-air DTV. It owned one basic PC and two basic TV sets.

- **Household 4** represented a very low user group, with only basic in-home voice needs, no internet use, and free-to-air TV. This household owned one TV and no PCs.

We have analysed five countries: the UK, France, Germany, Italy and the US. (We did not analyse Japan and China, largely owing to the difficulty of obtaining English language tariff information in the available timeframe). For each of the countries, we gathered tariff information (as of September 2006) across all communications services – including bundled tariffs where they were available and appropriate. We generally collected tariffs for two or three major operators in each communications sector (or cross-sector where bundles were involved). In this way, we intended to capture real-world tariffs that were available and being used by significant proportions of the population in each country. We chose not to do an exhaustive search of all possible tariffs, both because the tariffs of the major operators capture the prices paid by the largest subscriber bases in each country and also because they reflect price competition lower down the market share scale. We therefore feel that our results are broadly reflective of the state of prices in each market.

Having collected tariffs, we then matched usage patterns to these tariffs by country. For each household type, we selected the tariffs that met these usage patterns for the lowest price, using bundles where appropriate. As an example, our approach allowed us to use 'triple-play' cable TV / broadband / fixed-line for higher-use households, rather than stand-alone services.

In addition to service tariffs, we also examined equipment costs, amortised over a product lifecycle, as part of a 'total cost of ownership' approach. This is particularly important in the area of mobile telecoms, where operators in some countries typically subsidise handsets to attract new customers – these are then effectively 'recouped' through tariff payments through the life of the contract. In other countries, by contrast, mobile operators do not (or in some cases are not permitted to) subsidise handsets: the consumer therefore buys them at retail cost, and the operator has no commercial need to recoup a subsidy via the tariff. This anomaly means that a simple comparison of tariffs can be misleading; we believe our approach helps to eliminate this disparity. We chose to amortise mobile handsets over a two-year lifecycle; evidence comparing European mobile handset sales in 2005 with the installed subscriber base (making adjustments for new subscribers) suggests that this is a fair amortisation period.

As well as mobile handsets, we have also considered other communications equipment, chiefly home computers, set top boxes/modems, and TV sets. All of these products are critical enablers of their relevant communications services, and should, we feel, form part of the total cost of ownership model. These costs were also amortised over suitable periods (again, see Appendix A for details). For the purposes of this report, we have not calculated an annuity to represent the equipment costs – rather, we have used a simple unadjusted straight-line amortisation. In future versions, we intend to calculate the relevant annuities.

One last factor that we considered was also mobile-specific: we made allowances for the 'called party pays' mobile pricing approach used in the US (and a handful of other countries). We captured this through allowing for variations in both mobile-to-fixed and fixed-to-mobile

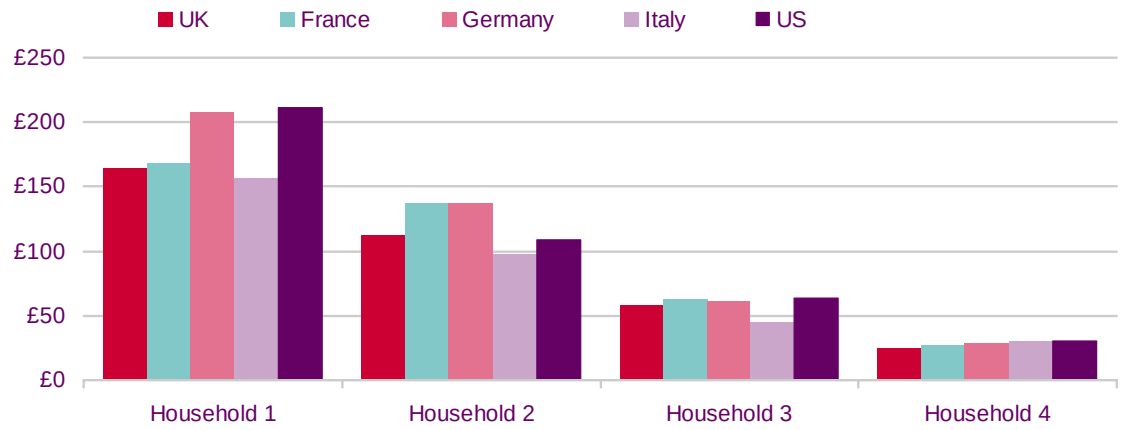
prices within each household bundle (a fall in one tends to be cancelled out by a rise in the other).

Note that we have converted prices back to GBP, using a comparative price level adjustment. Monthly comparative price levels are defined as the ratios of PPPs (purchasing power parities) for private final consumption expenditure to exchange rates. This represents the number of specified monetary units needed in each of the countries listed to buy the same representative basket of consumer goods and services, relative to any specified country (in this case, the UK). Further information on comparative price adjustment can be found on the OECD website: www.oecd.org. We have also included all sales taxes and other surcharges in our price analysis – this has been done in order to reflect the total prices that consumers actually pay, but obviously does not allow for differences in other areas of personal taxation policy within each country.

Initial results

Figure 1.15 shows the results of our benchmarking exercise, which reflect monthly recurring service costs only. Subject to the methodological caveats outlined above and in Appendix A, the output suggests that the UK sits towards the lower end of the five countries.

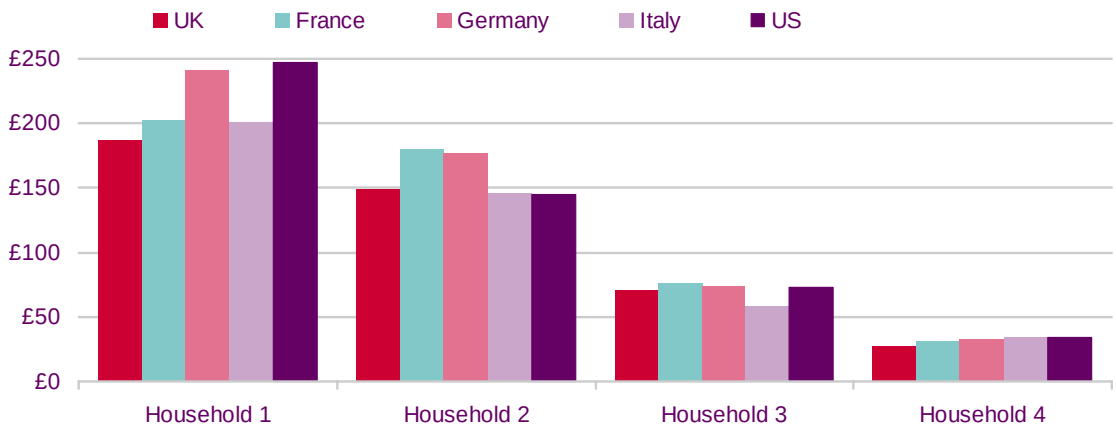
Figure 1.15: PPP-adjusted monthly price of communications services, excluding connection/equipment costs



Source: Ofcom

Adding amortised equipment costs and connection fees alters the monthly costs significantly, as shown below in Figure 1.16. When these costs are added, Household 1 in the UK pays a total of around £188/month (compared with £165/month excluding equipment/connection charges). In addition, the combination of lower hardware costs and higher mobile handset subsidies in the UK (particularly compared with other European countries) means that using this 'total cost of ownership' measure, Household 1 in the UK pays less per month than any other country in the analysis. This is in contrast to the 'service-only' analysis, where UK Household 1 sat in line with France and Italy. Here, the UK also appears to be the cheapest for the lowest users (Household 4).

Figure 1.16: PPP-adjusted monthly price of communications services, including connection/equipment costs



Source: Ofcom

1.3.6 Communications revenues - telecoms biggest but TV growing fast

The UK generated £38bn of communications sector revenue in 2005, making it the fourth largest communications market in the world, and the fourth largest of the countries in this study in terms of revenue per capita. In this section we give a breakdown of revenue and growth for other territories to help place the UK in context.

Worldwide communications revenue totalled £837bn in 2005, having grown at an average annual rate of 5.9% since 2001 (Figure 1.17).

Telecommunications revenue (fixed voice, mobile voice and mobile data and broadband subscriptions) at £649bn, accounted for 78% of the total. Television revenue (advertising, subscriptions and public funding) made up a further 19% (£163bn), with radio (advertising and some subscription revenue) accounting for the remaining 3% (£25bn).

On a global scale, television was the fastest growing of the three industries, with revenue up an average of 7.2% per annum since 2001, comfortably outstripping telecommunications (5.7%) and radio (3.9%).

Figure 1.17: Global communications revenue, 2001 – 2005

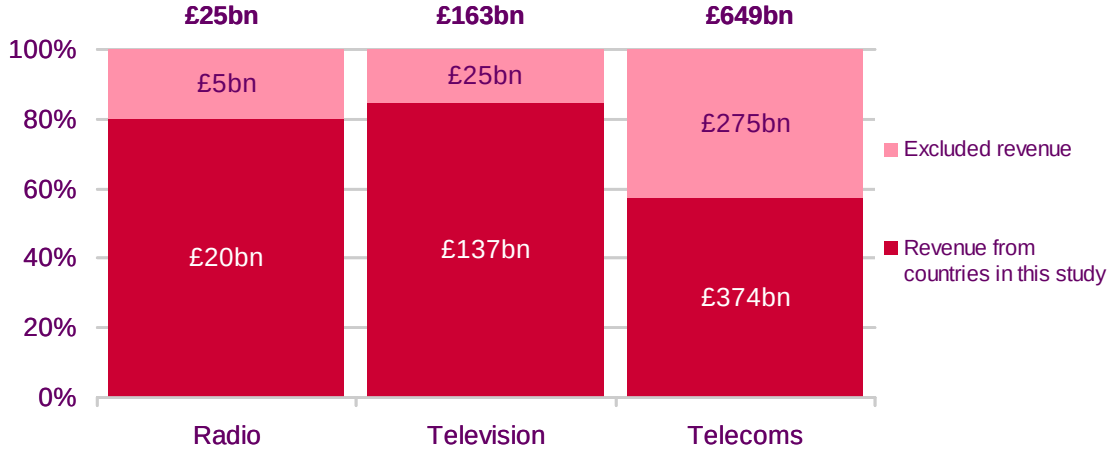
Total revenue (£bn)

Source: IDATE DigiWorld, PWC Global Entertainment and Media Outlook andOfcom

Revenue in the twelve countries examined in this study totalled £532bn in 2005, accounting for 64% of the worldwide figure. However, a higher concentration of television and radio revenues among the studied countries means that they capture 85% of television sector revenues and 80% of radio (Figure 1.18). The telecommunications industry is more evenly distributed across the globe so that our comparator countries account for 58% of worldwide telecoms revenue.

Figure 1.18: Revenue distribution between countries in and out of study

Proportion of global revenue (%)



Source: IDATE DigiWorld and PWC Global Entertainment and Media Outlook 2006-2010

Figure 1.19 illustrates the distribution of industry revenue among countries in this study. The US makes by far the most substantial contributions to the radio and television sectors (56% and 54% of total revenue respectively), although in telecommunications it accounts for just 34% of the industry total.

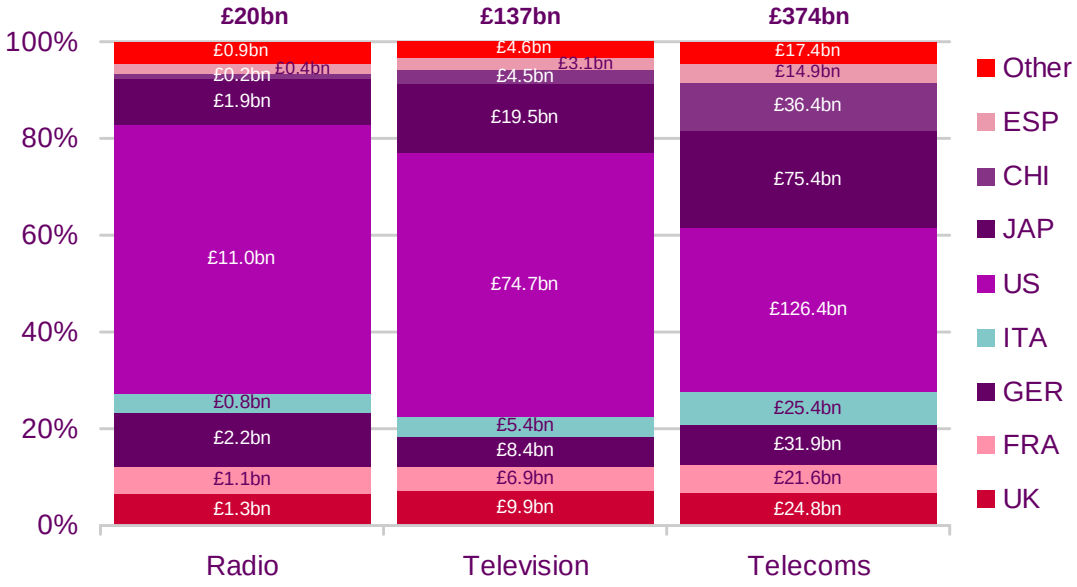
Japan has the second largest television market (with £19.5bn, or 14%, of total revenue) owing to its large population, followed by the UK (£10.6bn or 8%). In radio, the German industry is second largest (£2.2bn) explained by the substantial investment made by the

publicly-funded broadcaster ARD in its network of radio stations. Japan comes third with £2bn, followed by the UK at £1.2bn in 2005.

In telecoms, Japan and China attract the largest revenues after the US (£75.4bn and £36.4bn), followed by Germany (£31.9bn), Italy (£25.4bn) and the UK (£24.8bn).

Figure 1.19: Proportion of revenue accounted by the countries in this study

Breakdown of revenue by countries analysed



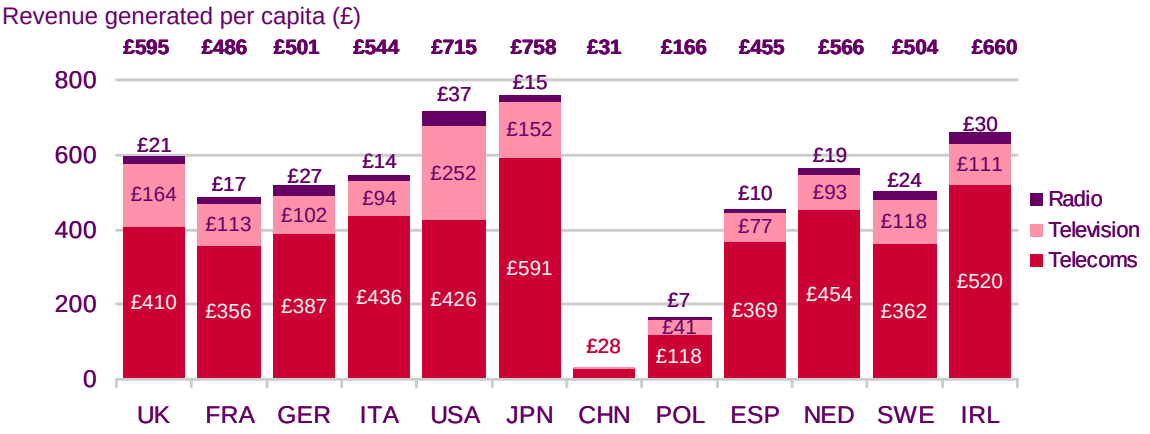
Source: IDATE DigiWorld / PWC Global Entertainment and Media Outlook 2006-2010 / IDATE / Ofcom / estimates based on national regulator data
Note: telecoms revenue in this chart excludes corporate, value-added and dial-up internet service revenue as comparable data was not available for all countries; 'Other' includes Poland, the Netherlands, Sweden and Ireland.

On a per capita basis, Figure 1.20 shows that Japan emerged as the country with the highest annual communications revenue in 2005 (£758 per head per annum). The US came a close second with £715 followed by the Republic of Ireland with £660, perhaps explained by the country's current economic buoyancy. China and Poland, with £31 and £166 respectively, were the countries in this survey with the lowest per capita revenue by a considerable margin.

Japan's high overall communications revenue is driven by its position as the country with the highest per capita telecoms revenue, with the Republic of Ireland coming second at £520. Telecoms revenue per head among the remaining countries all fell in the range £356-£450.

Greater variance was found in the revenue per head in the television industry, where the US was highest, at £252 per annum, followed by the UK with £164 and Japan with £152. The remaining countries (except China and Japan) generated per capita television revenue in the £77 - £118 range. China and Poland once again were lower, with £3 and £41 respectively.

Figure 1.20: Communications revenue generated per capita



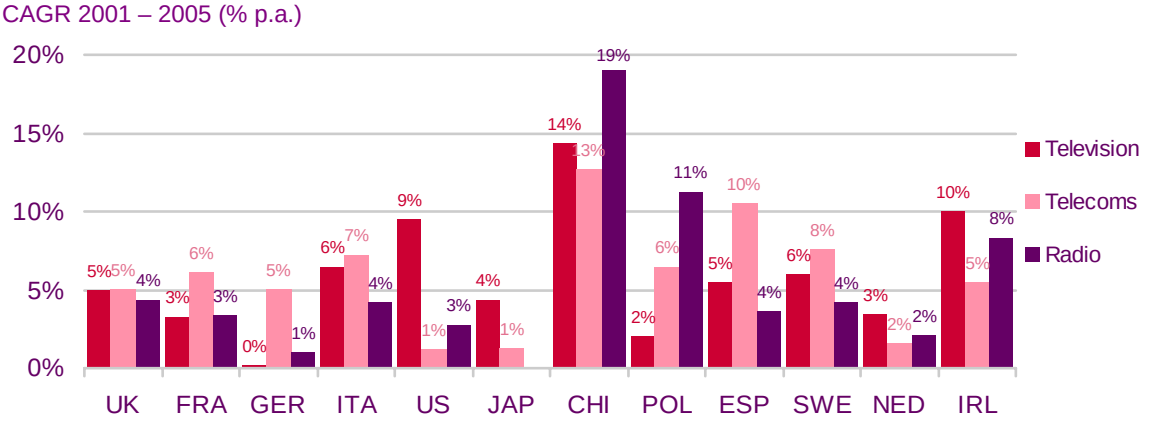
Source: IDATE DigiWorld / PWC Global Entertainment and Media Outlook 2006-2010 / IDATE / Ofcom / estimates based on national regulator data

While China's current total communications industry revenue is low, all three sectors have shown considerable capacity for expansion, with growth in the 13% - 19% range over the period 2001 – 2005, compared to 5% for the UK (Figure 1.21). All other countries have experienced a less even pattern of growth between the sectors that make up the communications market. For example:

- Telecommunications has been the fastest growing communications sector in France, Germany and Spain;
- The television industry has been the fastest growing communications sector in the US, Ireland and the Netherlands; and
- Italy and Sweden have seen significant growth in both television and telecommunications.

With the exception of China, Poland and Ireland, the radio industry has seen more modest growth than the other parts of the communications sector in each country, perhaps starting to feel the impact of online advertising.

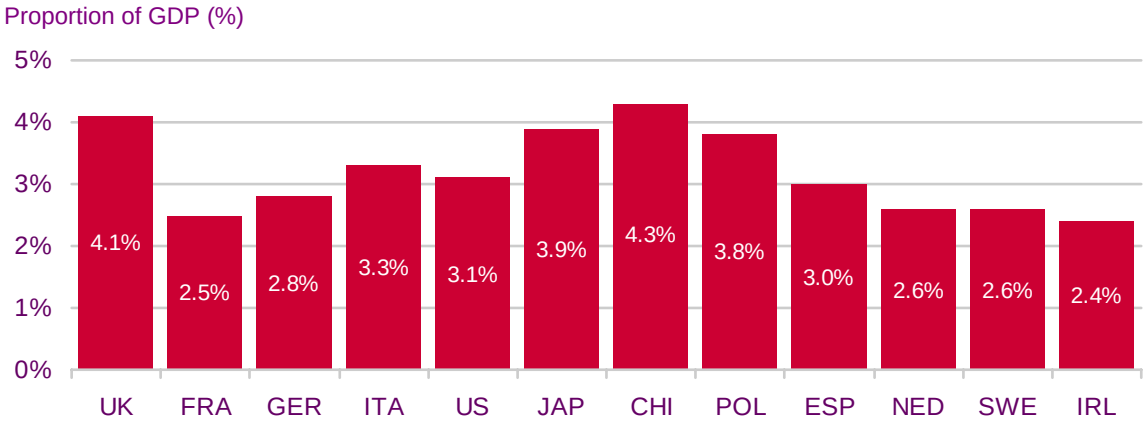
Figure 1.21: Annual growth across communications industries, 2001 - 2005



Source: IDATE DigiWorld / PWC Global Entertainment and Media Outlook 2006-2010 / IDATE / Ofcom / estimates based on national regulator data

Finally, there is some variation to the overall contribution made by the communications industries to each country's economy (Figure 1.22). At 4.3% of GDP, China's communications market has a significant impact on the Chinese economy as it does in the UK at 4.1%. Japan and Poland (3.8% and 3.9%) also make a significant contribution; in the remaining countries, communications revenues make up between 2.4% and 3.3% of total GDP.

Figure 1.22: Communications revenue as a proportion of GDP

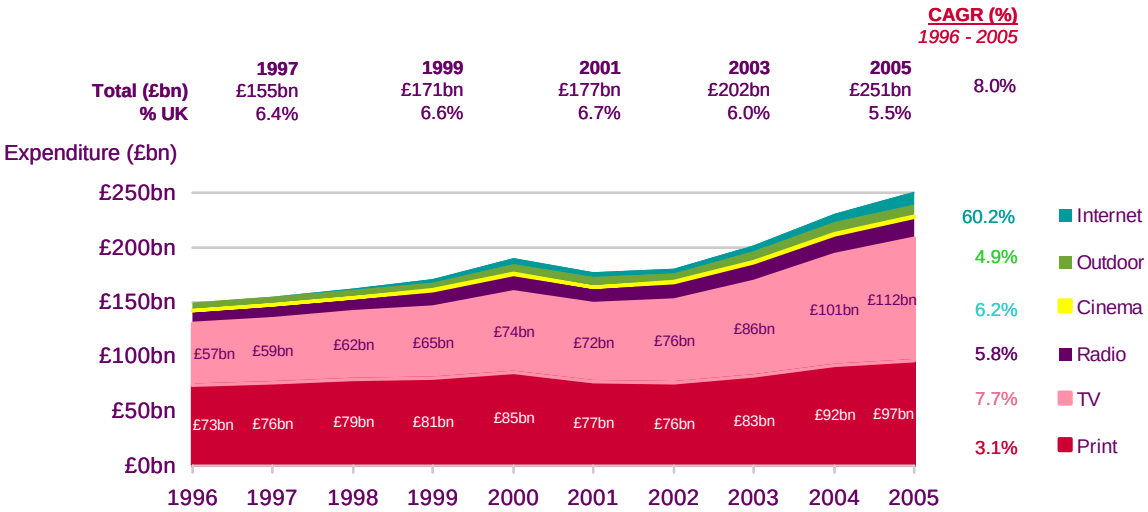


Source: IDATE DigiWorld / PWC Global Entertainment and Media Outlook 2006-2010 / IDATE / Ofcom / estimates based on national regulator data

1.3.7 The global market for advertising expenditure reached £251bn in 2005

Advertising expenditure globally reached £251bn in 2005, and the market has expanded at an average annual rate of 8% since 1996 (Figure 1.23). Television advertising accounted for 45% (£112bn) of total spend, while radio took a further 8% (£19bn). However, the big growth medium is the internet, where advertising has grown at an average of over 60% per annum for the last ten years, and stood at £12bn in 2005.

Figure 1.23: Global advertising expenditure in 2005



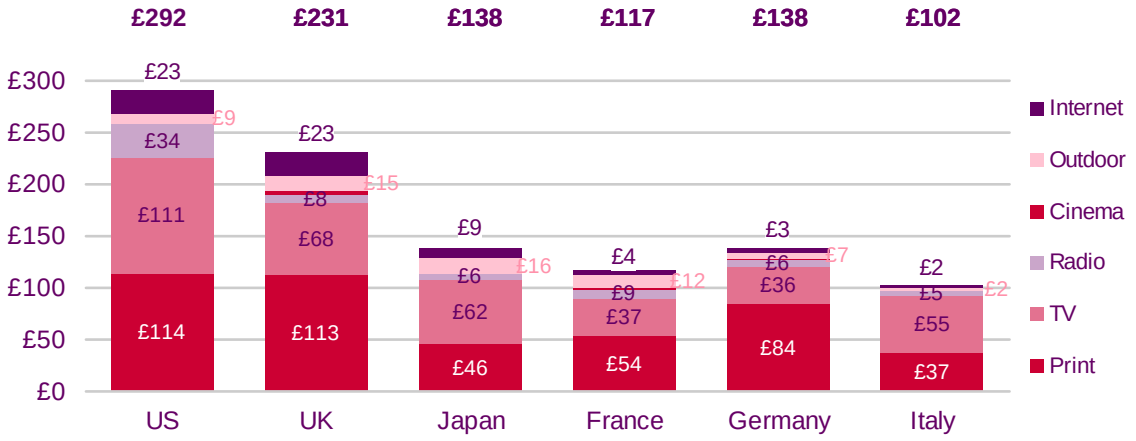
Source: WARC 2006

The US market for advertising is the largest of the countries in this study, accounting for 34% (£86bn) of the global total in 2005. Japan ranked second with 8% (£19bn) while the UK came third with 8% (£14bn).

Although the Polish market is currently relatively small, it is expanding rapidly, notching up annual growth of 22% since 1996. In the Republic of Ireland, too, advertising spend has grown substantially over this period (11% per annum) benefiting from a buoyant economy. At the other end of the spectrum, the Japanese and German advertising markets have grown more slowly since 1996 (1.7% and 0.2% per annum. respectively), reflecting more subdued economic performance.

Adjusting for population size reveals that the US still occupies the top position with the largest market for total advertising revenue (Figure 1.24). The UK ranks second, matching the US on a per capita basis for print and internet; the difference between the two is explained mainly by smaller per capita contributions from TV and radio in the UK.

Figure 1.24: Advertising revenue per capita

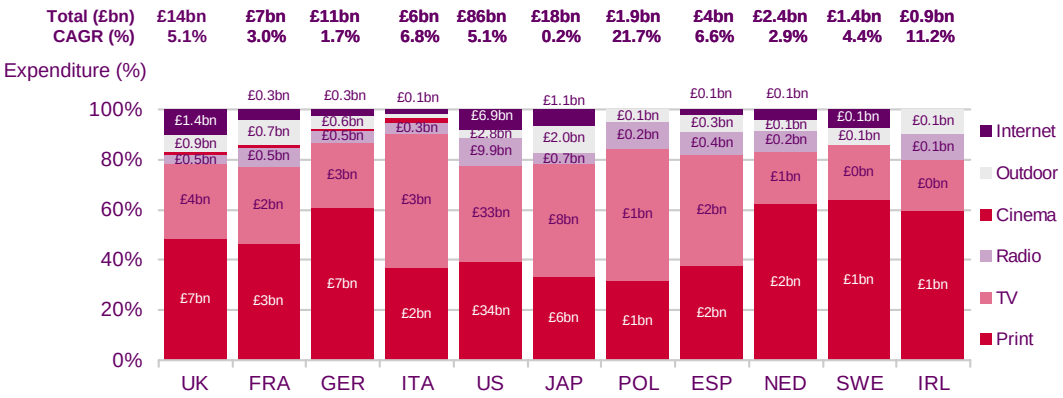


Source: WARC 2006 and Ofcom analysis

Spend by medium varies by country, reflecting, among other things, differences in reach. In Germany, the Netherlands and Sweden, spend on print advertising dominates, with television ranking second (Figure 1.25). Italy, Japan, Poland and Spain offer a contrast, with television taking first place, followed by print. A more equal distribution of revenue between print and television is found in the US and France.

The internet takes a larger proportion of advertising spend in the UK than in any other country in this analysis (around 10% in 2005). At the same time, UK radio is notable for making one of the smallest proportionate contributions.

Figure 1.25: Advertising expenditure by medium, 2005



Source: WARC 2006 and Ofcom analysis

1.4 The regulatory landscape

1.4.1 What is regulation?

Regulation is the process by which governments seek to influence markets in order to achieve social and economic objectives. Regulatory measures can vary from direct intervention to letting market forces prevail; the approach depends on the nature of the regulated industry, the political landscape, and the associated legislative framework.

Given that market structures and institutional frameworks vary by country, diverse regulatory regimes have emerged over time. However, with the advent of globalised telecommunications and media markets, as well as international membership bodies such as the European Union and the World Trade Organisation (WTO), certain policies have been adopted by many countries, although this does not necessarily mean that they are implemented in exactly the same way.

The following section describes the types of regulatory authorities in the key comparator countries of this report, the different kinds of regulatory policy they pursue together with examples of their implementation, as well as the future challenges facing communications regulators around the world.

1.4.2 Regulatory authorities in the communications sector

The majority of regulatory authorities are, to varying degrees, independent organisations which are set up by, and accountable to, the government of the day. For example, the European Union's Directives require that National Regulatory Authorities (NRAs) be independent of industry, audiovisual media service providers and national governments.

The WTO reference paper on telecommunications regulation stated that the regulator should be independent of any operators in the market, but it did not specify the extent to which the regulator should be independent of the policy-maker.

Figure 1.26 lists the communications sector regulatory authorities for the countries included in this report.

Figure 1.26: Communications sector regulators

Country	Regulator name	Year incorporated	Industries covered
UK	Ofcom	2003	Telecoms, Broadcasting
France	Autorite de Regulation des Communications Electroniques et des Postes (ARCEP)	2005[1]	Telecoms, Post
France	Conseil Superieur de L'Audiovisuel (CSA)	1989	Broadcasting
Germany	Federal Network Agency (BNetzA)	2005[2]	Telecoms, Railway, Post, Gas, Electricity[3]
Italy	Communications Authority (AGCOM)	1997	Telecoms, Broadcasting
US	Federal Communications Commission (FCC)	1934	Telecoms, Broadcasting
China	Ministry of Industry Information (MII)	1998	Telecoms, Broadcasting[4]
Japan	Ministry of Internal Affairs and Communications (MIC)	1998	Telecoms, Broadcasting
Ireland	Comreg	2002	Telecoms
Ireland	Broadcasting Commission of Ireland	1998[5]	Broadcasting
Sweden	Post and Telecommunications Agency (PTS)	1994	Telecoms, Post
Sweden	Radio and TV Authority (RTA)	1994	Broadcasting
Spain	Telecommunications Market Commission (TMC)	1996[6]	Telecoms
Poland	Office of Electronic Communications (UKE)	2006[7]	Telecoms
Poland	National Broadcasting Council (KRRiTv)	1993	Broadcasting
The Netherlands	Post and Telecommunciations Authority (OPTA)	1997	Telecoms
The Netherlands	Media Authority (CvdM)	1988	Broadcasting

1 ARCEP's predecessor was ART, which was established in 1997
2 BNetzA 's predecessor was RegTP, which was established in 1998
3 Broadcasting is regulated at the state (Länder) level in Germany
4 Broadcasting is regulated through a subsidiary organisation called SARFT, which is accountable to and supervised by the MII
5 The BCI was established as the Independent Radio and Television Commission and changed its titled to the BCI in 2001
6 Broadcasting in Spain is currently regulated by the Ministry of Industry, Tourism and Commerce
7 The UKE replaced the Office of Telecommunications and Post Regulation, which was established in 2002

1.4.3 Spectrum management

The effective and efficient management of electromagnetic spectrum is one of the key regulatory challenges across the world. Traditionally, spectrum has been managed using a 'command and control' structure, where governments control spectrum, issue spectrum licences, and often mandate its use for a particular service (e.g. for broadcast TV, mobile telecoms etc.) or technology. This approach was deemed necessary as a means to address concerns such as interference, and to provide opportunities for international harmonisation; such an approach was possible as there was less demand for spectrum.

Over the past few years, however, spectrum management worldwide has started to shift towards a more market-oriented approach, with increased emphasis on technology and service neutrality, and towards free-market trading of spectrum among operators. This approach has been driven by increased demand for spectrum and by convergence, which means that services which were once delivered in a distinct band are now delivered over a range of platforms using different spectrum bands.

1.4.4 Telecommunications regulation

Telecommunications regulation has evolved in broadly two different ways. For most of the countries covered in this report, the telecommunications market developed like a public utility with an obligation to provide a universal service to all households and businesses; in other words the public is considered to have the right to access basic telecommunications services on reasonable terms. The universal service aspiration remains a basic principle of the telecommunications agreement of the WTO. In some countries however, notably the US, the telecommunications market developed more as a business model designed to meet consumer demand. A few American rural telecommunications companies are owned by local municipalities, but otherwise the country does not have a history of a state-owned network operator.

There is sometimes a tension between strengthening infrastructure through public intervention and encouraging a competitive market through liberalisation. Consequently, differences remain in the extent to which state-owned incumbents have been privatised. In the UK, 99.8% of British Telecommunications (BT) had been privatised by 1993, at just the time that the state telecommunications monopoly in China started undergoing structural reform. There are currently six main basic telecommunications service providers in China, but the state remains the majority owner in all of these, resulting in comparatively limited competition from the private sector.

A similar tension applies to whether direct intervention is appropriate in other areas of the telecommunications regulatory framework, such as local loop unbundling, interconnection and international roaming. For example the European Commission (EC) has proposed maximum international roaming wholesale charges in an effort to enable European citizens to make cheaper calls from abroad. This has been criticised by some groups as preventing operators from providing tailored tariffs for different consumer groups and introducing perverse incentives into mobile price bundles. By contrast, the Japanese communications authority has no international roaming regulation, and the charges are left to market forces.

1.4.5 Broadcasting regulation

As broadcasting has historically tended to be funded primarily by advertising or a licence fee, the economics and regulation of the sector are quite different to that of telecommunications. Although there are almost as many approaches to broadcasting regulation as there are countries, the US can loosely be seen as representing the commercial model, and Europe

as representing the public service model. The European Commission asks all EU Member States to recognise the role public service broadcasters (PSBs) play in providing certain qualities and standards in programming. The main network providers in the US do not have PSB obligations, and hence the provision of news, educational and cultural programming is dictated by these channels' commercial interests. In addition to competition regulation, the cultural, social and political influence attached to the broadcasting industry makes it a strong candidate for content regulation. Content regulation concerns the material which is broadcast – and typically addresses issues of accuracy, impartiality and plurality.

Differences in content regulation can be observed, for example, by comparing the US and France. In 1987 the US abolished the Fairness Doctrine, thereby releasing broadcasters from the obligation to report information without bias. By contrast French regulation requires the PSB to avoid conflict of interest that may undermine credibility, and to declare any collaboration with external organisations. In France there are also programming and film production quotas which serve to protect the national language and culture, (although all EU members are subject to quotas on the quantity of material commissioned from independent companies (i.e. not affiliated to a broadcaster) and the level of European-originated programming).

Content and competition regulation in the broadcasting sector are of course intertwined. PSBs are granted 'free' access to scarce spectrum on condition that they meet programming requirements which are more onerous than those for commercial broadcasters. Although the European Commission allows Member States to define their own public service remit, it does require that PSB financing does not distort trading conditions and competition. Other competition regulation in the broadcasting sector concerns cross-ownership and foreign investment.

China's broadcasting sector is different in nature from those in the EU and the US. It is 100% state owned, and consequently the regulator (SARFT) controls all material transmitted. In Japan there are commercial broadcasters and controls have recently been tightened to ensure that they are not taken over by foreign interests.

1.4.6 Challenges facing communications regulators

Despite the international differences in the telecommunications and broadcasting markets, many of the challenges facing regulators in different countries are broadly similar. They include addressing questions posed by convergence, managing spectrum in the face of increasing demand, and the conditions under which next-generation networks should be provided. In addition, many countries have separate telecommunications and media regulators with distinct remits but this arrangement may be put under strain with the advent of converged media such as mobile TV, and the supply of bundled triple and quadruple play services: in Japan, for example, regulation remains in the hands of the relevant Ministry.

In a similar vein, spectrum management will require collaboration across the communications sector to ensure the optimal allocation of spectrum. Next-generation networks (NGNs) will be able to carry the full range of current communications services via data packets, and the nature and timing of NGN deployment will depend partially on the policy decisions regulators make about whether to intervene (and in what manner) in relation to these infrastructure upgrades.

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The International Communications Market 2006

2 Telecoms

2.1 Key market developments

Figure 2.1: Key indicators

Telecoms	UK	France	Germany	Italy	USA	Japan	China
Telecoms service revenues	£24.8bn	£21.6bn	£31.9bn	£25.4bn	£126.4bn	£75.4bn	£36.4bn
Telecoms revenues per capita	£411	£357	£387	£437	£429	£592	£28
Fixed lines per 100 population	56.2	54.6	65.8	45.8	59.6	50.8	26.9
Mobile connections per 100 pop	108	77	96	123	70	71	29
Share of mobile post-pay	34%	64%	50%	9%	92%	97%	37%
3G connections per 100 pop	7.6	5.7	6.7	18.6	0.9	22.7	0.0
B'band connections per 100 h'holds	39.3	37.5	28.3	30.9	38.0	43.9	11.6
DSL as % of broadband connections	73.3%	94.0%	97.2%	94.8%	42.2%	64.8%	71.8%
WiFi hot-spots	10.7k	9.8k	8.6k	1.8k	26k	6.8k	3k

2.1.1 Recent market activity

Most of the major fixed-line network operators have focused on evolving their broadband and online strategies over the past year. This includes major pushes into Voice over Internet Protocol (VoIP) and converged voice services. Many incumbent fixed voice operators have responded to the perceived or actual threat from internet service providers (ISPs) offering cheaper VoIP services in conjunction with broadband internet connectivity. France Telecom, AT&T and BT all introduced VoIP services during 2006, largely in response to the growing visibility of VoIP in the market. The next evolution – wireless VoIP – has just begun, with the recent introduction of WiFi VoIP handsets. Combined wireless VoIP/cellular handsets will enable customers to make cheap or free mobile calls when they are within a WiFi 'cloud', and to roam onto cellular networks at other times. This is likely to pose significant threats and opportunities for the cellular operators, as well as continue competitive pressure on fixed-line players.

The fixed-line operators are also keen not only to capture significant portions of the broadband connections market (usually via DSL), but also to secure access to content. In the UK, for example, BT is due to launch its BT Vision service by the end of 2006, providing connectivity, proprietary content and aggregated programming. In the US Verizon is competing directly with cable operators for the rights to screen Hollywood content, which it plans to transmit over its new fibre network, and in Belgium, Belgacom has bought premium football television rights. In the US, AT&T is building a portal presence with its BlueRoom service and in Europe Telecom Italia and France Telecom already offer full IPTV services.

Fixed-line operators' concern about the erosion of traditional fixed-line voice revenues has led to the emergence of two operator strategies designed to protect existing revenue streams.

- The first of these is **consolidation at an operator level**, and although none of the major players has been involved in major corporate merger/acquisition activity over the past six months there has been activity in LLU markets, an example being Carphone Warehouse's purchase of One.Tel and Tele2 in the UK at the end of 2005.

- The second strategy is that of **consolidation across platforms,** to allow players to take advantage of bundling opportunities, and as a defensive move to compete with operators already providing such services. There has been corporate activity in the mobile and internet sectors, where Vodafone sold its stakes in Japan and Belgium but has new agreements with BT and Fastweb to provide fixed services in the UK and Italy. Telefonica-owned O2 bought ISP Be in the UK, and ntl:Telewest bought Virgin Mobile (also in the UK).

Among mobile operators, there has been an increased focus on 3G services, and in particular on the implementation of high-speed downlink packet access (HSDPA) technology. Newly-launched services include mobile internet and TV applications – almost every major mobile player has either trialled or launched these advanced products during 2006. Mobile operators are also making renewed efforts to consolidate and enhance their customer bases, with an emphasis on reducing churn (the number of customers leaving their network to join another) and on converting pre-pay customers onto more lucrative post-pay contracts.

The sector with the highest current profile in the financial community has been internet services (both content and applications). Google, which enjoys growing advertising revenues, has made a number of major acquisitions, most notably that of online video site YouTube, and has struck an online advertising deal with media giant NewsCorp. Apple's iTunes site has continued to lead the audio (and now video) downloading landscape, and social networking/blogging sites such as MySpace and Livejournal continue to explode in popularity.

2.1.2 Technological developments

Japan and France lead on VoIP

Voice over IP (VoIP), sometimes also known as Voice over Broadband, is an innovative new service that enables users to make and receive telephone calls via their broadband connection. There are four types of VoIP:

- **Peer-to-peer** (P2P) VoIP is based on file-sharing technology and is a software-only solution, an example being Skype's original offer. Users make calls using IP addresses instead of phone numbers and can usually only call people with the same brand of VoIP (enclosed user groups). Calls completely bypass the traditional fixed-line network (the Public Switched Telephone Network or PSTN) and are usually free.

- **Other PC-to-PC** VoIP services direct calls via a central server, examples being Yahoo! Messenger, GoogleTalk and Windows Live Messenger. These tend to have evolved from instant messaging backgrounds and although, like P2P VoIP services, calls are made to IP addresses, there is some interoperability between different services. Again, these services bypass the PSTN and calls are usually free.

- **Outgoing PSTN** VoIP services enable users to make VoIP calls to fixed telephones, and the VoIP provider pays termination charges to the terminating network. If the user calls another VoIP user, the call is usually free, while calls to regular PSTN or mobile recipients are generally charged, although usually at a lower level than an equivalent PSTN-originated call.

- **Incoming PSTN** VoIP enables incoming calls to users from PSTN and mobile phones by assigning a regular telephone number to the VoIP user. Often the user is charged a

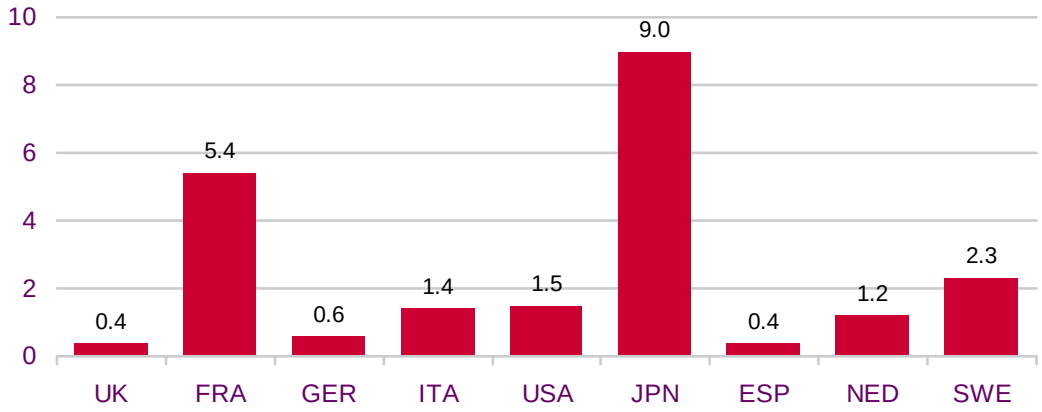
monthly rental for the service. Outgoing and incoming PSTN VoIP can be provided as one bundle or as separate services.

By the end of 2005, there were significant disparities in the take-up of VoIP among developed countries. Figure 2.2 shows the estimated number of people using paid-for VoIP services per 100 population for various countries at December 2005. It shows that Japan had the greatest level of VoIP penetration, with around one in eleven using the service, and that France also had a relatively high level of VoIP take-up – a reflection of the success of alternative operator Free in marketing VoIP services, and of France Telecom's subsequent response.

By contrast, the UK had one of the lowest levels of paid-for VoIP service take-up among the countries analysed, with 0.4 VoIP users per 100 population. This can partly be explained by the strength of carrier pre-selection operators in the UK, which offer similarly low-priced call services using the PSTN. Ofcom research suggests that the overall number of people using VoIP in the UK, including those who use it for free PC-to-PC calls, is much higher, with an estimated 1.8 million users in May 2006.

Figure 2.2: VoIP penetration, December 2005

Subscribers per 100 population



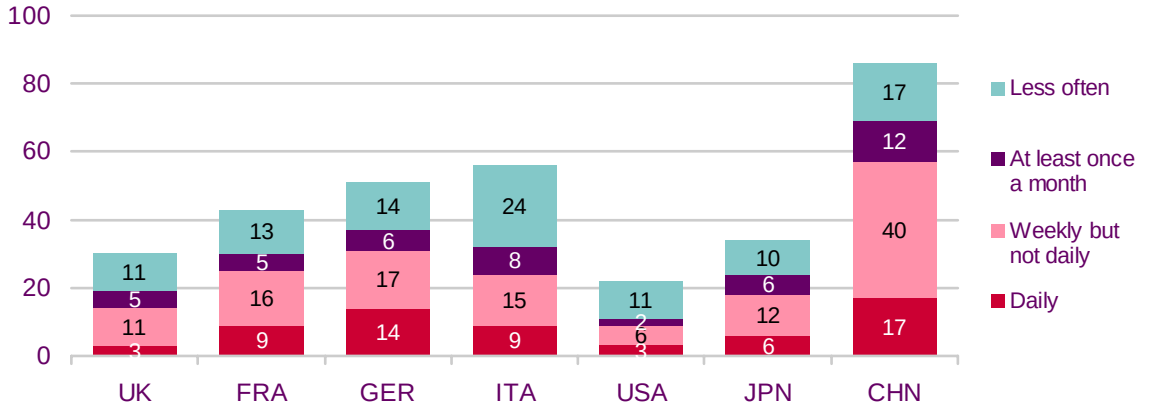
Source: National regulators/OPTA/operators/IDATE
Note: The chart excludes PC-to-PC only VoIP call users

According to our online survey carried out in October 2006, take-up of all VoIP services (including PC-to-PC calls) by those who have broadband at home varies significantly between countries. Internet telephony is popular with broadband users in China, where 86% report having made VoIP calls, and of these almost two thirds said that they do so on a weekly basis. This is probably due to a very high share of early adopters in the sample, because of relatively low broadband penetration in the country, at 12%.

Germany had the second highest take-up, with 31% of respondents saying they use VoIP daily or weekly. Around a quarter of adults with broadband at home in France and Italy are weekly users of internet telephony, according to our survey. Perhaps unexpectedly, the US had the lowest share of VoIP users among its broadband users, with 9% reporting weekly use. The UK was second lowest, with 14%.

Figure 2.3: Use of the internet to make phone calls at home

% adults with broadband at home



Source: Ofcom research, fieldwork by Synovate in October 2006
Note: The chart includes PC-to-PC only VoIP call users

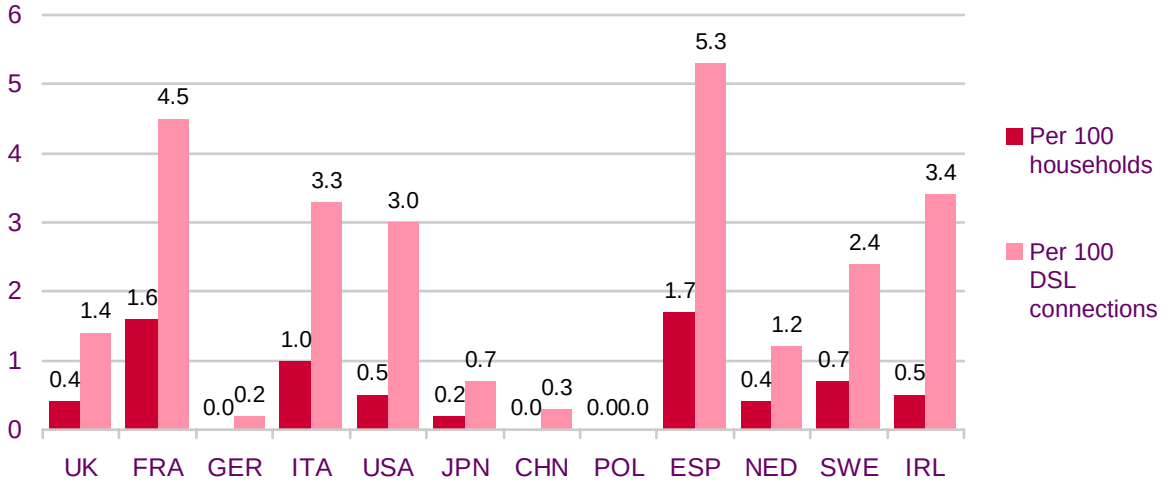
IPTV gains ground in Spain, France and Italy

IPTV (or TV over broadband) is a service that delivers TV programming to subscribers through their broadband connection rather than via traditional cable, satellite or terrestrial links. This allows far greater personalisation, customisation and interaction than other platforms.

IPTV is still an emerging application, and consequently take-up levels remain low. Of the countries analysed, Spain, France and Italy showed the highest penetration levels in 2005, while the UK ranked near the bottom (Figure 2.4).

Figure 2.4: IPTV penetration, December 2005

Subscriptions per 100 households and DSL connections



Source: Ofcom/operators/IDATE

According to Cullen International, in October 2006 France and Sweden had the largest number of commercial IPTV services with four TV over broadband services competing for subscribers in each country (France Telecom, Neuf Telecom, Free and Telecom Italia in France, and Telenor with Viasat, TeliaSonera, SkyCom in Sweden). Germany, Italy, Spain and the Netherlands all had two competing IPTV services, whereas in the UK there was only

one IPTV service, Homechoice (now owned by Tiscali), although BT is due to launch its *BT Vision* TV over broadband service before the end of 2006.

Broadband users embrace online services and applications

Our online survey of broadband users in seven countries highlights the fact that the internet is becoming an integral part of media consumption – and social life – in many countries around the world.

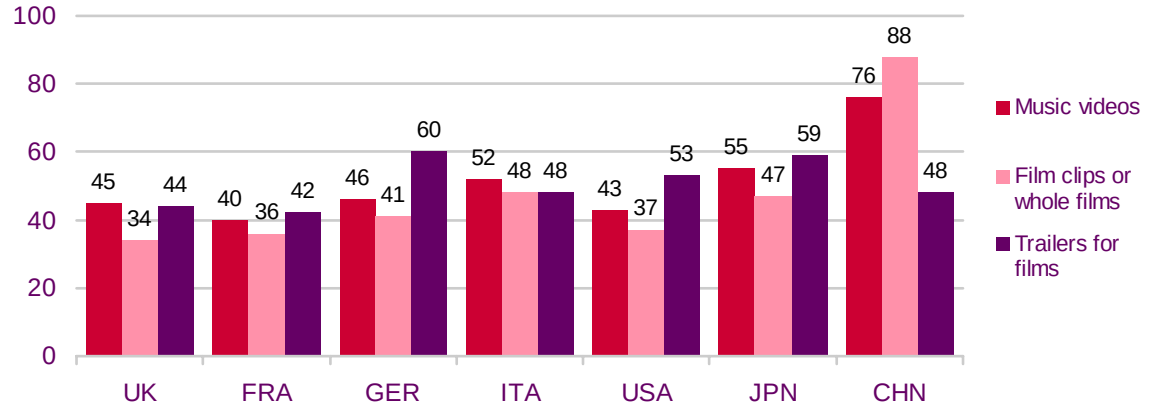
Figure 2.5 below shows the proportion of broadband users who have watched or downloaded music videos, film trailers and film content online. It shows that viewing of music videos, film clips and whole films is higher in China than elsewhere among our sample countries; this is possibly due to the large share of early adopters in the China sample.

In other countries, the proportion of broadband users who have watched online music video ranged from 40% (France) to 55% (Japan), those watching trailers ranged from 42% (France) to 60% (Germany), while the viewing of film clips was generally slightly lower, ranging between 34%-48%.

Figure 2.5: Use of online music videos and films

Have you ever watched or downloaded any of the following via your PC?

% of adults with broadband at home



Source: Ofcom research, fieldwork by Synovate in October 2006

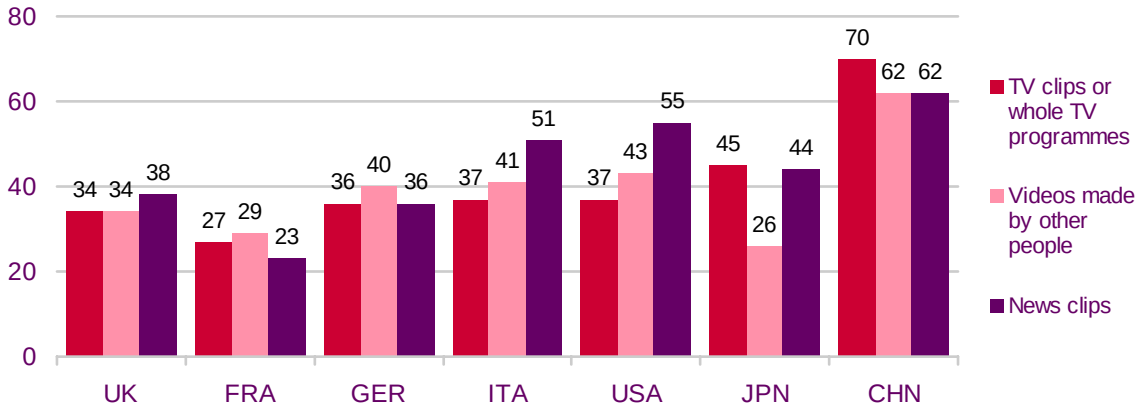
A revealing picture emerges when comparing the use of TV, news clips and user-generated content (Figure 2.6). The growing ease of producing and publishing video content online has, over the past year, spawned a similar revolution to that initiated by text- and image-based blogs several years ago. Hundreds of thousands of new videos made by ordinary online users are being uploaded daily to sites such as Google-owned *YouTube.com* (which is perhaps the most widely known video content sharing site, with over 70 million videos viewed each day).

Within most countries, the proportion of broadband users watching user-generated content online was similar to the proportion watching TV content online. Apart from China, where reported usage was again very high, watching TV content online ranged from 27% to 45%, while watching user-generated content ranged from 25% to 43%. The only countries where more people watched TV content online than user-generated content were China and Japan. The use of news clips also varies by country, from 23% of broadband users in France to 55% in the US, where it rated higher than TV and user-generated online content.

Figure 2.6: Use of online TV, news and user-generated content

Have you ever watched or downloaded any of the following via your PC?

% of adults with broadband at home



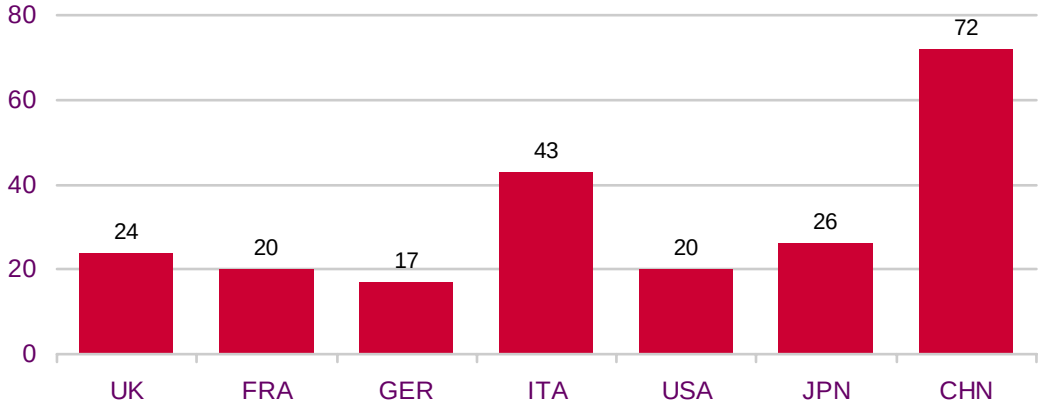
Source: Ofcom research, fieldwork by Synovate in October 2006

Our findings also indicate that sharing of files with other users is a relatively widespread activity among broadband users in the markets surveyed: a significant minority of adults with broadband at home participated in peer-to-peer file-sharing communities, also known as P2P networks. Such networks allow members to download files directly from each other's computers, typically music and video files. As would be expected, given the likely high proportion of early adopters, P2P membership is especially high in China, where 72% of users said they were members of online communities specifically designed to share files. Of the other countries researched, Italy also had high participation, at 43% of broadband users. Around one in four broadband users in Japan and the UK, and one in five in France, the US and Germany also said that they were members of file-sharing communities.

Figure 2.7: Membership of P2P file-sharing communities

Are you a member of an online community or network designed specifically to allow you to download other people's files and allow them to download yours?

% of adults with broadband at home



Source: Ofcom research, fieldwork by Synovate in October 2006

Online social networking is an international phenomenon

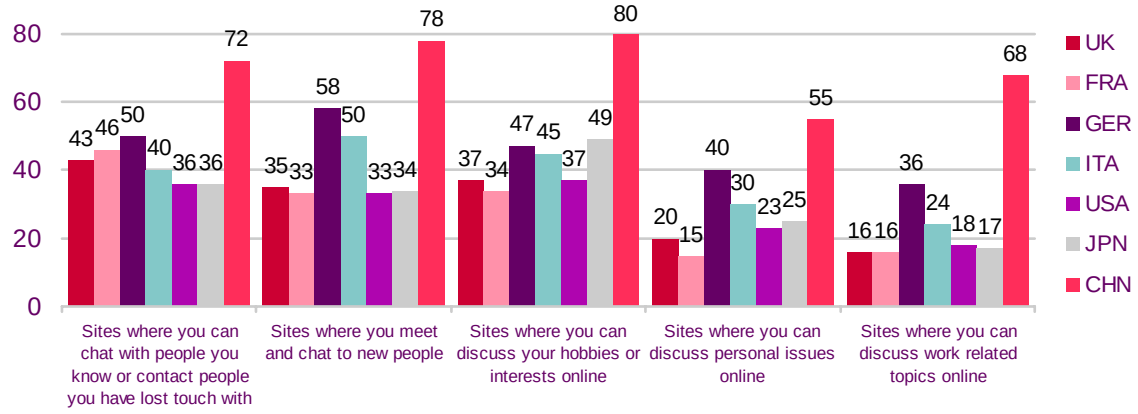
Our research on UK internet users published in the 2006 Communications Market report highlighted the widespread use of websites for interaction with people and community building – often referred to as 'social networking websites'. We can see a similar picture among broadband users in the seven countries included in our international study (Figure 2.8). Here, again, take-up in China is the highest across our sample, with over 70% using the internet to keep up existing contacts and meet new people, while 8 in 10 broadband users have discussed their hobbies and interests online. Germany shows the second highest levels of use for all types of online social interaction, except for hobby- and interest-based sites, where Japan scores higher.

Overall, our findings suggest that the keeping up of existing contacts is the most popular type of social interaction online in France (where half of broadband users have visited such sites), and in the UK and Italy, where around four in ten have done so. Sites where one can discuss hobbies and interests rate first in China, Japan and the US, with 80%, 49% and 37% of broadband users respectively reporting having used such websites. Use of the internet to meet new people generally rates lower in most countries, except for Germany, where it is the top online social activity with 58% of adults with broadband at home reporting having used such sites, and Italy, with 50%.

Figure 2.8: Use of social networking websites

Have you ever used the following types of websites?

% of adults with broadband at home



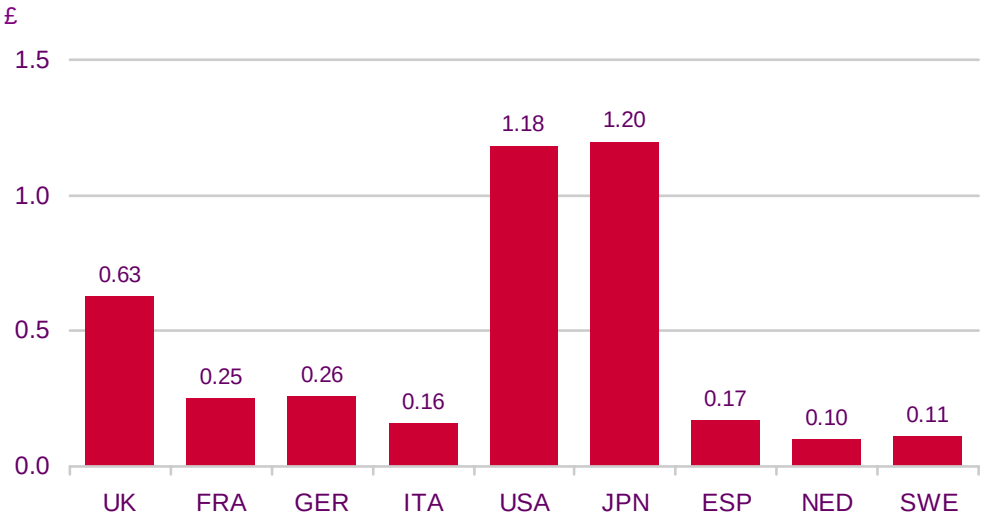
Source: Ofcom research, fieldwork by Synovate in October 2006

UK second only to US and Japan in digital audio downloads

Over the past two years, the way in which music is purchased has undergone a significant evolution. Consumers (especially young people) are increasingly supplementing or replacing CDs (and other 'hard copy' forms of music) with digital audio downloads via either broadband or mobile networks.

In terms of average digital download spend per head, the US and Japan were the leading nations in 2005 (Figure 2.9), with each person spending on average more than £1.18 over the year. On this measure, the UK ranked third among the countries analysed, with £0.63 average spend per head in 2005. The UK's relatively strong position was largely due to the early launch of Apple's iTunes download service, which was followed by competitive responses from a number of online and high street retailers.

Figure 2.9: Digital audio download sales per head, 2005



Source: IFPI/Ofcom

Note that these figures measure 'legal' paid-for downloads, and exclude unauthorised file-sharing downloads or downloads from unauthorised sites. Data on such types of download are very difficult to obtain, though there are some suggestions that the number of unauthorised downloads is still significantly greater than the number of tracks purchased lawfully.

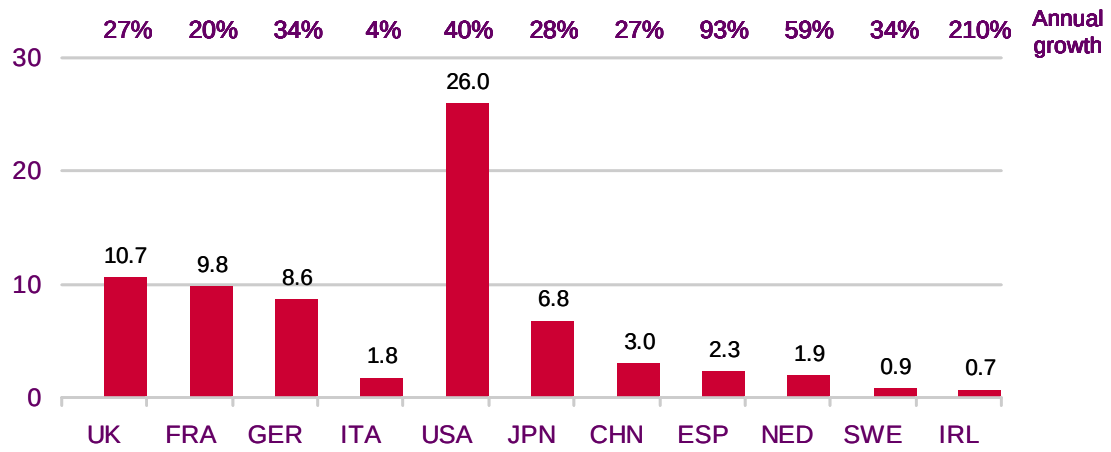
Wireless hot-spot coverage is growing fast

Increasingly, telecoms users in many countries can access broadband on the go using WiFi hotspots which have been rolled out by various operators around the world. Most major cities in the developed world are now covered by numerous points of access, and the last few years have seen the deployment of WiFi networks covering large areas of cities or whole cities in initiatives run by both municipalities and commercial operators.

As Figure 2.10 shows, by March 2006 the US had by far the highest number of hot-spots among our countries; according to Informa, the US commanded 94% of the North American market and around 25% of all hot-spots globally. In Europe, the UK had the highest number of hot-spots (10,700), followed by France and Germany.

Ireland and Spain experienced the highest growth in the number of hot-spots during 2005 (210% and 93% respectively), although both of these countries grew from a relatively low base. Roll-outs in Italy and France proceeded more slowly than in other countries during 2005.

Figure 2.10: Public wireless hot-spots by country, Q1 2006

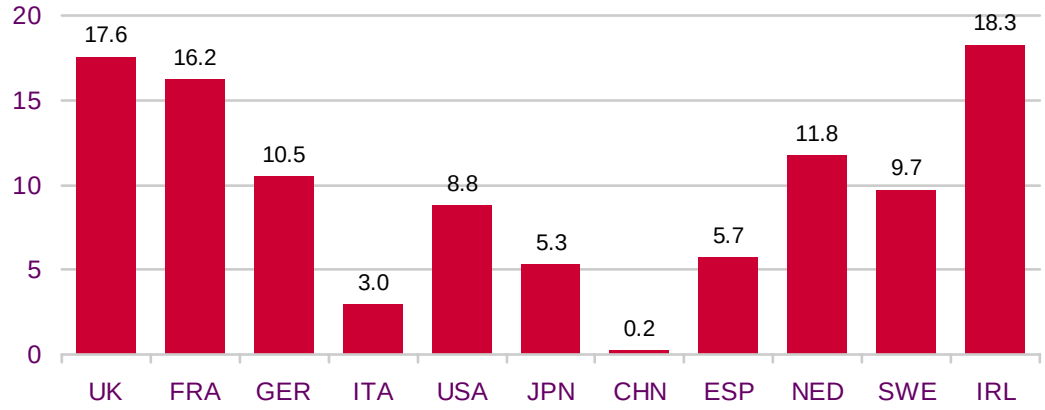


Source: Informa

An analysis of the number of hot-spots per 100,000 people allows a comparison of the level of deployment of public WiFi in different countries relative to their population (Figure 2.11). Here, we see that while the US led by far in terms of absolute number of hot-spots, the Republic of Ireland and the UK top the list in relative terms, with around 18 hot-spots per 100,000 population, closely followed by France, with 16. The US, at 8.8 per 100,000, matched the average number for our sample of countries. The deployment of public WiFi access points per 100 population in Japan was relatively low, perhaps because of the popularity of high-speed data services provided by mobile networks.

It is important to note, however, that the number of hot-spots relative to total population does not indicate availability or population coverage – such an analysis would need to be geographically-based, assessing the number of residents covered by hot-spots in specific areas in each country.

Figure 2.11: Public wireless hotspots per 100,000 population, Q1 2006



Source: Informa

Figure 2.12 below shows the largest hot-spot operator in each country in Q1 2006. According to Informa, Orange France was France and Europe's largest operator, with 8,150 hot-spots in 2006 Q1, followed by The Cloud in the UK, with 6,600. An analysis of the number of hot-spots provided by the top operator as a share of total country hotspots is indicative of the degree of supply concentration in each WiFi market. The largest operator's market share was greatest in France (83%), Germany (76%) and Ireland (75%), while the

US (29%) and Netherlands (37%) had a much lower level of WiFi provision controlled by the largest operator.

Figure 2.12: Largest wireless hot-spot operators by country, Q1 2006

Country	WiFi Operator	Commercial launch	Hotspots Q1 2006	Share of total hotspots in country
UK	The Cloud	May 2003	6,600	62%
France	Orange France	Feb 2003	8,150	83%
Germany	T-Mobile/T-Com	Nov 2002	6,550	76%
Italy	Tin.it	Mid-2003	771	44%
USA	Wayport	Jan 2000	7,682	29%
Japan	NNT West	Jun 2002	3,030	45%
China	China Mobile	Mar 2003	2,100	69%
Spain	Telefonica	Jun 2003	1,323	58%
Netherlands	KPN HubHop	May 2003	720	37%
Sweden	TeliaSonera HomeRun	Oct 1999	524	60%
Ireland	Eircom	Feb 2004	550	75%

Source: Informa

2.1.3 Regulatory developments

Although there are different nuances to the regulatory debate in individual countries based on the prevailing market structure and national legislative framework, several broad themes have received a high degree of attention during the last year. These include: international roaming and mobile call termination charges, spectrum management, net neutrality and next generation networks and access.

Mobile call termination

Mobile call termination is the service necessary for a network operator to connect a caller with a call recipient on a different network. If voice call termination, generally, was not available a network operator could only terminate calls to other customers on its own network. This service is referred to as wholesale because it is sold and purchased by network operators rather than retail customers.

Regulators in many EU Member States have found mobile network operators (MNOs) to have significant market power (SMP) for terminating calls on their networks, and have imposed a range of remedies including proposed charge controls.

International roaming charges

In February 2006 European Commissioner Viviane Reding announced proposals to address high inter-operator wholesale tariffs in international mobile roaming through a new EU regulation which could come into force as early as the second half of 2007. The regulation would cover retail tariffs to ensure that consumer prices reflected reduced costs. The EC has also proposed that EU consumers should not be charged for receiving calls to their mobile abroad.

The European Commission's proposals are opposed by the GSM Association, which argues that prices have already come down significantly as a result of competition in the sector (it reported a decrease of 22% in the last year). The GSM Association argues further that the EC proposals will prevent operators designing tailored packages to meet the needs of specific consumer groups.

Spectrum management

The effective and efficient management of electromagnetic spectrum is one of the key regulatory challenges across the world. One of the main priorities for the European Commission is a radical overhaul of policies related to spectrum management, including removing unnecessary constraints on the technology or service that can be provided in spectrum bands (technology and service neutrality), as well as the promotion of spectrum trading and the authorisation of pan-European services.

The proposals are intended to help the deployment of new technologies and deliver benefits to consumers by promoting innovation and competition. Some concern has been expressed that such a flexible approach may undermine the economies of scale presently enjoyed by network and handset manufacturers but supporters have argued that industry will still be able to deliver harmonisation where it will bring benefits.

In 2006, the European Commission proposed that a common approach to authorisations for pan-European services will help to promote the single market. However, there is currently some uncertainty as to what is meant by pan-European services. The Radio Spectrum Policy Group (RSPG), which is made up of representatives from Member States, has recently adopted an Opinion which considers several spectrum options for accommodating multimedia services (such as mobile TV) across Europe.

The European Commission's position is that market forces, technology and service neutrality should play an increasingly important in the allocation of spectrum, in order to ensure its optimal use. As a result of the liberalisation of and trading in licences, consumers will benefit from new technologies and services being brought to market more quickly.

Japan plans to reallocate spectrum for specific services (e.g. mobile communications) and to compensate incumbent licence holders, and the US is using auctions and trading to assign new spectrum. Within the EU there is widespread support for the need for increased flexibility in spectrum management and the introduction of market mechanisms. However, details of how this new approach should be implemented (for example, in what spectrum bands and to what timescales) still need to be agreed.

The UK was one of the first countries in the EU to implement a flexible and market-based approach to spectrum management. However, a number of other Member States have now started to introduce trading in selected spectrum bands, and a few are also opening up bands, potentially allowing a wider range of services and technologies to potentially be offered.

Net neutrality

Net neutrality is the proposition that all content and applications must be treated equally on the internet, if innovation and customer choice are to be optimised. The net neutrality debate has arisen in response to the argument made recently in the US by internet service providers (ISPs) that they should not be charged different prices for the delivery of their content or applications by network operators. By contrast, electronic communications network providers believe that they should be able to charge different prices to operators for

different qualities of service in order to recover their infrastructure investment costs while supporting higher volumes of high quality services such as video.

In the US, a House Energy and Commerce subcommittee defeated a proposal which would have imposed extensive regulations on broadband providers and prevented them from offering higher-speed video services to partners or affiliates. The committee members rejected a 'net neutrality' amendment to a proposed piece of telecommunications legislation which had attracted support from companies including Amazon.com, eBay, Google, Microsoft and Yahoo. On 6 November, 2006, the Chairman of the Federal Trade Commission (FTC), Deborah Platt Majoras, expressed her preference for relying on a combination of existing laws, competition enforcement and user pressure to address complaints about concerns such as net neutrality.

The Dutch incumbent KPN took legal action against the Dutch government in summer 2006, alleging that its telecoms regulation was unfairly biased in favour of cable companies. The complaint asked for new regulations on cable operators. KPN's complaint was assessed and rejected by a local judge, at which time KPN stated that they intended to appeal the decision. In October 2006 the Dutch Parliament passed a motion calling on the Minister for Economic Affairs to introduce symmetric regulation for cable and telecoms by requiring cable companies to share networks with rivals, replicating local loop unbundling (LLU) in telecommunications.

The motion argued that free access to all networks for all service providers would benefit the further development of innovation and IT in the Netherlands. The Dutch government will consider now the Parliament's motion before coming to a decision on what form of reform is appropriate.

Next-generation networks

Next-generation networks (NGNs) is a generic term that includes both next-generation core and access networks. Investment in next-generation core networks focuses on replacing multiple legacy core networks with a single IP-based network for the provision of all services. Next-generation access networks relate to offering higher speed broadband services over local access networks. These may be delivered by a number of technologies, including fibre, cable, terrestrial fixed or mobile wireless services, satellite or upgrades to existing copper-based access networks.

The choice of whether to deploy either a next generation core or access network depends in part on communications providers' strategies. Next-generation core networks enable reductions in network operation and maintenance costs by moving to a single IP-based network. Next-generation access networks (NGAs) allow communications providers to offer increased bandwidth to end-users, including residential and small business customers. This may allow the launch of new services such as IPTV that could form the basis of additional revenue streams. The financial risks of launching a next generation access network will depend to a great extent on the level of demand that follows the rolling out of such a network.

The benefits of next generation networks, particularly next generation access, are emerging. Few operators are currently deploying both next-generation core and access networks simultaneously; however, a number of operators have announced the roll-out of particular NGNs or NGAs, including:

- **BT, C&W, Thus** and **ntl** are all deploying next-generation access core networks in the UK which may help them to reduce costs and expand their product ranges;

- **Telecom Italia** is migrating to an all-IP next-generation core network;

- in the US, both **Verizon** and **AT&T** are deploying fibre deeper into the access network, seeking to launch high-bandwidth broadband and video services in competition with US cable;

- **Deutsche Telekom** has announced its deployment of fibre-to-the-cabinet with VDSL to up to 50% of German homes;

- **KPN** has announced its intention to deploy fibre-to-the-cabinet, and is exploring the options for cost reduction from the removal of local exchanges; and

- in Japan a number of operators have deployed fibre access networks and **NTT** is considering its options with respect to a next-generation core network.

As these deployments emerge on a country-by-country basis, so the regulatory policy has varied by country depending on the specific characteristics of each market.

To date, the majority of regulatory debate on next-generation networks has centred on the issue of 'regulatory holidays'; a temporary suspension of regulation to allow market development for these investments. Within the US, the FCC has adopted a policy of forbearance from ex ante regulation with respect to fibre access networks. In this situation, once incumbent operators upgraded their access network to next-generation access, they would no longer be obliged to offer access to it to other operators. This is due to the competitive position within the US, with competing end-to-end infrastructure provision from both the incumbent telecom companies and the cable operators.

In Germany there has been a debate about the appropriateness of a 'regulatory holiday' for Deutsche Telekom's fibre-to-the-cabinet investment. Deutsche Telekom has called for time-limited forbearance on its fibre-to-the-cabinet with Very high bit-rate Digital Subscriber Line (VDSL) deployment. However, following discussions with the European Commission and further consideration, the German telecoms regulator (BNetzA) determined that VDSL services were to be included in its definition of the wholesale broadband access market in Germany. As a result, it determined that Deutsche Telekom would be required to provide third party access to a VDSL bitstream product. This decision hinged on BnetzA's conclusion that VDSL- and ADSL-based wholesale access are currently substitute services in the same economic market.

OPTA, the Dutch regulator, is currently consulting on the regulatory implications of KPN's announced deployment of fibre-to-the-cabinet, including a range of potential conditions to be applied to the phasing out of current exchange-based LLU products. At the same time, KPN has proposed to offer voluntary sub-loop unbundling and a bitstream access product for its fibre-to-the-cabinet deployment. OPTA also intends to conduct market reviews for wholesale local access and wholesale broadband access, and to assess to which market the backhaul from sub-loop unbundling locations belongs.

Other countries have adopted policies which aim to increase the level of end-to-end competition in the provision of next-generation networks. One example is Japan, with a regulatory policy focused on removing barriers to the deployment of competing end-to-end access infrastructure. The issue of access to the incumbent's fibre access network is also currently being discussed in Japan.

Within the UK, the majority of regulatory discussion has focused on the impact of BT's 21st Century Network next-generation core network investment and has resulted in the formation of NGNuk, an independent NGN industry body, which aims to create an improved framework

for industry engagement. It seeks to do so by providing a set of guiding principles and an implementation framework for an interconnected NGN future for the UK, including interconnection between PSTN replacement NGNs, IP-based mobile networks, VOIP operators, and other relevant communications networks and service developments .

At the European level, there has been an ongoing debate on regulatory holidays and emerging markets within the European Framework Review, including next-generation network deployments. In June 2006, Commissioner Reding outlined the European Commission's position, stating that the response to the challenges faced by operators from the deployment of next generation infrastructure must be new business models as opposed to regulatory protection. Within this speech, Commissioner Reding also indicated the risk that regulatory holidays may pose to consumers, raising the possibility of higher prices and less choice, and she also recently stated that such holidays should not be supported.

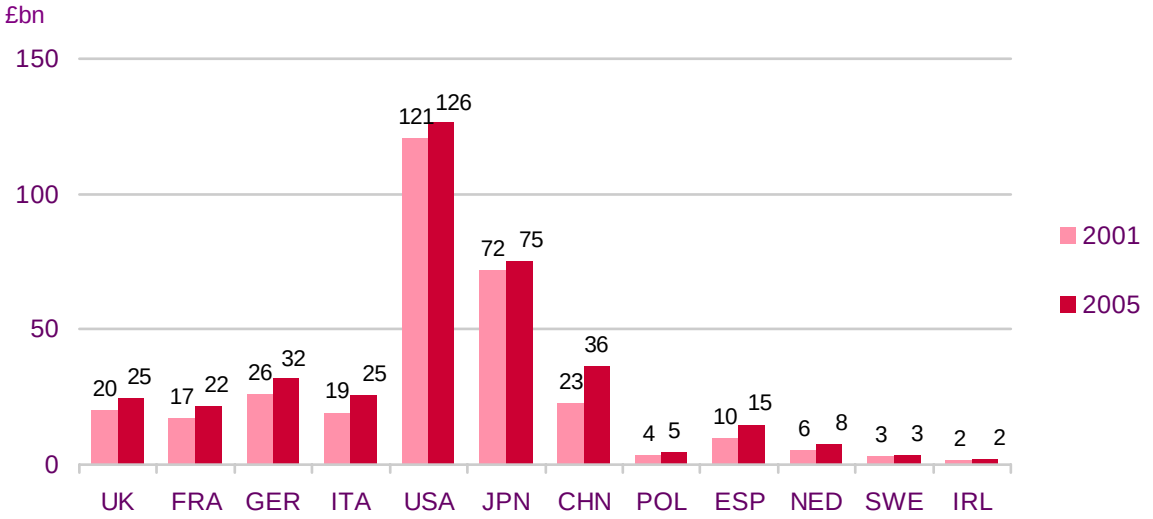
2.2 The telecoms industry

2.2.1 Total telecoms revenue has risen slowly in most countries…

Over the five years to 2005, total telecoms revenue grew broadly in line with inflation in most of the countries in our analysis. Figure 2.13 below shows that revenue in both the US and Japan exceeded that of all other countries in our analysis by a wide margin. Indeed, in 2005 US telecoms revenue exceeded that of the UK, France, Germany, Italy and China combined.

Between 2001 and 2005 China had the fastest growth in telecoms service revenues, with turnover increasing by over 60% to £36bn. Spain also had impressive revenue growth over the period, a large proportion of which came from the mobile sector.

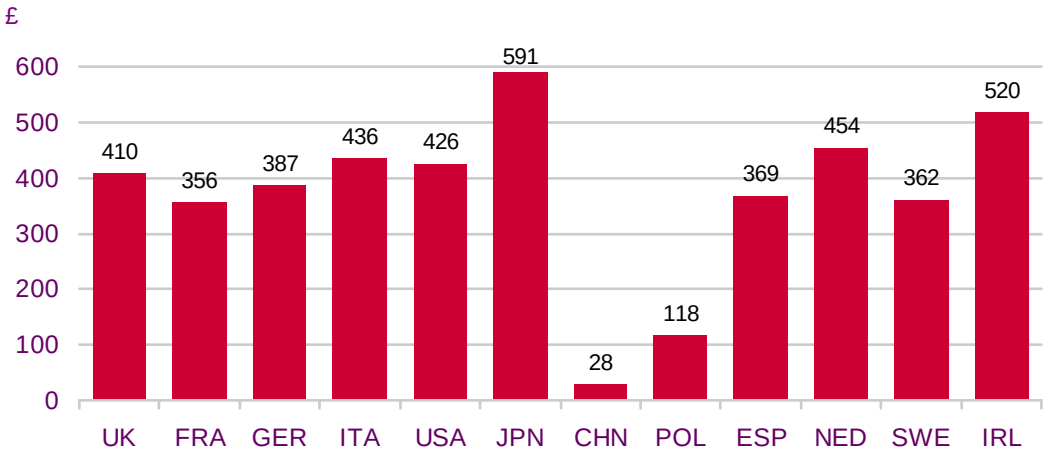
Figure 2.13: Telecoms service revenue 2001/2005



Source: IDATE / Estimates based on operator and regulator data/Ofcom research
Note: Revenue excludes corporate data services and dial-up internet

In 2005, Japan had the highest per capita telecoms spend with an average £592 over the year, followed by Ireland with £520. (Figure 2.14). Average spend in the US and the other European countries studied all fell into the £350-£450 per year range, except for Poland which was significantly lower at £118 a year. China had the lowest per capita spend at £28 a year. It should be noted that average spend cannot be used as a proxy for prices in each country, as it does not take usage levels into account.

Figure 2.14: Telecoms service revenue per capita, 2005

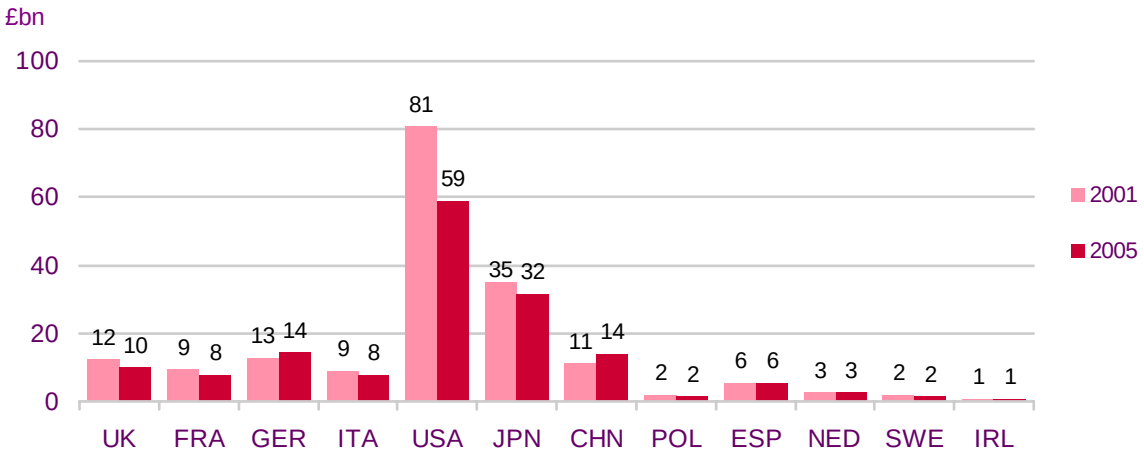


Source: IDATE / Estimates based on operator and regulator data/Ofcom research
Note: Revenue excludes corporate data services and dial-up internet; excludes VAT

2.2.2 …but fixed-line voice revenue has declined…

Revenue from fixed-line voice was relatively flat across most countries over the five years to 2005, although there was a gentle downward trend. The major exception was the US, where high recent growth of mobile contributed to a steep decline in fixed-line voice revenues (over 25%). Of the countries studied, only China and Germany experienced growth in fixed voice between 2001 and 2005; in China this is despite the fact that many new telecoms customers are taking up mobile services in preference to fixed.

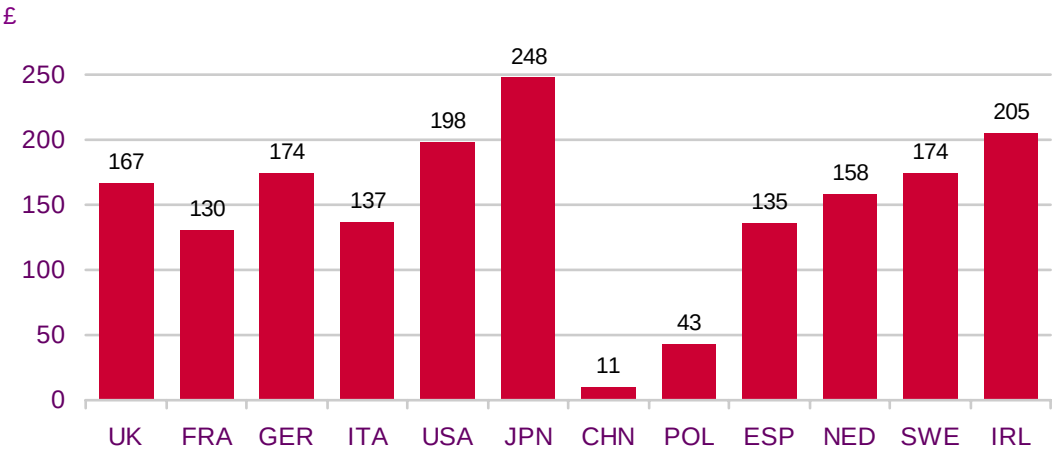
Figure 2.15: Fixed-line voice revenue



Source: IDATE / Estimates based on operator and regulator data/Ofcom research

Although, despite recent revenue falls, the US had the largest fixed voice spend in absolute terms in 2005 (Figure 2.16), on a per-capita basis Japan and the Republic of Ireland had a higher fixed spend with £248 and £205 respectively, compared to the US's £198. The lowest per capita spends were in China (£11 a year) and Poland (£43 a year).

Figure 2.16: Fixed-line voice revenue per capita, 2005



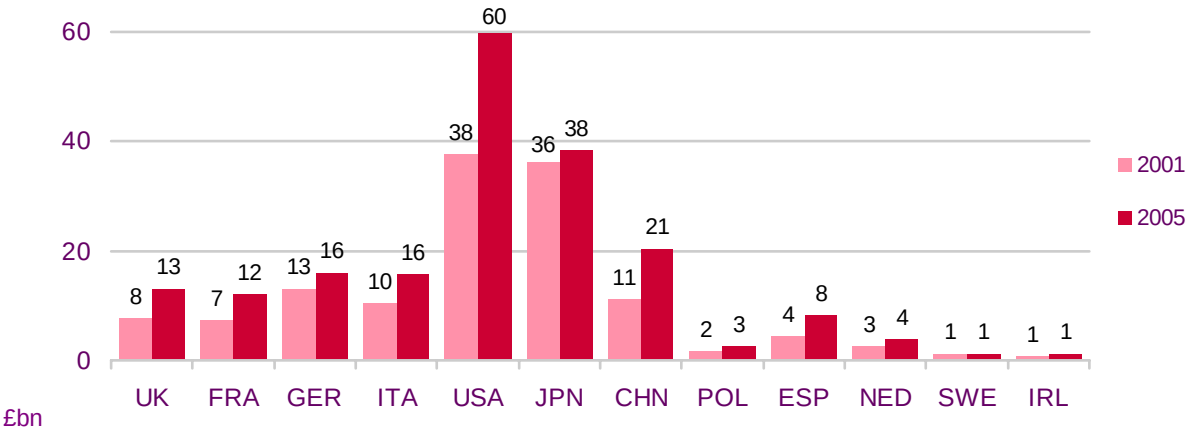
Source: IDATE / Estimates based on operator and regulator data/Ofcom research

2.2.3 …while mobile revenue has grown sharply

Figure 2.17 below shows that mobile revenue grew strongly across most countries over the four years to 2005. The US showed significant growth, with mobile revenue rising by more than 50% over the period; however, mobile revenues grew at the fastest rate in China, with revenues in 2005 being almost double those in 2001. As mentioned previously, China's mobile communications industry appears to have benefited from the widespread bypassing of fixed-line connectivity among Chinese consumers in favour of an immediate leap to mobile. Revenue growth among the countries in question was directly related to market maturity, with growth being highest in those with a rapidly growing subscriber base and slower in those markets with high mobile penetration.

An analysis of 2005 mobile revenue shows that, once again, the US had the highest revenue in 2005 with £60bn, followed by Japan with £38bn. China occupied a clear third position in the list with mobile revenues of £21bn in 2005.

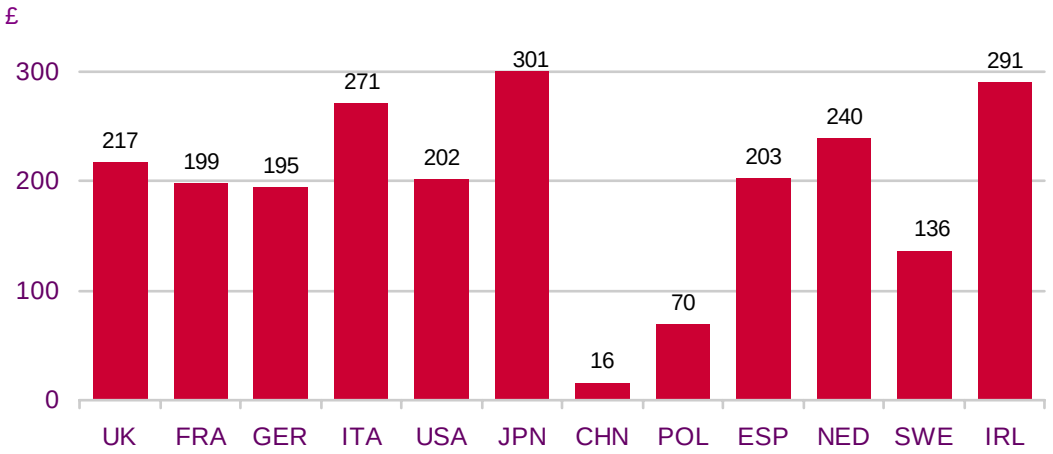
Figure 2.17: Mobile service revenue



Source: IDATE / Estimates based on operator and regulator data/Ofcom research

Japan has the highest per capita mobile service spend at over £301 a year, compared to £16 a year in China, which had the lowest average mobile spend (Figure2.18). Average spend per capita in the UK was £217 compared to £167 for fixed voice services.

Figure 2.18: Mobile service revenue per capita, 2005

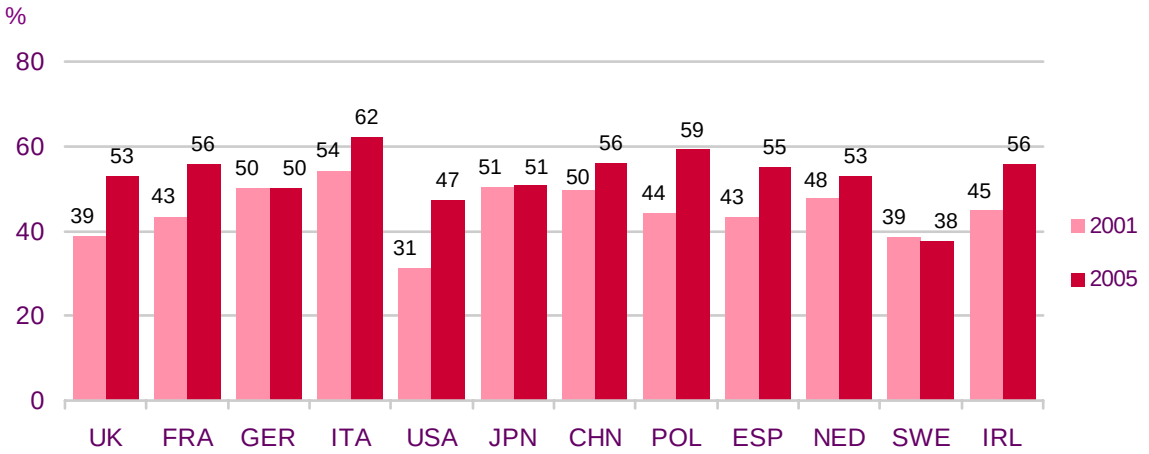


Source: IDATE / Estimates based on operator and regulator data/Ofcom research

2.2.4 Mobile forms an ever-increasing proportion of telecoms revenue

Comparing mobile revenue to total telecoms revenue for each country shows the relative strength of mobile in Italy, where it accounted for around 62% of all telecoms revenue in 2005 (Figure 2.19) Most countries in our list have followed a similar pattern of growth under this measure, with the exceptions being Japan and Germany, where mobile remained at around 50% of total telecoms revenue during the period, and Sweden, where it fell slightly (as a result of earlier mobile market maturity coupled with falling prices).

Figure 2.19: Mobile service revenue as proportion of total telecoms revenue

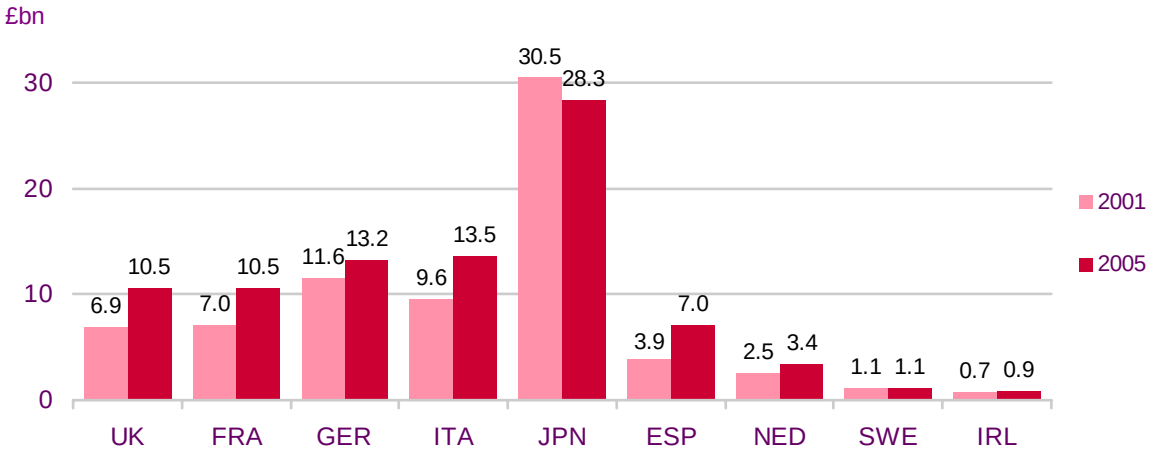


Source: IDATE / estimates based on operator and regulator data/Ofcom research

2.2.5 Within mobile, voice revenue grows in most countries…

Interestingly, when mobile services are split into their voice and data elements, some of these effects become even more pronounced. Figure 2.20 below shows that Japanese mobile voice revenue declined marginally over the five years to 2005. This can be explained by the combination of a near-saturated mobile market (even in 2001), strong price competition between the three Japanese mobile operators, and a near-zero-inflation economic environment. By contrast, mobile voice revenue rose steadily during this period in all the other countries in our analysis; however, much or all of this growth can be attributed to subscriber increases, and increases in average usage, rather than rising retail prices.

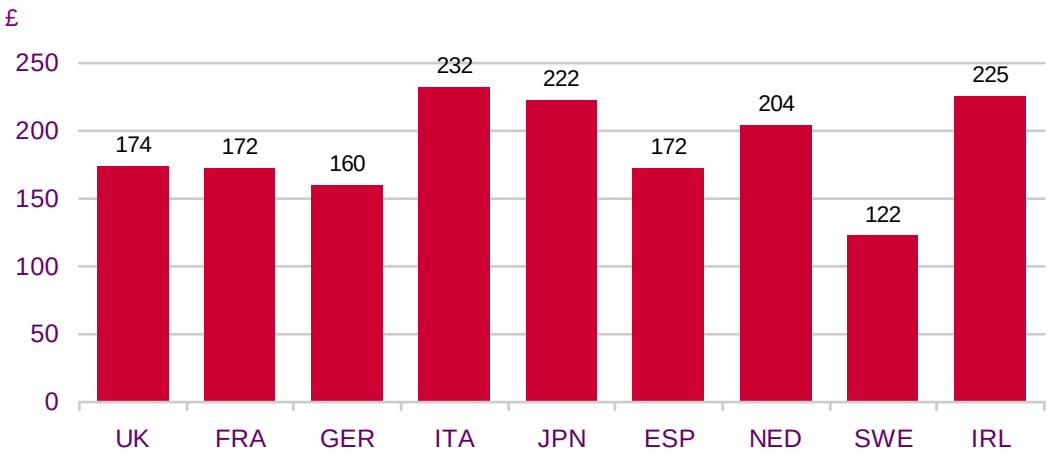
Figure 2.20: Mobile voice service revenue



Source: IDATE / estimates based on operator and regulator data/Ofcom research

On a per capita basis, Italy had the highest mobile voice spend per person in 2005 with £232, followed closely by Ireland and Japan (Figure 2.21). Of the countries for which data was available Sweden had the lowest average mobile voice spend per person, again as a result of falling prices.

Figure 2.21: Mobile voice service revenue per capita, 2005

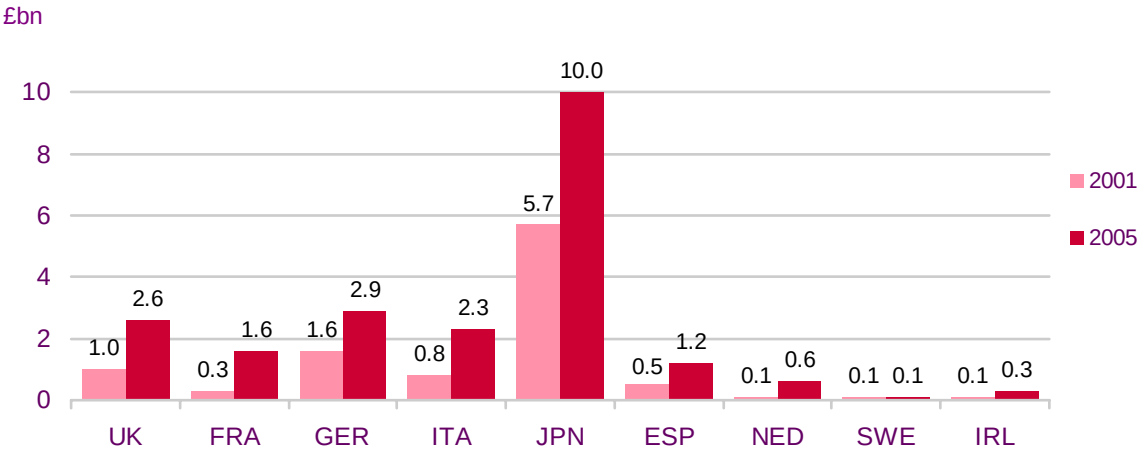


Source: IDATE / estimates based on operator and regulator data/Ofcom research

2.2.6 …while mobile data revenue has grown at a faster rate…

In contrast, revenue from mobile data services (including SMS, MMS, mobile internet and other mobile content) rose across the board between 2001 and 2005 (Figure 2.22). Japan saw a dramatic rise in this revenue stream, as more and more Japanese consumers adopted 2.5G and 3G. In most other countries, the bulk of the increase in data service revenue over this period came from the SMS market.

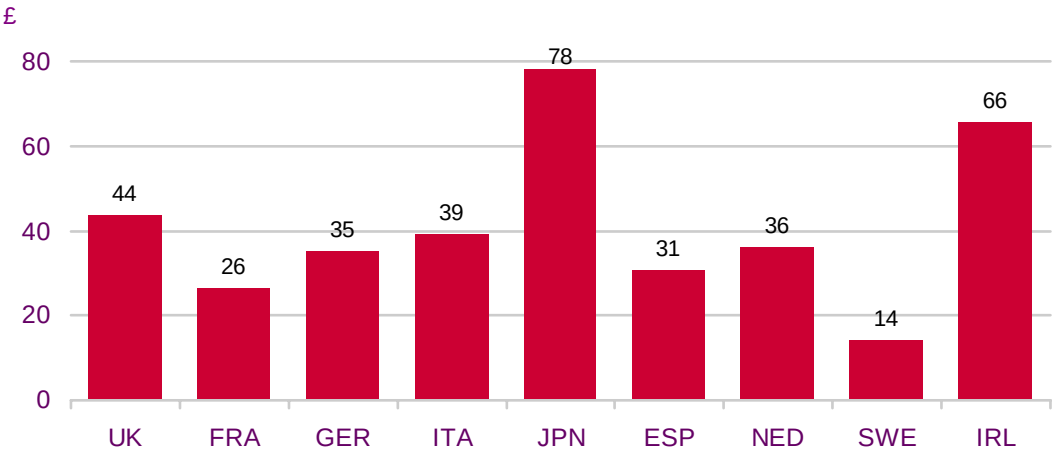
Figure 2.22: Mobile data service revenue



Source: IDATE / estimates based on operator and regulator data/Ofcom research

On a per capita basis, of the countries for which mobile data spend information was available, Japan had the highest average spend, followed by Ireland and the UK. Sweden and France had the lowest mobile data spends in 2005 (Figure 2.23).

Figure 2.23: Mobile data service revenue per capita, 2005

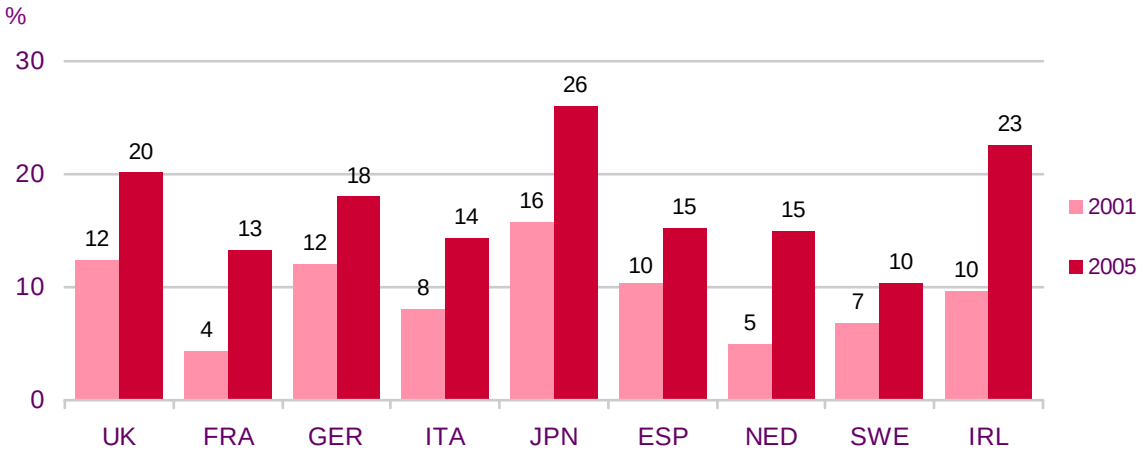


Source: IDATE / estimates based on operator and regulator data/Ofcom research

2.2.7 …meaning that data forms an increasing proportion of mobile revenue

Figure 2.24 below shows mobile data service revenue as a proportion of total mobile revenue. It indicates that all countries saw mobile data form an increasingly significant portion of their total mobile revenue over the five years to 2006. In Japan, by 2005, mobile data services comprised over 25% of all mobile revenue, closely followed by Ireland with 23% and the UK with 20%. All other countries were sitting in the 10%-18% range.

Figure 2.24: Mobile data service revenue as proportion of total mobile revenue

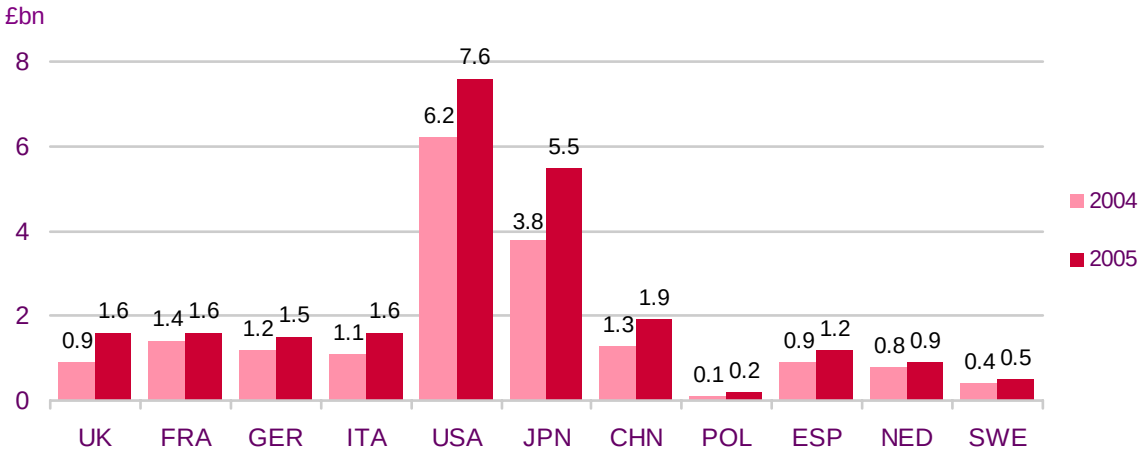


Source: IDATE / estimates based on operator and regulator data/Ofcom research

2.2.8 Broadband revenue rose strongly between 2004 and 2005

Broadband revenue rose steeply in all countries between 2004 and 2005 (Figure 2.25). The UK, for example, witnessed over 60% year-on-year growth, and even Japan (a relatively mature broadband market) saw revenue grow by 40%. This growth was almost entirely due to the rapid growth in broadband connections, despite general falls in retail monthly subscription prices in all countries (although many users upgraded their downlink speeds over the same period).

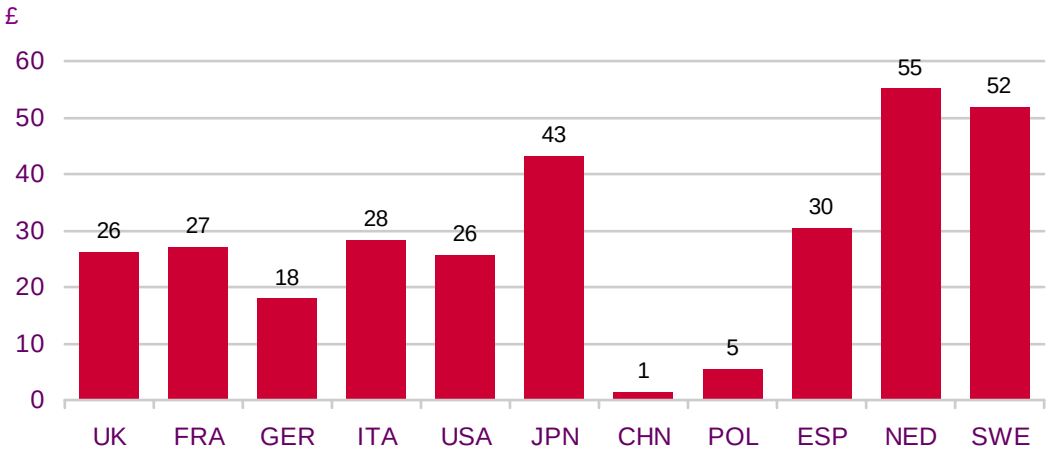
Figure 2.25: Broadband revenue



Source: IDATE / estimates based on operator and regulator data/Ofcom research

Analysis of 2005 broadband revenue shows that once again the US and Japan were significantly ahead of the other countries in our analysis (Figure 2.25); however, on a per capita basis the highest spends were in the Netherlands and Sweden (Figure 2.26).

Figure 2.26: Broadband revenue per capita, 2005



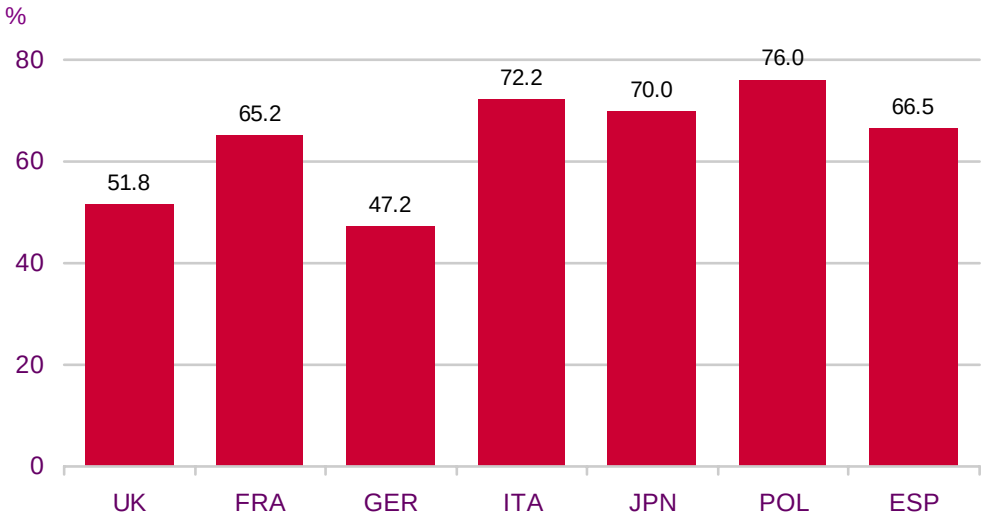
Source: IDATE / estimates based on operator and regulator data/Ofcom research

2.2.9 Germany and UK have greatest diversity of fixed-line supply

Most fixed-line incumbents lost significant market share to alternative operators between 1995 and 2005. Competition came from a mixture of facilities-based 'altnet' operators, and, more recently, through alternative service providers which use the incumbent's network to provide voice services. Additionally, new local loop unbundling (LLU) operators have begun to take control of local exchange lines from the incumbents to offer network-based services.

Figure 2.27 shows that Germany has seen the most competition to the incumbent (Deutsche Telekom), with the UK (BT) not far behind. By contrast, incumbents in France, Italy and Japan (France Telecom, Telecom Italia and NTT respectively) have maintained a higher market share. The UK was one of the first countries to deregulate the fixed-line market and introduce fixed-line competition at a retail level (during the mid 1980s), with other EU nations following similar paths during the 1990s. Note that the US is not included in this analysis, owing to the fragmented structure of its telecoms market and the presence of local monopolies/duopolies.

Figure 2.27: Incumbent market share of fixed-line volumes, 2005



Source: IDATE / National regulators/OECD/Ofcom research

2.2.10 The UK has one of the most diversified mobile markets

In mobile, the Herfindahl-Herschman Index (HHI) is often used to measure the level of concentration in the markets in terms of subscriber market shares of different operators.

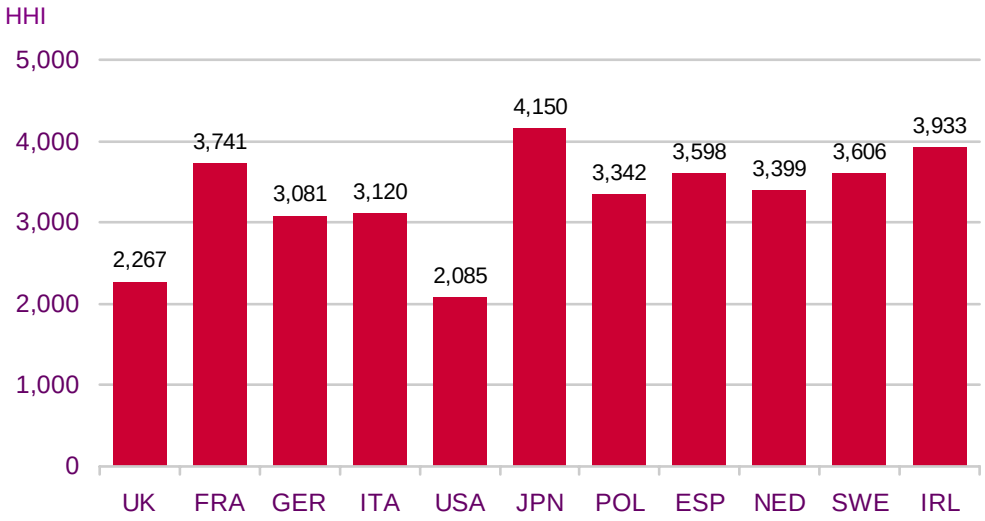
Herfindahl-Hirschman Index of market concentration

The Herfindahl-Hirschman Index (HHI) is a measure of the size of firms in relation to the size of the industry as a whole and is an indicator of the level of competition in a market. The HHI is defined as the sum of the squares of the market shares of each individual firm. As such, it can range from 0 (for a market with a large number of firms with equal market share) to 10,000 for a monopoly.

Decreases in HHI generally indicate a loss of pricing power and an increase in competition, whereas increases imply the opposite. In the UK the Office of Fair Trading (OFT) is likely to regard a market with an HHI in excess of 1,800 as highly concentrated and a market with an HHI in excess of 1,000 as concentrated.

Figure 2.28 below shows that the US has the least concentrated mobile market in terms of subscribers, owing to the fragmented nature of the US cellular market (although continuing consolidation will re-concentrate the market to an extent). On the other hand, Japan had the most concentrated mobile market. The data show that the UK had the second most diversified mobile market after the US, reflecting the relatively equal strength of the main network operators, and the presence of a growing fifth network operator.

Figure 2.28: Herfindahl-Herschman Index - mobile subscribers

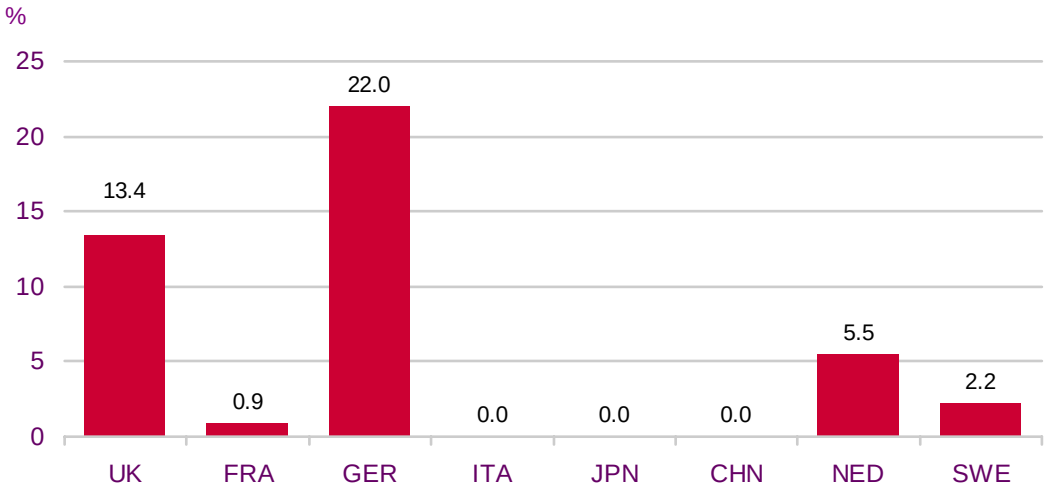


Source: IDATE / National regulators/OECD/Ofcom research
Note: Estimate for Germany includes resellers

2.2.11 MVNOs have significant market share in Germany and UK

The relative strength of MVNOs is shown in Figure 2.29 below. The UK and Germany had by far the most developed MVNO markets by the end of 2005, and of the remaining countries (the Netherlands, Sweden and France) had some MVNO presence. The presence and strength of MVNOs in any given market is reflective of a number of factors, including general market conditions, the regulatory environment, and the strategies of the network operators. In the UK, for example, T-Mobile struck a deal with Virgin Mobile for access to its 2G network as long ago as 1999, while in Italy the network operators not opened their networks to competitors. Note that we have no data for the US, where MVNOs (chiefly Virgin Mobile) have recently been gaining share.

Figure 2.29: MVNO share of retail subscribers, 2005

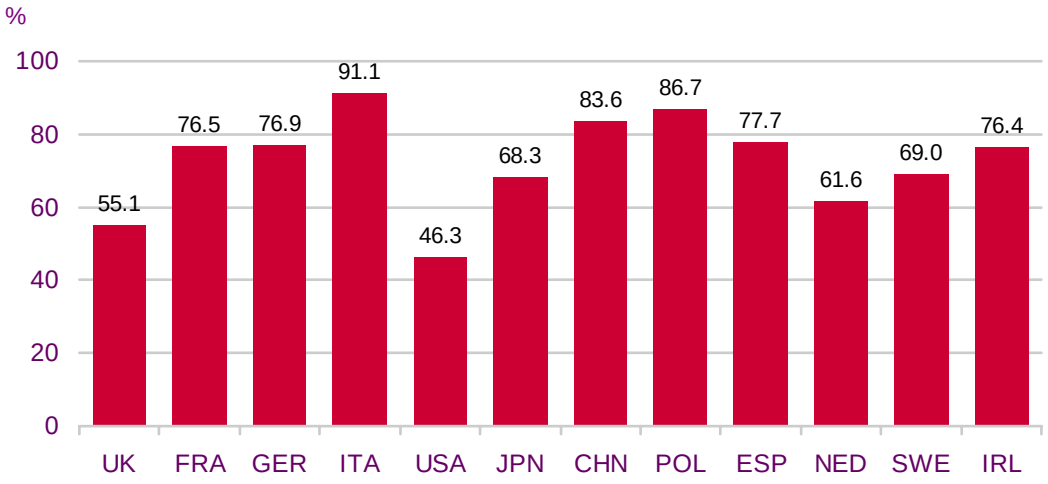


Source: IDATE / National regulators/OECD/Ofcom research

2.2.12 Broadband market concentration differs widely between countries

In broadband, there is again a marked difference between the countries included in our analysis. Figure 2.30 below shows that the US and the UK had a relatively fragmented broadband market at the end of 2005, while Italy and China were dominated by their incumbents' ISPs. In the UK, BT Retail, ntl and AOL accounted for around 55% of all connections at the end of 2005; however, we estimate that the UK's top three broadband operators' share increased to over 62% in June 2006, following the merger of ntl and Telewest.

Figure 2.30: Retail subscription share of top three broadband operators, 2005

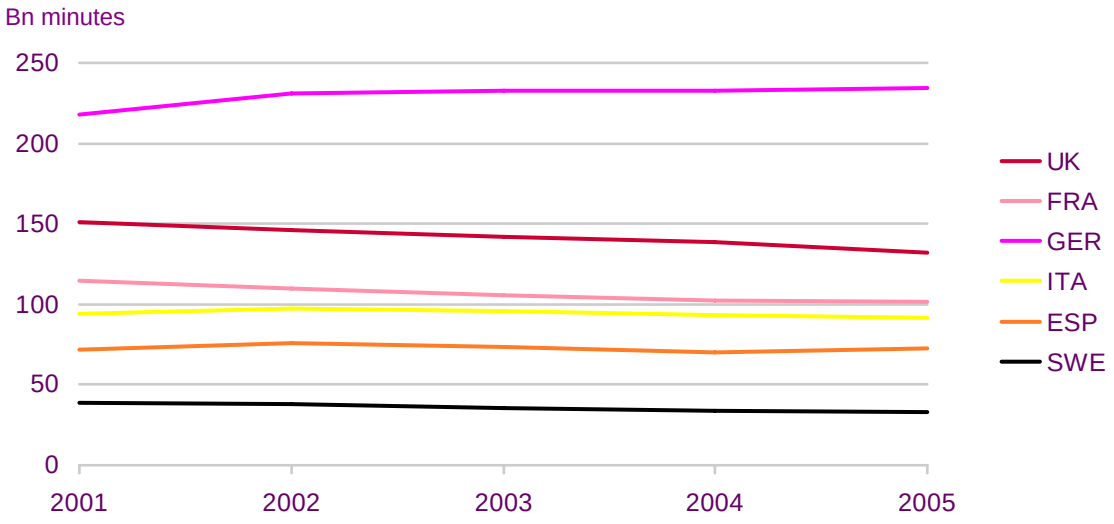


Source: IDATE / National regulators/OECD/Ofcom research

2.2.13 Total fixed-line voice volumes remain constant

Fixed-line voice call volumes remained broadly flat between 2001 and 2005 across the countries where we have data (Figure 2.31). When considered against total fixed-line voice revenues, this suggests that prices fell over the same period.

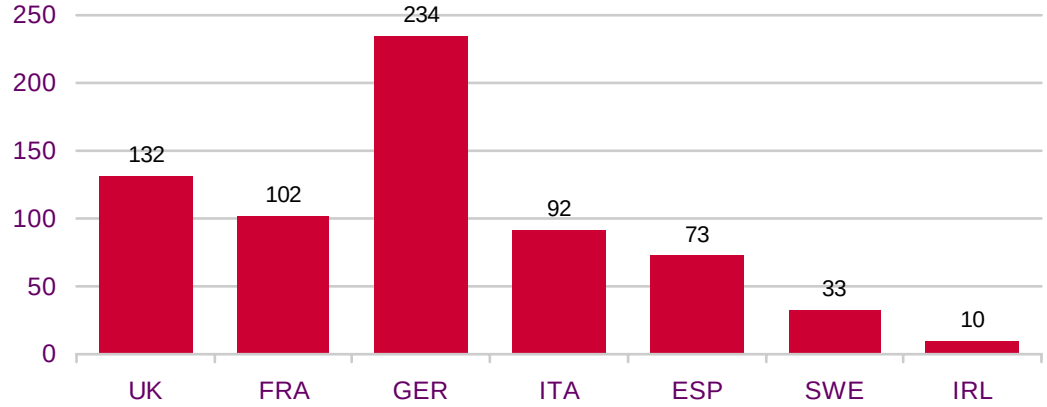
Figure 2.31: Fixed-line voice volumes



Source: IDATE / National regulators/Ofcom research

Figure 2.32: Fixed-line voice volumes, 2005

bn minutes



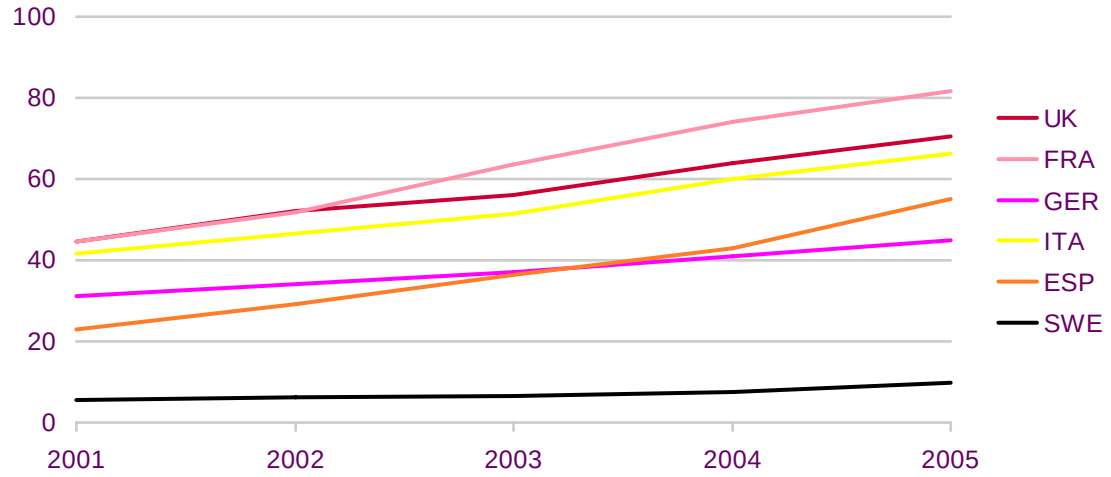
Source: IDATE / National regulators/Ofcom research

2.2.14 Total volume of mobile calls grows rapidly since 2001

By contrast, mobile voice call volumes grew rapidly across all the countries for which we have data (Figure 2.33). This is due to a combination of continued subscriber growth in these countries, coupled with increased usage volumes among existing subscribers. Of the countries analysed, Sweden has shown the lowest proportionate growth, probably owing to the fact that mobile was already a mature and widely-used technology by 2001.

Figure 2.33: Mobile voice volumes

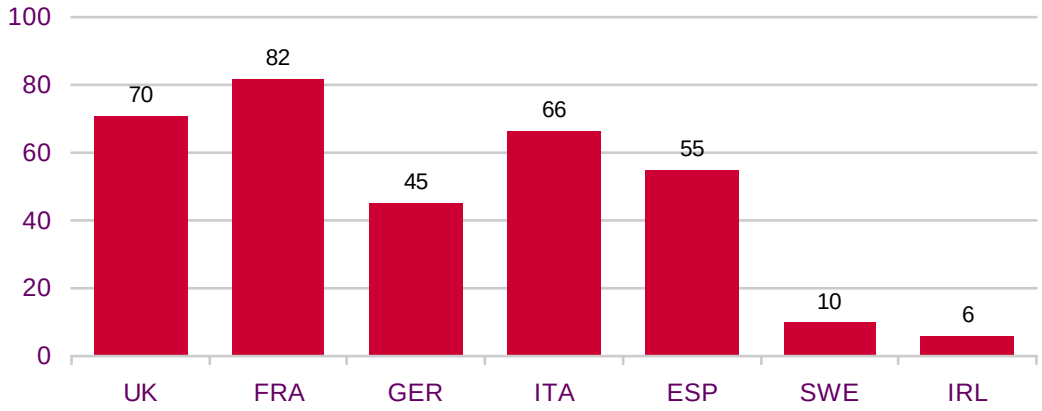
bn minutes



Source: IDATE / National regulators/Ofcom research

Figure 2.34: Mobile voice volumes, 2005

bn minutes

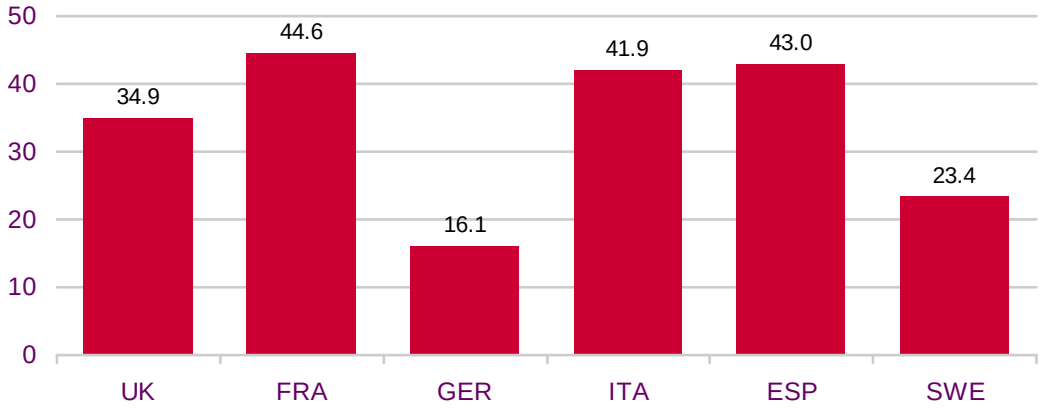


Source: IDATE / National regulators/Ofcom research

Of the countries for which data was available, mobile made up the highest proportion of total fixed and mobile voice calls in France, Spain and Italy – where it accounted for 40-45% of all voice calls. In the UK, mobile made up just over a third of total voice calls, while in Germany only 16% of voice calls originated on mobile networks in 2005.

Figure 2.35: Mobile as a proportion of all voice call volumes, 2005

%



Source: IDATE / National regulators/Ofcom research

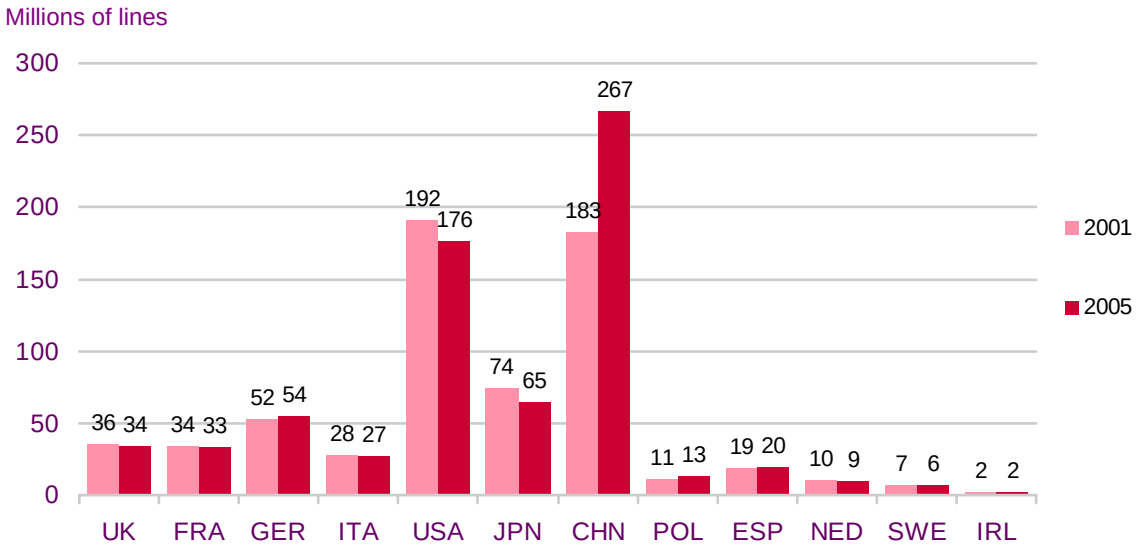
2.3 The telecoms user

2.3.1 China grows to first place in fixed lines

In general, the number of fixed lines has been slowly declining in the five years since 2001 (Figure 2.36). The notable exception to this trend is China, where the number of analogue (PSTN) lines increased by almost 50% over this period. This contradiction can be explained by China's relatively low installed base of PSTN lines before 2000. The other countries where the number of fixed lines grew were Poland (a 15% increase), Germany (4%), Republic of Ireland and Spain (both 6%).

The US showed the largest absolute decline in fixed lines between 2001 and 2005 – down by 15.3m or 8%, followed by Japan (down 8.9m or 12%) and the UK (down 1.6m or 4%). By the end of 2005, China had the most exchange lines of any of the countries in our analysis (267 million), followed by the US (176 million).

Figure 2.36: Total fixed exchange lines (PSTN and ISDN)

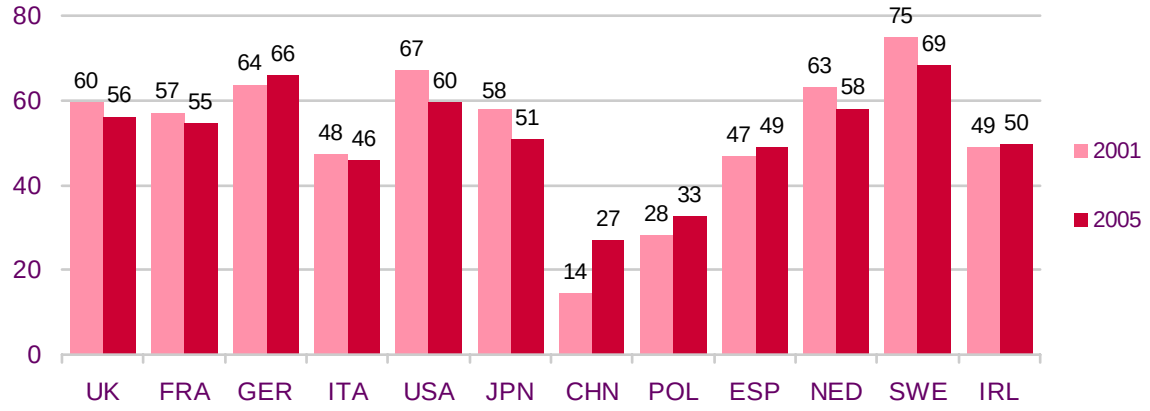


Source: IDATE / National regulators/OECD/Ofcom research
Note: PSTN lines include ISDN connections at PSTN line equivalent (e.g. one ISDN30 line = 30 PSTN lines)

Despite fast growth in the number of lines over the past four years, China had the lowest proportion of lines per 100 population at the end of 2005 within the countries surveyed, with 27 (Figure 2:37). Poland had the second-lowest fixed-line penetration, with 33 lines per 100 people in 2005. Of the remaining countries, Sweden had the highest take-up, at 69 lines per 100 people, followed by Germany with 66 lines. Fixed-line penetration in the UK was slightly above the average (56 lines) for the countries in our analysis, at 51 lines per 100 people.

It is worth noting that measuring the number of lines per 100 population is a useful comparative indicator of fixed-line density, but is not a direct measurement of the number of people or households with access to fixed lines. The latter would require a split between residential and business fixed lines, which is difficult to obtain on a comparative basis for different countries.

Figure 2.37: Fixed lines per 100 population



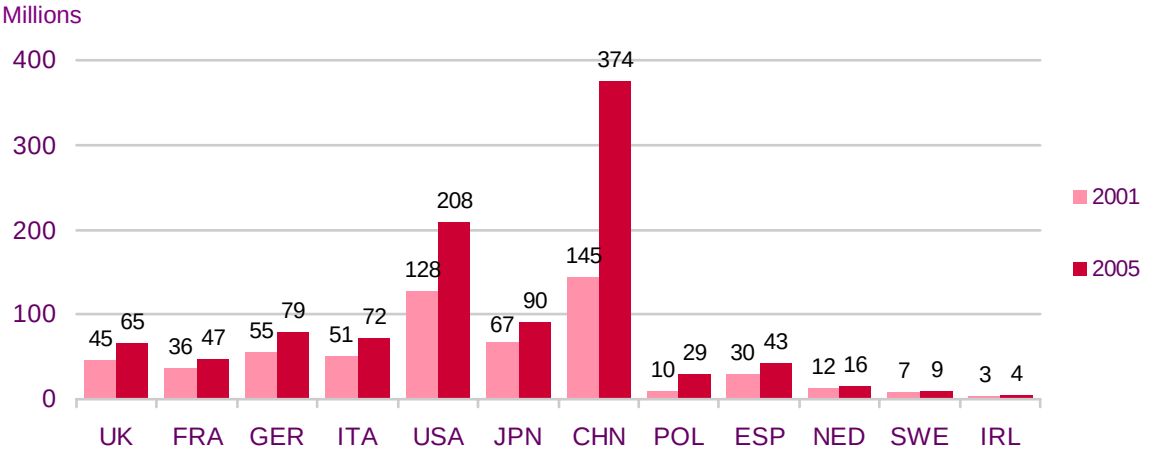
Source: IDATE / National regulators/OECD/Ofcom research
Note: PSTN lines include ISDN connections at PSTN line equivalent (e.g. one ISDN30 line = 30 PSTN lines)

2.3.2 China also pulls away in mobile subscriptions…

An analysis of mobile subscription growth shows that China achieved dramatic increases in subscriptions between 2001 and 2005 – growing by 230 million over this period (Figure 2.38). Poland had the highest growth rate, at 190 %, or 19 million subscriptions. The US also experienced strong growth, particularly in 2005 when there was an increase in subscribers of 32 million (19%) in one year. Growth between 2001 and 2005 was more modest in Sweden (27%), France (29%) and the Netherlands (35%), mainly due to already-high penetration levels in 2001. In the UK, the number of mobile subscriptions increased by 46% (20.1 million) between 2001 and 2005.

By the end of 2005, China was by some margin the world's leading mobile country by number of subscriptions, with nearly 375 million – more than the entire population of the European Union, and almost six times the UK figure of 65.5 million. The US was second with just over 200 million.

Figure 2.38: Mobile subscriptions



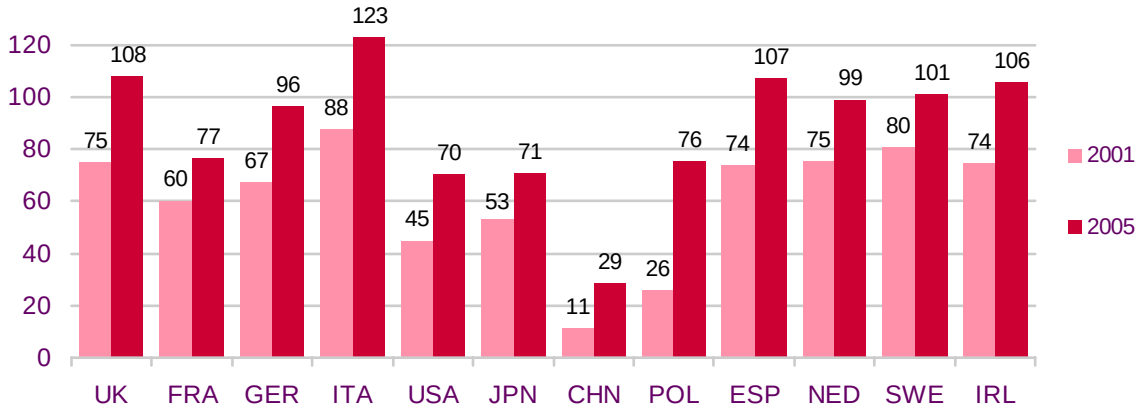
Source: IDATE / National regulators/OECD/Ofcom/operators

2.3.3 …but remains at the bottom of the pack for mobile penetration

A different picture emerges when mobile subscriptions per 100 population are examined for each country (Figure 2.39). While China had the largest number of subscriptions at the end of 2005, mobile penetration was actually the lowest among the countries surveyed, at around 29%. By 2005, Italy, Spain, Ireland, Sweden and the UK all had more mobile subscriptions than inhabitants, meaning that a proportion of users had more than one mobile subscription each. In Italy, there is anecdotal evidence to suggest that many people have multiple pre-pay mobile subscriptions, which they use at different times of the day or for calls to different networks. Similarly, in the UK there is a high level of multiple SIM card use, and our consumer research in Q4 2005 indicated that 11% of mobile owners used two or more mobile devices with different numbers. This number is likely to increase further due to the recent rise in the take-up of secondary business mobile devices such as Blackberries.

It is also worth noting that mobile penetration in France, the US and Japan was noticeably lower at the end of 2005 than in the other industrialised nations in the list. This may be due to a combination of cultural and demographic factors, in addition to country-specific issues such as the 'receiving party pays' charging system in the US.

Figure 2.39: Mobile subscriptions per 100 population

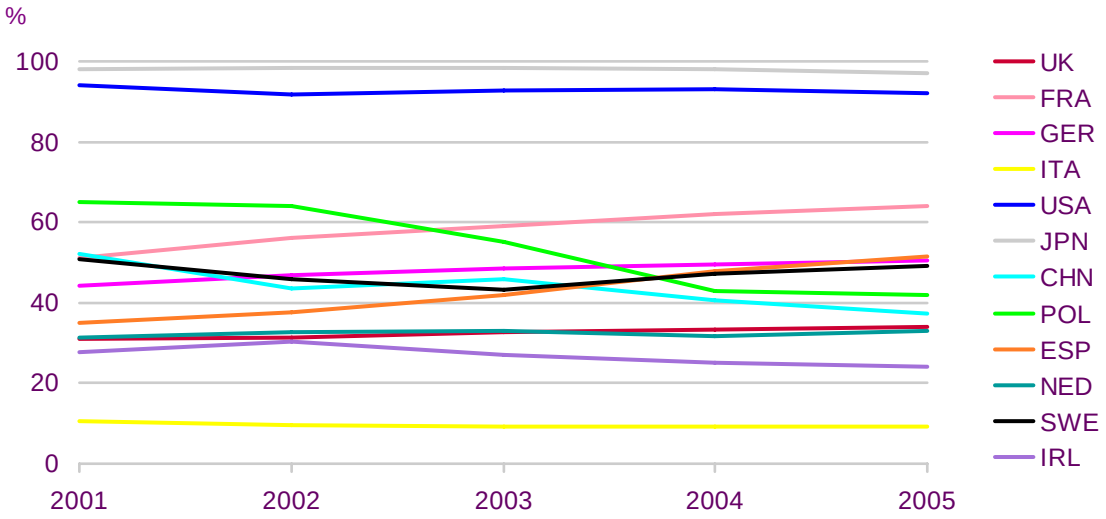


Source: IDATE / National regulators/OECD/Ofcom/operators

2.3.4 Pre-pay/post-pay mix varies significantly between countries

Figure 2.40 below shows the proportion of post-pay (sometimes known as 'contract') subscriptions in each country. It shows that virtually all subscriptions in Japan and the US were contract-based over the entire period of analysis, while in Italy over 90% of subscriptions were pre-pay (or 'pay-as-you-go') with no tied contract. Of the remaining countries, the UK had 66% pre-pay subscriptions in 2005, while by contrast some 64% of French subscriptions were via contracts.

Figure 2.40: Post-pay as proportion of total mobile subscriptions



Source: IDATE / National regulators/OECD/operators/Ofcom/operators

2.3.5 3G penetration is highest in Japan, while Italy tops European 3G league

3G mobile services were first offered in Japan and South Korea in 2002, with many European countries following suit in 2003 and 2004. 3G (using many different standards, explained in more detail below) allows users to access advanced data services, and to download audio and video content at much faster rates than over 2G or 2.5G networks. Most countries are still in the build phase of their 3G networks – substantial incremental infrastructure investment is required, due to the shorter signal propagation characteristics of 3G frequencies compared to 2G (resulting in a higher required density of base stations).

3G mobile technologies

3G technologies provide increased voice capacity and higher-speed mobile data access compared to 2G and support multimedia applications. The distinction between 2G, 2.5G and 3G is primarily based upon data speeds, resulting in some difference of opinion on the categorisation of various technologies. The following technologies are generally considered to be 3G:

W-CDMA (Wideband Code Division Multiple Access) is part of the UMTS family standardised by 3GPP. It is the most popular 3G technology in Europe and Japan (NTT DoCoMo's FOMA) while it is also becoming increasingly popular in the US. The maximum downstream speed is 384 Kbit/s although actual speeds are around 200 Kbit/s. It is a mass-market technology, with 75m subscribers worldwide.

HSPA (High Speed Packet Access), often referred to as 3.5G, is an extension to the original W-CDMA standard providing significantly higher data rates. HSDPA (downlink) can provide theoretical maximum downlink speeds of 14.4 Mbit/s. However, current implementations and devices support maximum speeds of 1.8 Mbit/s and 3.6 Mbit/s while typical speeds range from 0.5 to 1.5 Mbit/s. The first large-scale commercial HSDPA network was launched in the US by Sprint at the end of 2005 while more than 70 networks support HSDPA today.

HSUPA (uplink) will support maximum uplink speeds of 5.76 Mbit/s (increased from 384 Kbit/s available with HSDPA) and is expected to be commercially available in 2007. Initial deployments will support up to 1.5 Mbit/s. The investment required to develop HSPA networks consists mainly of relatively cheap software upgrades which will probably lead to a decrease in average cost per bit carried over mobile networks.

TD-CDMA (Time Division – CDMA) is also part of the 3GPP UMTS family with limited adoption to date, mostly for fixed/nomadic wireless access. In the UK it is being used by UK Broadband. It is suitable for use in unpaired spectrum bands and offers variable uplink/downlink data rate ratios (a feature particularly useful for asymmetric or broadcast services such as mobile TV). TDtv, the mobile TV standard developed by IPWireless, is based on this technology. Maximum downlink speeds of up to 12 Mbit/s have been reported.

TD-SCDMA (Time Division Synchronised Code Division Multiple Access) is a 3G standard developed in China, expected to be mainly deployed in its home market. The Chinese authorities aim to award at least one TD-SCDMA licence.

CDMA2000 (also known as CDMA 1X, CDMA2000 1X) is a high-speed mobile technology used widely in the US and Japan as well as other parts of Asia Pacific and in Latin America. It offers maximum speeds of 153 Kbit/s in both directions (average 60-100 Kbit/s) and is backward and forward compatible with IS-95 (its 2G predecessor), a fact that has helped its wide adoption. Although considered a 3G technology its data performance is comparable to GPRS (a 2.5G technology in the GSM/UMTS family) in most current deployments.

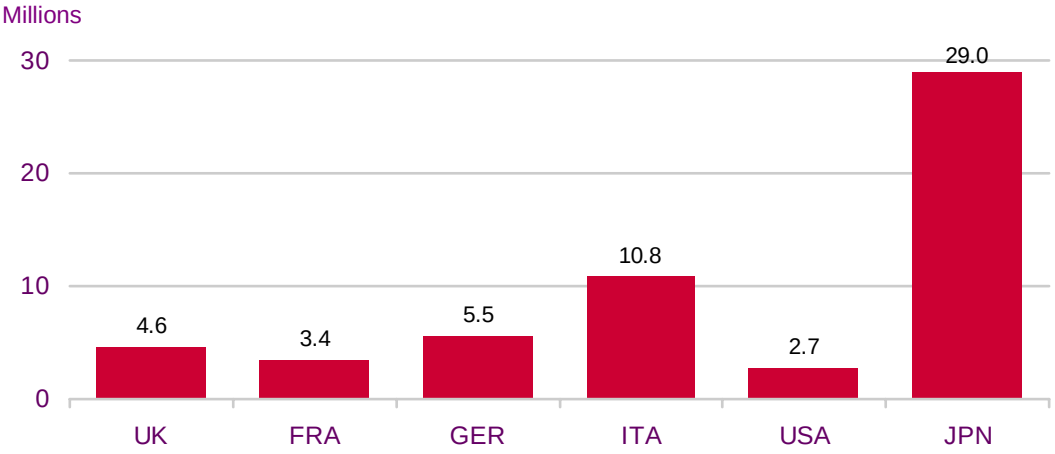
CDMA2000 1xEV-DO (Evolution-Data Optimised) is an extension to CDMA2000 (similar to what HSDPA is for WCDMA) that can provide downlink speeds of up to 2.4 Mbit/s (average 300-600 Kbit/s). EV-DO Revision A will provide maximum downlink at 3.1 Mbit/s and 1.8 Mbit/s uplink (average 300-600 Kbit/s both ways).

As Figure 2.41 below shows, Japan is the clear leader in 3G subscriptions, which is hardly surprising, as Japan was the first country to introduce large-scale commercial 3G services. At the end of 2005, Japan had almost three times as many 3G subscribers (29 million) as the next highest country, Italy, with 10.8m. The UK had just under 5 million 3G connections at the end of 2005, while Germany had over 5.5 million. China was not included, as no 3G

networks had yet been deployed there. At the time of writing, it was not yet certain which technologies would be used, and when the licences would be awarded.

Note that the 3G connection data shown in Figure 2.41 reflect the estimated number of 3G SIM cards connected to a network, and are not equal to the number of individual 3G users or 3G phone owners – it is possible that one person may have more than one active 3G connection, for example those with both a 3G handset and a 3G-enabled data card for their laptop.

Figure 2.41: 3G connections, 2005

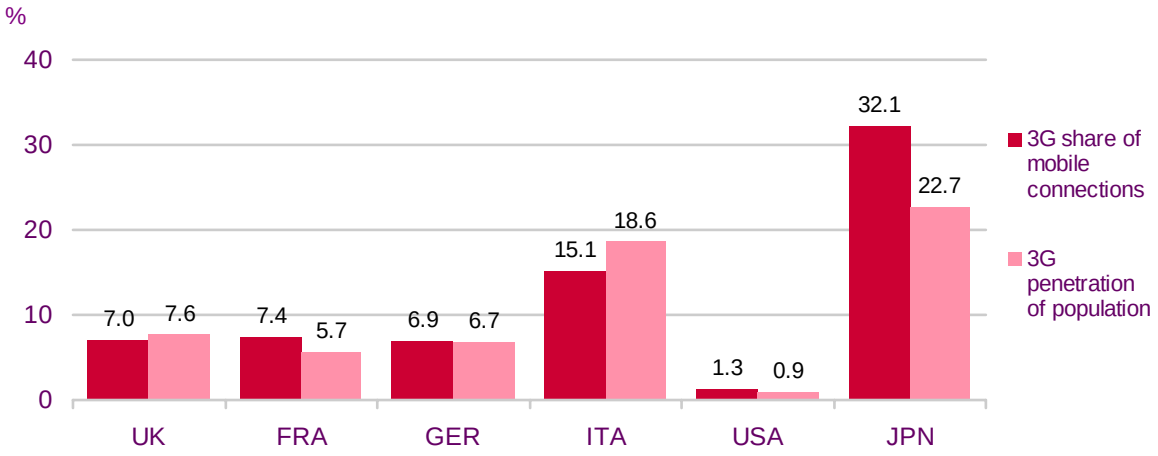


Source: Analysys
Note: Figures do not include CDMA2001x subscriptions

Measured as a proportion of total mobile connections, 3G was again most popular in Japan, where share was twice as great as in Italy; however, when the total population is used as the base, Japan's 3G penetration was only 22% higher than Italy's. (Figure 2.41)

Generally, the countries in our analysis kept the same rank for both penetration indicators, except for France and Germany. While Germany had a higher number of 3G subscribers and a higher penetration of total population than France, the share of 3G connections as a proportion of total mobile connections was greater in France.

Figure 2.42: 3G penetration, 2005



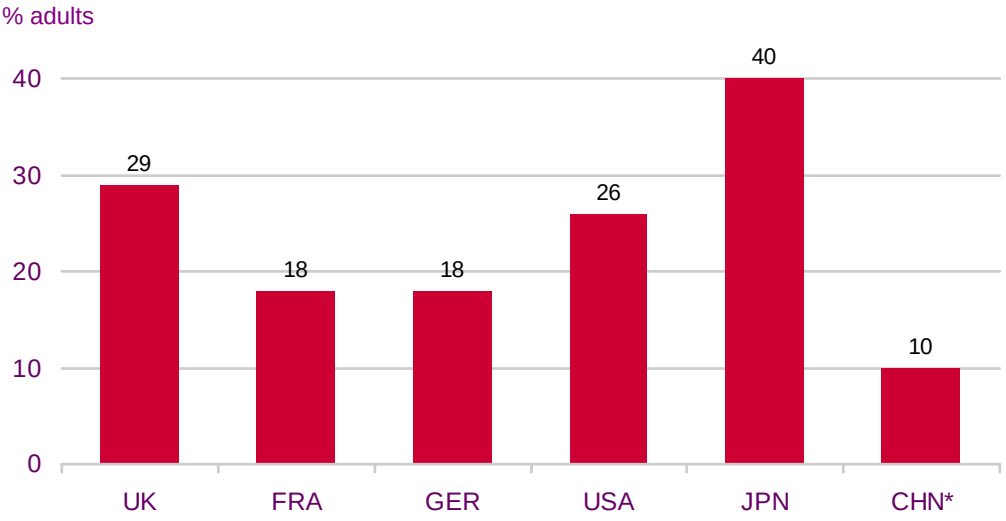
Source: Analysys
Note: Figures do not include CDMA2001x connections

It is important to note, however, that the number of connections cannot be equated to usage levels. For example, it does not necessarily follow that because Italy has twice as many 3G subscriptions as Germany, there is twice as much 3G traffic, only that twice as many subscribers can use 3G services. Moreover, 3G subscriptions or traffic are not directly representative of mobile data use, as earlier technologies, such as GPRS, can be used for data services such as multimedia messaging and mobile internet access.

Figure 2.43 shows the findings of a survey by Ipsos, which looked at the use of mobile phones and other wireless devices to access the internet in different countries. Japan has by far the highest proportion of adults who access news and information online via a wireless device, at 40% of adult population. The UK was second, with 29%, followed by the US, with 26%.

The high level of internet use via wireless devices in the US, compared to the relatively low 3G subscriber base, is explained by widespread adoption of the CDMA2001x standard, which allows high data speeds but is often classified as a 2.75G technology. The relatively high use in China, at 10%, is explained by the fact that the survey looked at an urban-only sample in this country.

Figure 2.43: Use of wireless devices to access news and information online



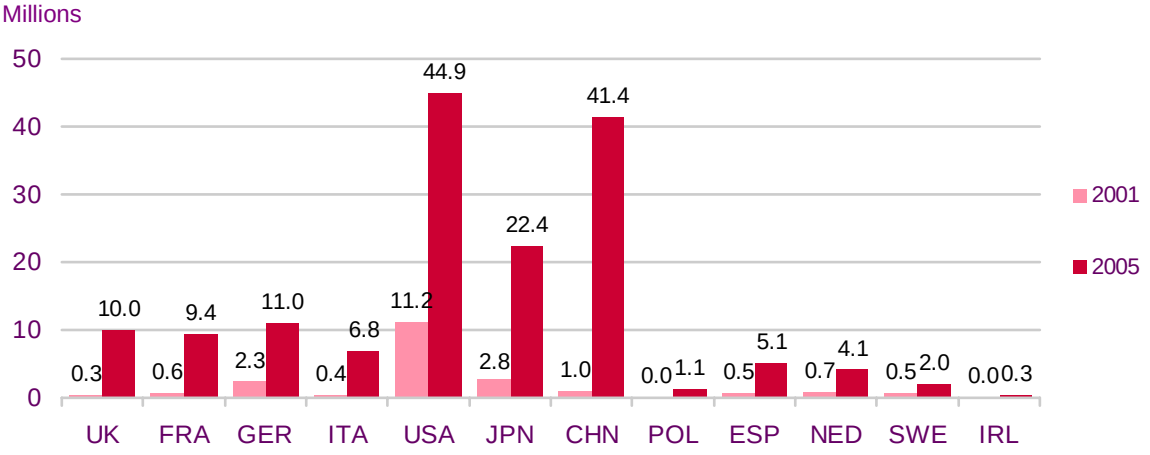
Source: IPSOS
Note: Urban sample only in China, no data available for Italy

2.3.6 US leads in broadband connections, but China is catching up fast

In broadband, the number of connections in each country rose steeply between 2001 and 2005 (Figure 2.44). The highest growth rate was in China, where connections grew from around 1 million in 2001 to over 40 million by the end of 2005. The number of UK connections grew by 27% (9.5m), while France and Italy both increased by over 14%.

At the end of 2005, while the US was still the largest broadband market, China was close behind – and an extrapolation of the growth curves shown in Figure 2.44 suggests that the number of broadband connections in China might have overtaken those in the US by mid-2006.

Figure 2.44: Broadband connections



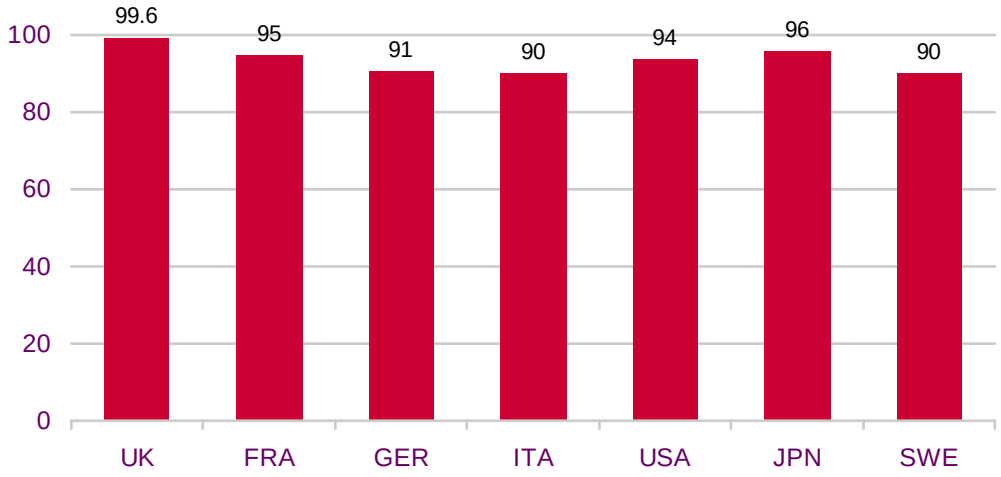
Source: IDATE / National regulators/OECD/Ofcom/operators

Broadband availability was high among all of the territories for which figures were available (Figure 2.45). Sweden and Germany had the lowest estimated availability amongst this sample; however, 90% of their citizens were still able to subscribe to broadband services. A 2006 report prepared by Ovum and the DTI indicated that the UK had the highest broadband availability of the countries in our analysis, at just under 100%; according to BT, 99.6% of UK

premises are now connected to a DSL-enabled telephone exchange at 512 kbit/s speeds or higher.

Figure 2.45: Broadband availability, 2005

% population with access to a terrestrial broadband solution



Source: Ovum/DTI/BT
Note: UK figure is for percentage of premises which can receive broadband at 512 kbit/s

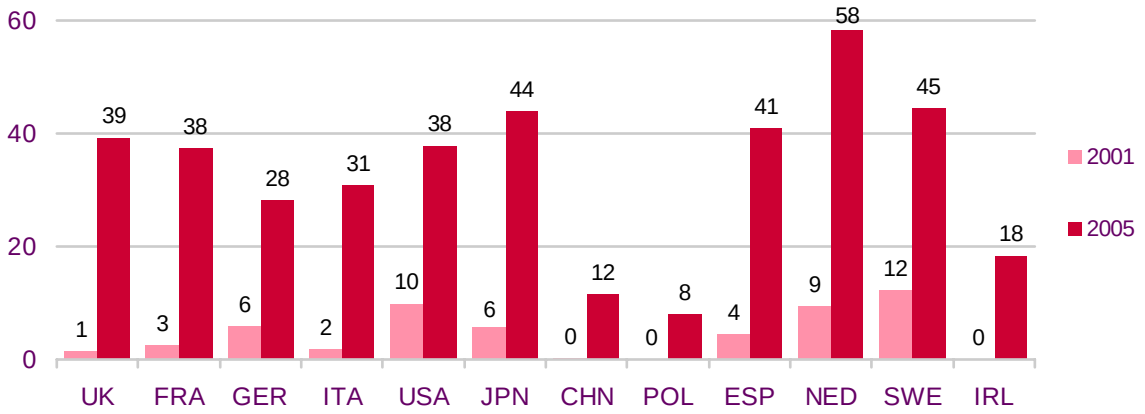
2.3.7 The UK climbs the broadband penetration league

In a similar pattern to our mobile penetration analysis, China's large number of broadband connections actually represents a low penetration of households. By the end of 2005, Chinese broadband penetration represented around 12% of households, compared with almost 40% in the UK, and 44% in Japan (Figure 2.46).

Penetration growth between 2001 and 2005 was highest in the Netherlands where 49% of households connected to broadband, followed by Japan and the UK, which both had 38% penetration growth over the period. Broadband penetration in the UK overtook that of the US and France for the first time in 2005.

These figures are not accurately indicative of the proportion of homes with broadband connections. This is because a certain unquantifiable proportion of reported broadband connections in each country are to home businesses or small businesses, meaning that actual household penetration in each country will be slightly lower than the figures shown in the chart.

Figure 2.46: Broadband connections per 100 households



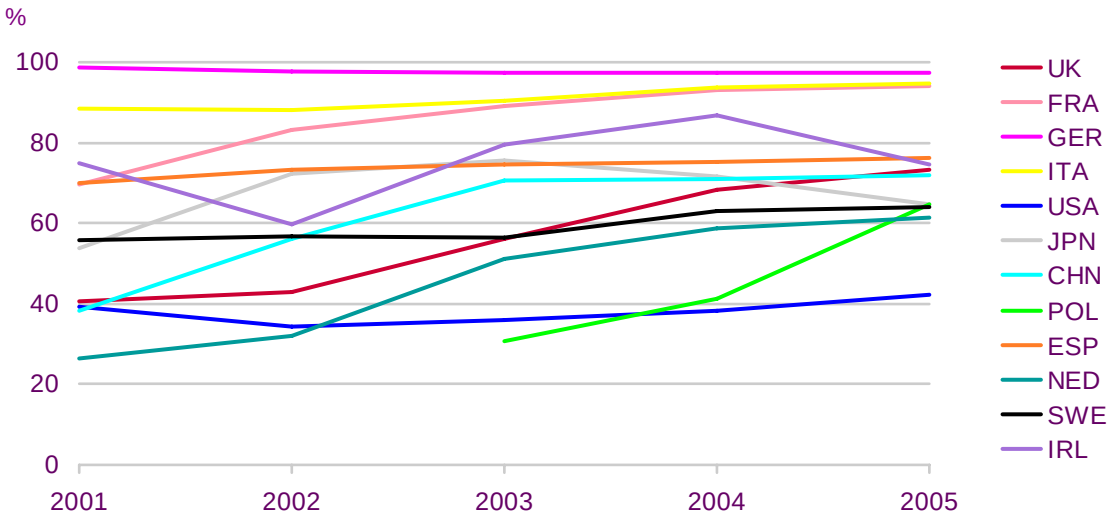
Source: IDATE / National regulators/OECD/Ofcom/operators

2.3.8 Broadband delivery platforms vary widely, but tend towards DSL

For each country in our analysis, the mix of platforms over which consumers receive broadband internet varies markedly. Figure 2.47 below shows the proportion of broadband connections in each country that are provided over DSL via the copper local loop telephone network. It shows that by 2005 virtually all German connections were via DSL, as were 94% of connections in France and Italy. The UK, Spain, Republic of Ireland and China all had between 65% and 75% connections via DSL by the end of 2005, while the US stood out as the country with the lowest DSL mix – at around 40% by 2005.

The situation in Germany is particularly interesting, as the country has an extensive cable network which appears little-utilised for cable broadband. This is probably because the cable network was previously owned by the incumbent fixed-line operator Deutsche Telekom, which was forced to sell it in the late 1990s. Deutsche Telekom therefore chose not to invest in cable broadband activities pending the sale, which took many years to complete. This may possibly explain why cable broadband was not successful in Germany, especially during the high broadband growth years of 2002-2005.

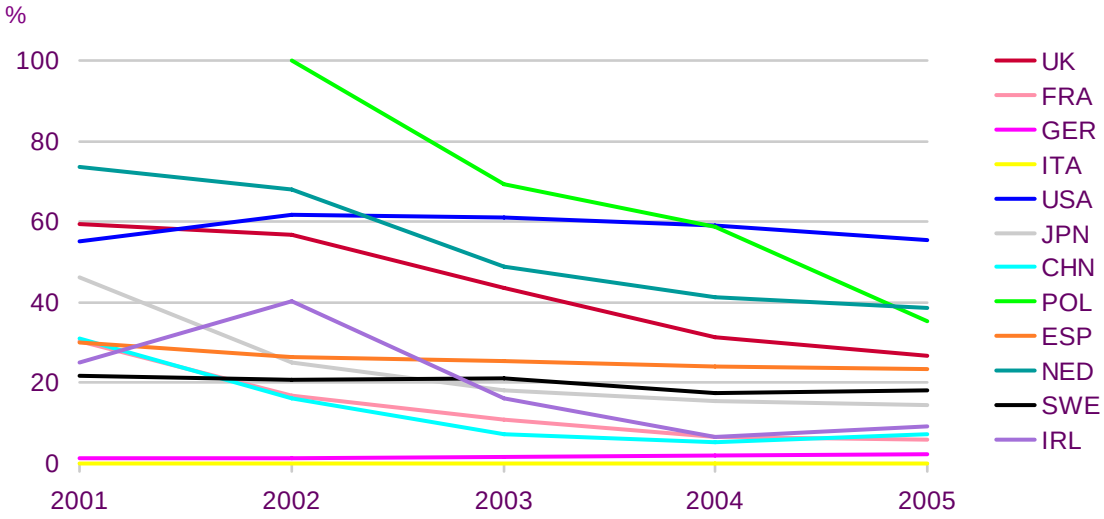
Figure 2.47: DSL as proportion of total broadband connections



Source: IDATE / National regulators/OECD/Ofcom/operators
Note: Data for Poland not available prior to 2003

The corollary to this is Figure 2.48 below, which shows the proportion of broadband connections supplied via cable modems. Italy had no connections via cable modem by 2005, and Germany had less than 3%. This reflects the nature of the cable industries in both of these countries, as previously discussed. By contrast, the US used cable modems for over 55% of its broadband connections by 2005, again reflecting the more integrated position of the US cable industry, owing to cable's strong position in TV delivery since the 1980s. The Netherlands (39%) and Poland (35%) also had relatively high shares of cable broadband connections in 2005, followed by the UK (27%).

Figure 2.48: Cable modem as proportion of total broadband connections



Source: IDATE / National regulators/OECD/Ofcom/operators
Note: Data for Poland not available prior to 2003

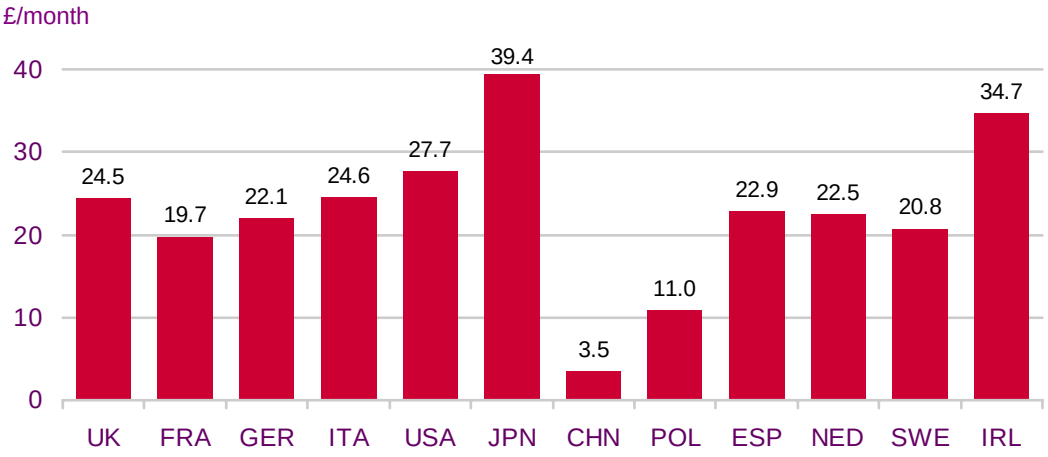
2.3.9 Fixed-line average revenue per user is in decline almost everywhere

Figure 2.49 below shows the variation in estimated fixed-line average revenue per user (ARPU) across countries. It shows that Japan had the highest ARPU levels, at around

£39/month equivalent by 2005, and that China had the lowest levels (around £4 equivalent). However, these figures should be viewed in the context of significantly different costs of living and purchasing power parities (PPPs) in these countries.

Of perhaps more interest is the trend in ARPU from 2001 to 2005. Most countries in our analysis have experienced gradual ARPU reduction over this period, reflecting falling prices, except for China where the decline was possibly caused by the lower spend by new fixed-line subscribers. Germany and Japan were the only countries where fixed voice ARPU has increased very slightly over the five years.

Figure 2.49: 2005 fixed-line voice ARPU

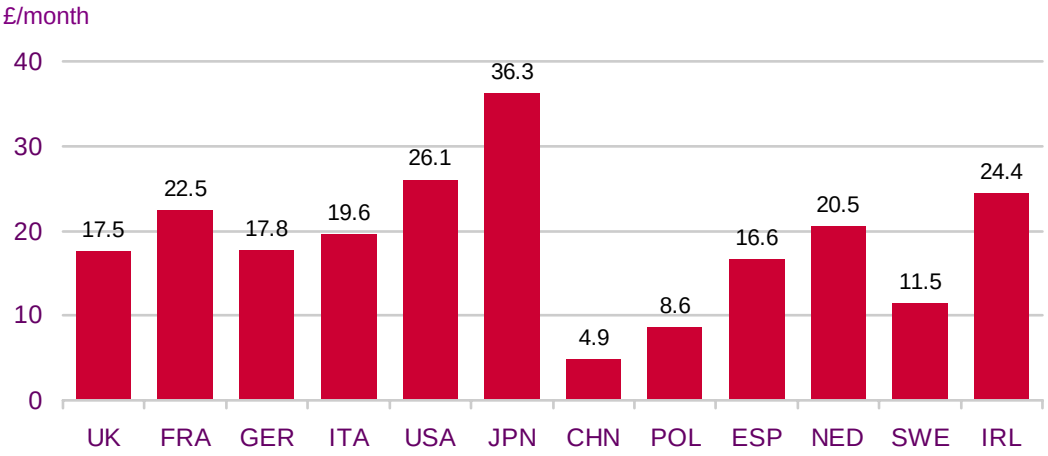


Source: IDATE / operators/national regulators/OECD/Ofcom/operators

2.3.10 Mobile ARPU stabilises as increased usage counters falling prices

In mobile, 2005 ARPU levels varied, with Japan showing the highest levels and China the lowest (Figure 2.50). However, time-series analysis again throws up some interesting differences. Mobile ARPU declined by over 30% in Poland and by over 15% in Japan and Sweden, with Germany and China also experiencing declines between 2002 and 2005. ARPUs remained relatively flat for most other countries in the analysis, while the UK and France saw increases of around 10% and 14% respectively. This reflects the offsetting effect of increased usage and falling prices.

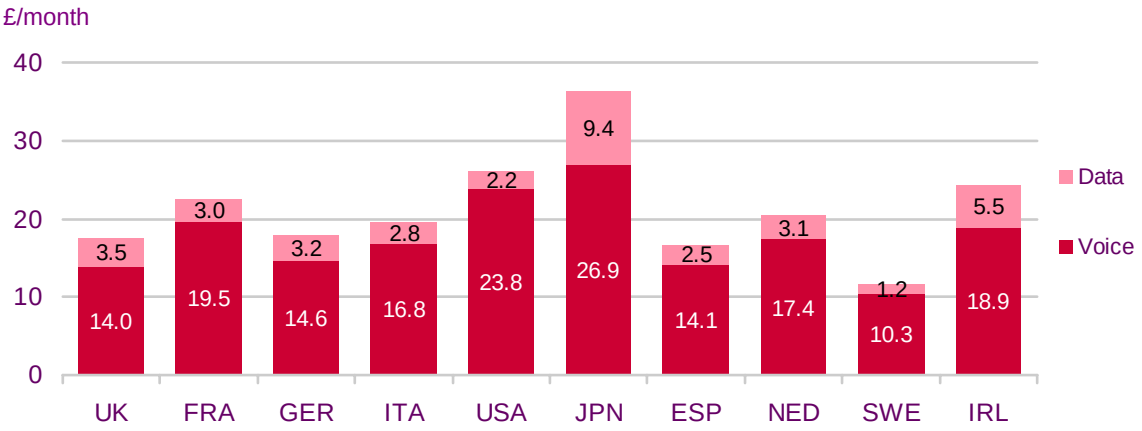
Figure 2.50: Mobile service ARPU, 2005



Source: IDATE / operators/national regulators/OECD/Ofcom/operators

Figure 2.51 below shows the estimated 2005 mobile ARPU split into its voice and data components. It shows that Japan had a significantly higher level of data ARPU than all other countries in the list, and that, at 26%, data also comprised a higher proportion of total ARPU than for most other countries. This reflects the higher integration of data services into the Japanese mobile market – the bulk of other countries' data ARPU still came from simple SMS services by 2005. Ireland and UK also had a relatively high share of data in total mobile ARPU, at 23% and 20% respectively.

Figure 2.51: Mobile voice and data ARPU, 2005



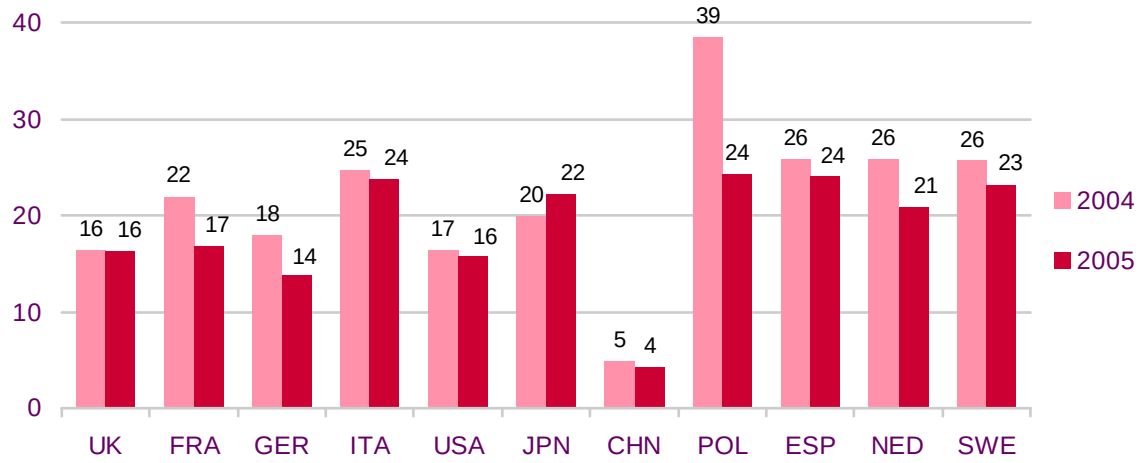
Source: IDATE / National regulators/OECD/Ofcom/operators

2.3.11 Broadband ARPU falls as operators cut prices

Analysis of broadband ARPU shows that it fell across most constituent countries between 2004 and 2005 – largely as a result of ongoing price cuts. This was despite the fact that most operators increased the connection speeds of their broadband offerings during the year. The UK had one of the lower broadband ARPUs, at just over £16 per month, with only China, Germany and Italy having lower ARPU in 2005. Interestingly, broadband ARPU in Japan bucked the trend, increasing by 12% between 2004 and 2005.

Figure 2.52: Broadband ARPU

£/month



Source: IDATE / Operators/national regulators/OECD/Ofcom/operators

The International Communications Market 2006

3 Television

3.1 TV market developments

This first section highlights a number of television industry developments, divided into three categories:

- Markets – established operators are expanding their channel portfolios; DTT has launched in many countries and is well established in some markets; consolidation is occurring in many pay TV markets; IPTV is emerging as a fourth multichannel television platform.
- Technology – High definition television (HDTV) is becoming widely available worldwide.
- Policy and regulatory – Public service broadcaster (PSB) regulation and funding comes under scrutiny; digital switchover gathers momentum worldwide.

Each of these is considered in turn.

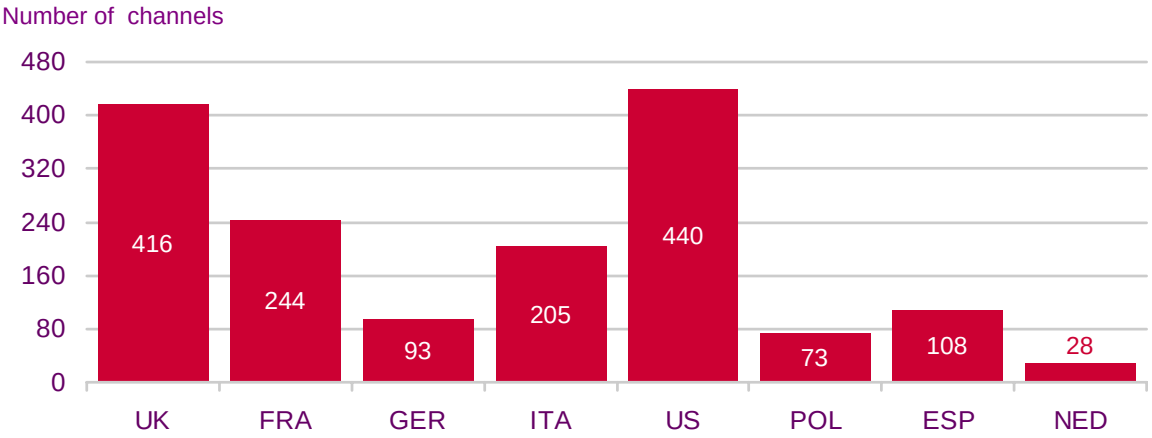
Figure 3.1: Key television market indicators

	UK	FRA	GER	ITA	US	JAP	CHI
Total industry revenue	£9.9bn	£6.9bn	£8.4bn	£5.4bn	£74.7bn	£19.5bn	£4.5bn
Revs per capita	£164	£114	£102	£94	£253	£154	£4
Advertising	*£59*	*£37*	*£36*	*£55*	*£131*	*£83*	*£2*
Subscription	*£65*	*£47*	*£29*	*£21*	*£121*	*£45*	*£2*
Public funding	*£40*	*£30*	*£37*	*£18*	*£1*	*£26*	*£0*
TV households	25m	24m	39m	21m	110m	48m	341m
Annual licence fee	£132	£80	£140	£68	No fee	£74	No fee
Largest TV platform Proportion of homes (%)	DSat 34%	ATT 58%	ACab 57%	ATT 66%	ACab 41%	ACab 33%	ATT 63%
ATT channels	5	7	13	9	6	7	16
Total channels	416	244	93	205	440	n/a	n/a
Viewing per capita (mins/day)	219 min	206 min	211 min	237 min	271 min	281 min	154 min
Share of largest channel (%)	23%	32%	14%	23%	9%	20%	10%
Share of three largest channels (%)	55%	67%	41%	56%	25%	54%	20%
DSO completion date	2012	2011	2009	2012	2009	2011	no date

3.1.1 Channel operators expand their portfolios

The widening availability of digital television (DTV) platforms, with their ability to carry large numbers of television channels, has enabled a rapid expansion of consumer choice (Figure 3.2).

Figure 3.2: Number of channels available in each territory, mid 2006



Source: Screen Digest and Ofcom research
Note: Numbers include local and regional services and count PPV services as a single channel. All figures are mid 2005 except for the US which are Q3 2006.

The proliferation of digital television platforms has prompted a number of strategic responses from the channel operators in each country. They appear to have been driven by three objectives:

- to maintain and build audience share and thereby offset possible losses in advertising revenue arising from channel proliferation;
- to target economically attractive or under-served audiences with niche content in a way that a mass-market generalist channels cannot; and
- to diversify sources of revenue (for example, from advertising to subscription or pay-per-view revenue) and thereby reduce dependence on a single stream of income.

By way of illustration, Figure 3.3 presents an overview of the breadth of the terrestrial operator channel portfolios in a range of countries.

Figure 3.3: Channel portfolios of terrestrial operators in sample countries

Country	Broadcaster	Channel portfolio
UK	BBC	BBC One, BBC Two, BBC Three, BBC Four, BBC News 24, BBC Parliament, CBeebies, CBBC, UKTV portfolio
	ITV	ITV1, ITV2, ITV3, ITV4, CITV, ITV Play, Men & Motors
	Channel 4	Channel4, E4, More 4, FilmFour
	Five	Five, Five Life, Five US
France	TF1	TF1, TF6, LCI, Eurosport, Serie Club, TV Breizh,Odyssee, Historie, Ushiaia, TFOU, TMC, Piwi, Eureka
	France Televisions	France 2, France 3, France 4, France 5, Mezzo, Guili, Euronews, Planete Thalassa, Ma Planete
	M6	M6, W9, Fun TV, Teva, M6 Boutique La Chaine, Paris Premiere, TF6, Music Hits, Music Black, Music Rock
Germany	Pro7Sat1	Sat 1, ProSieben, Kabal eins, N24, Nine Life
	RTL	RTL, RTL2, Super, NTV, RTL Shop, Traumpatner
	ZDF	ZDF, ZDFtheaterjabakm ZDFinfokanal, ZDFdocukanal, 3Sat, Kinderkanal (with ARD)
	ARD	ARD, Das Erste, Eins Plus, Eins Extra, Eins Festival, Kika, 3Sa, Arte, Phoenix
Italy	RAI	Rai Uno, Rai Due, Rai Tre, Rai Doc, Rai Utile, Rai News 24, Rai Sport Notixie, Rai Edu
	MediaSet	Canal 5, Boing, Italia 1, Retequattro
Japan	NHK	NHK General, NHK Education, BS1, BS2, BS Hi
Sweden	TV4	TV 4, TV4 Plus, TV4 Film, TV400, TV4 Fakta
	SVT	SVT1, SVT2, SVT24, Kinskapskanelen, Barnkalanen, SVT Extra
	Kanal5	Kanal 5
	TV3	TV3, ZTV, TV8, TV6, TV1000, Nature, History, Crime, Explorer

Source: Ofcom research
Notes: Does not include time-shifted versions of channels

Three approaches to channel expansion have been taken:

1. Operators diversifying channel business models

Channels launched by channel operators have in some cases relied on a new business model – in other words, free-to-air operators have diversified into pay television and in some cases pay television channel operators have done the opposite (e.g. Discovery launching a FTA channel, DMax, in Germany).

2. More channels relying on the same business model

Terrestrial broadcasters have also taken advantage of additional broadcasting capacity to launch channels that rely on their traditional source of revenue, such as free-to-air broadcasters expanding their advertiser-funded channel portfolios (e.g. France Télévision launching *France 4* and *Gulli* on the French DTT platform).

3. New revenue streams enabled by new technologies

There is a third category of response based around the development of new services enabled by technological innovation.

Pay-per-view (PPV) was a widely-deployed service in the earlier days of digital television platforms, but more recently content on demand, delivered though broadband, offers channels and rights holders access to yet another new revenue stream:

- Discovery recently launched a broadband site in Germany that offers consumers subscription-based access to full-length programmes from its archive; and
- Channel 4 and Five in the UK both have broadband-based download services offering access to US and UK shows.

3.1.2 DTT launched in many markets and well established in some

Roll-outs advanced worldwide – helped by supplier and consumer incentives

The timing and pace of DTT launches have varied by country – launches began in the late 1990s with Sweden and the UK, but some countries have only recently begun to roll out a DTT network (e.g. France).

Figure 3.4: DTT launch timeline

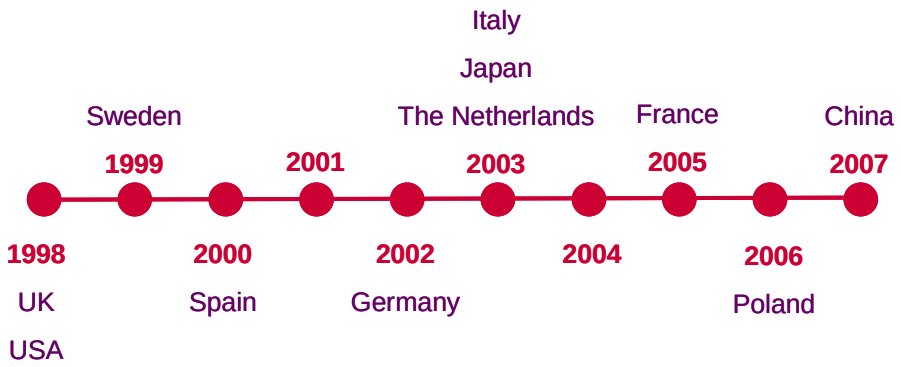
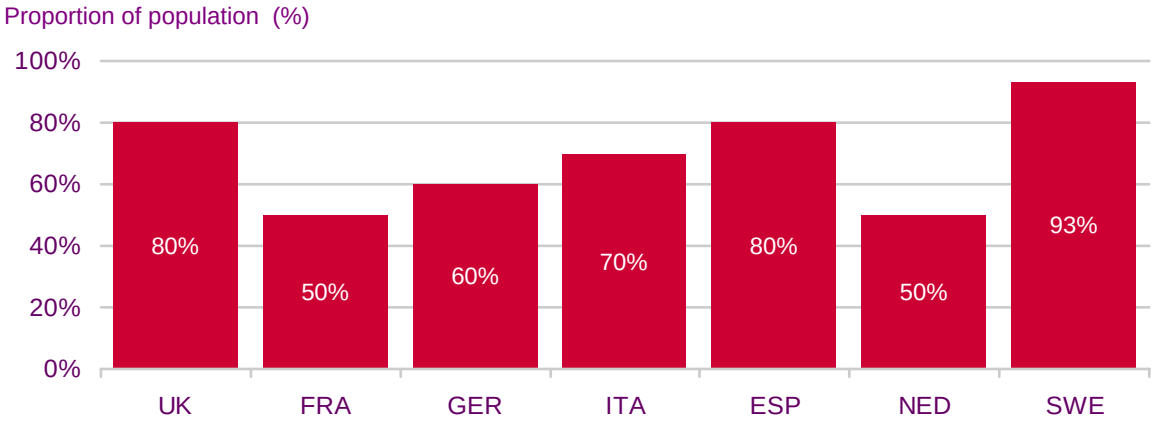


Figure 3.5 illustrates the proportion of the population with access to at least one DTT multiplex. For a selection of countries Sweden had the most extensive DTT coverage (93%) while the UK and Spain came second (80%). Poland and Ireland have yet to launch a DTT service, although both countries are actively planning for launches in the near future.

Figure 3.5: Proportion of the population covered by at least one DTT multiplex



Source: DigiTag, 2006
Note: This figure represents the population covered by the muptiplex with the greatest reach, rather than the more common definition of coverage that includes all multiplexes.

The experiences of DTT roll-out worldwide share two common features:

- **A relationship between DTT roll-out and the timing of digital switchover**
  Households in many countries rely on analogue terrestrial transmissions for television reception on their main set (although not in Germany, the Netherlands or the US). For these homes DTT can provide a simple and cheap method of converting to digital. Because of this, some countries have concluded that a DTT network should be made available in those areas where it is not prohibitively expensive to deploy in the run-up to

the termination of analogue television transmissions (see the section on digital switchover).

- **Incentives used to encourage roll-out and take-up –** Operator and consumer incentives have also been used in some countries to encourage roll-out of DTT:

  1. Operator incentives

  - **Payments for transition:** the German states of Bavaria and North Rhine Westphalia are proposing to help cover the DTT transmission costs of commercial television broadcasters as an incentive to participate in digital switchover and DTT roll-out; the roll-out of DTT in Sweden was also subsidised by the state. All three schemes are being reviewed by the European Commission at the time of writing.

  - **Additional gifted capacity:** existing channel operators receive additional DTT capacity so that the incumbent can develop a portfolio of channels (TV3 in the Republic of Ireland will receive half a multiplex when the DTT platform launches; in the UK the BBC, ITV, Channel 4 and Five all received more than one additional channel's worth of capacity when the DTT platform launched in 1998).

  - **Reducing licence payments:** in the UK, licensed FTA commercial broadcasters pay a fee for spectrum that reduces as the proportion of households with digital television increases.

  2. Consumer incentives

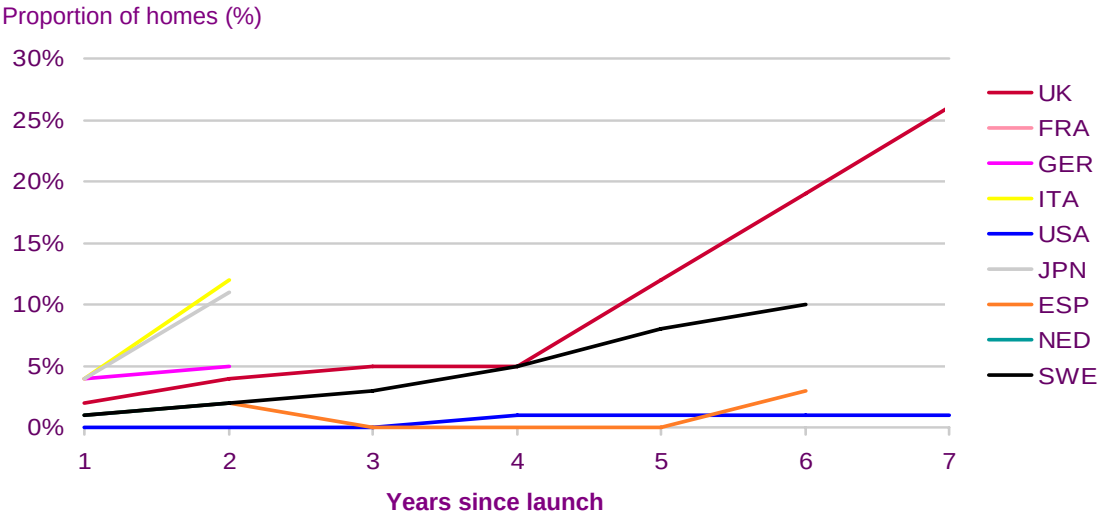
  - **Subsidising equipment -** The Italian government has been subsidising DTT decoders since 2004 to encourage DTT take-up. This scheme was being scrutinised by the European Commission at the time of writing.

  - **Compelling digital-only content** - In Spain *La Sexta*, a new FTA channel, is available on ATT, DTT, cable and satellite. However, the channel is available to a limited proportion of households, and although it can be accessed via satellite and cable, each has a relatively low level of take-up in Spain. By securing exclusive rights to the 2006 World Cup, the channel made the DTT platform an attractive proposition to households which were only able to receive ATT at the time.

DTT business models evolving

While the technical platform launches have common characteristics, DTT business models vary, and have changed over time in several countries. This can be explained by the experience of the first DTT platform launches – in Spain, Sweden and the UK they all launched as pay television services with a limited number of FTA channels; each found it difficult to attract a subscriber base large enough to make their businesses viable. Later DTT launches drew on these earlier experiences, recognising the importance of reducing the emphasis on pay TV and instead developing a bigger FTA component. In doing so, they were able to add households at a faster rate then their predecessors (Figure 3.6).

Figure 3.6: DTT take-up by country, measured by years since launch



Source: TV International Sourcebook 2007 (Informa)

Signs that DTT is maturing as a platform

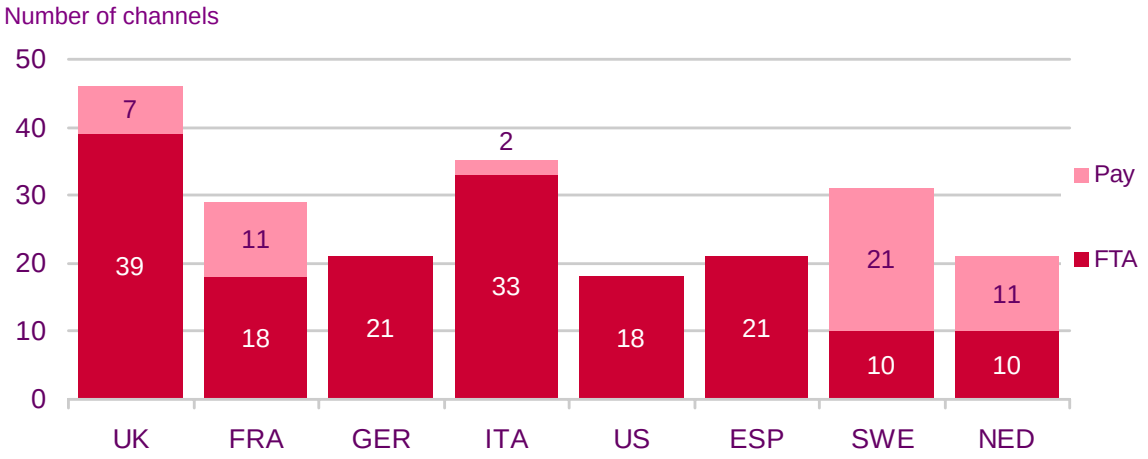
In some countries, the DTT platform is showing signs of maturity; playing to strengths (for instance mass-market reach and simplicity of installation) and tackling weaknesses (more limited capacity when compared to other DTV platforms and therefore fewer channels):

- BT in the UK has announced plans for the launch of a similar service called *BT Vision*; this will include a DTT decoder alongside on-demand content;
- The Italian IPTV operator FastWeb has integrated a DTT receiver into its set top box; and
- Alongisde a number of subscription-based television channels, Top Up TV in the UK has launched a programme download service in conjunction with its own branded personal video recorder (PVR). In return for a monthly fee, subscribers select programmes to watch that are then downloaded via DTT to their PVR.

A revival of commercial interest in the DTT platform has been seen in Sweden and the UK, with new DTT channel capacity attracting considerable interest:

- Additional capacity on the Swedish Boxer platform (released by digital switchover) saw incumbent commercial channel TV4 losing out to commercial rivals in a bid for that capacity; and
- ITV estimated in 2006 that a Freeview slot in the UK cost c.£12m p.a., up from £0.5m three years earlier.

Figure 3.7: Numbers of DTT channels available



Source: The websites of Freeview, Top Up TV, TNT (France), TDT (Spain), TV International and TV International Sourcebook 2007

3.1.3 Consolidation in many pay TV markets

Pay television markets in many countries initially developed as multiple-platform (e.g. cable and satellite), multiple-operator industries, often with the geographic fragmentation of cable and sometimes with two or more pay satellite companies. In most cases, DTT launches followed much later.

Over time these fragmented models of delivery have consolidated, often driven by the need to reduce operating costs, to simplify and build service brands. The sequence of consolidation has often followed the same pattern – satellite platform first, followed by cable.

Figure 3.8 illustrates the degree to which cable and satellite platforms have consolidated, with each operator over those platforms commanding a substantial proportion of all subscribers.

Figure 3.8: Subscribers to the largest satellite and cable operators by country

Country	Operator	Subscribers	% homes	Platform	% of platform
UK	BSkyB	8.3m	33%	Satellite	100%
	Ntl:Telewest	3.3m	13%	Cable	c.100%
FRA	CanalSat	3.2m	14%	Satellite	71%
	UPC/Noos	1.5m	7%	Cable	41%
	TPS	1.3m	6%	Satellite	29%
GER	Kabel Deutschland	10.1m	29%	Cable	41%
	Unity Media	7.8m	22%	Cable	32%
	Premiere	3.5m	11%	Satellite	100%
ITA	Sky Italia	3.6m	17%	Satellite	100%
US	Comcast	21.4m	19%	Cable	29%
	DirecTV	15.1m	14%	Satellite	56%
	Dish	12.0m	11%	Satellite	44%
JAP	SkyPerfecTV	4.1m	9%	Satellite	100%
	JCom	1.8m	4%	Cable	9%
SWE	ComHem/UPC	1.7m	40%	Cable	63%
	Canal Digital	0.9m	21%	Satellite	53%
	Viasat	0.8m	19%	Satellite	47%
NED	UPC	2.2m	31%	Cable	36%
	Essent Kabelcom	1.7m	24%	Cable	28%
	N.V.Caseme	1.3m	18%	Cable	21%

Source: TV International Sourcebook
Notes: CanalSatellite and TPS are listed separately owing to the fact that they have not yet merged operationally.

Approval for mergers has often been granted by competition authorities subject to certain conditions. These have ranged from limitations on access to and duration over programme rights to channel unbundling requirements:

Examples conditions applied to pay television platform mergers

France: *TPS/CanalSatellite (2006)*

Required to wholesale Canal+ non-premium film and sports channels, TPS Star and two of its children's channels to DSL operators.

Italy: *Telepiu/NewsCorp (2003)*

Mandatory wholesaling of premium content on a 'retail minus' principle (i.e. retail prices minus avoidable costs). Reduction in the scope and duration of rights that the merged operator could hold. Third party access to the merged satellite platform on fair, reasonable and non-discriminatory terms. Divestiture of TelePiu's analogue and digital terrestrial assets.

Spain: *Via Digital/CanalSatellite Digital (2003)*

Obligation to sub-license rights to third parties on a transparent and non-discriminatory basis. Channel capacity to be made available to third parties. Wholesale pricing of premium channel to other TV operators. Prohibition on passing the costs of the merger on to consumers.

Sources: EU Competition Policy Newsletter, Enders

The Polish satellite market is currently running counter to this trend, with the entry of a third satellite operator in additional to Cyfra Plus (a subsidiary of CanalPlus) and Cyfrowy Polsat. ITI Holdings launched its '*n'* service in October 2006 with high-technology add-ons such as HDTV and PVRs.

3.1.4 IPTV emerging as the fourth multi-channel television platform

New and established operators investing in IPTV

Internet protocol television (IPTV) based services have only been on offer to consumers in a limited number of countries for a short period of time. But already there are signs that these are beginning to compete with satellite, cable and DTT platforms as suppliers of pay television content.

IPTV is well established in France, with the three largest service providers (Orange, Free and Neuf TV) attracting a combined 400,000 subscribers, and offering a 'big basic' package of television channels alongside additional 'a la carte' offers and premium content from Canal+ and/or the Canal Sat and TPS premium tiers. Figure 3.9 provides an outline of the service bundle that Free offers, alongside selected operators from other countries.

Figure 3.9: IPTV services by country

		Television channels						
Operator	**Country**	Basic	Premium	Pick and mix	Local	**PPV**	**VOD**	**PVR**
Free	France	✓	✓	✓	✓		✓	
FastWeb	Italy	✓	✓	✓		✓	✓	✓
Imagenio	Spain	✓			✓	✓	✓	
Home Choice	UK	✓		✓			✓	

Source: IDATE

IPTV also presents a new business opportunity to established pay TV operators, some of which are combining IPTV technology and services with their existing channel packages to create service offerings with enhanced functionality (such as on-demand content):

- Premiere in Germany is planning to offer a combined satellite and IPTV service in partnership with Deutsche Telekom (DT). The hybrid service will ensure that Premiere customers have access both to DT's IPTV offering (which will include football) and to its own satellite subscription service;

- In Japan, pay television satellite operator Sky PerfecTV has rolled out an IPTV offering, Hikari PerfecTV, offering an alternative delivery platform for its channel offering; and

- In the UK, BT is preparing to launch a combined IPTV/DTT service (*BT Vision*)that will provide traditional broadcast-based channels over DTT alongside additional content over an IP connection.

3.1.5 IPTV operators expanding internationally and innovating service bundles

In a sign that the IPTV platform is beginning to mature, IPTV services providers are moving away from one package of basic channels towards third-party a la carte premium content:

- Imagenio in Spain has departed from a single 'big basic' television package, offers DSL subscribers a choice of 30 channels for 4 Euros per month or 60 channels for 11 Euros per month - mimicking the packages available from more established pay television operators;

- Free in France and Imagenio both offer some channels as single pick-and-mix purchases (e.g. *BBC World* for 0.25 Euro per month), giving consumers the flexibility to package channels they want rather than having to take a large bundle including channels they may not be interested in.

There are also signs that IPTV operators in countries where the technology was first deployed are expanding internationally – for example Orange in France has launched an IPTV service in Spain. The company also plans to launch IPTV services in other markets including the UK and Portugal.

IPTV in France and Italy – *Free* and *FastWeb* offerings

Free in France and *FastWeb* in Italy are two examples of the cadre of IPTV service providers that have emerged across European countries.

Free offers a bundled service to French households through the telephone line. Starting at £19 per month, the basic service includes:

- Up internet access offering bandwidths of up to 28Mbps;
- A package of 100 television channels with the option of buying additional channels on an a la carte basis (e.g. *BBC World* for E0.25 per month); and
- The opportunity of 'buying through' to premium channels from CanalSatellite/TPS and to films on demand.
- A set top box with PVR functionality.

FastWeb is a similar service available in Italy. For £12 per month and a £28 activation fee subscribers receive:

- 300 minutes of telephone calls per month;
- Up to 10Mbps of internet connectivity;
- Access to the Italian FTA networks plus CNN, BBC World, RAI 24, RAISat Sport;
- A set top box with PVR functionality; and
- The opportunity to 'buy through' to premium movie and sports channels.

3.1.6 HDTV becoming widely available worldwide

Japan and the US led the world in HDTV launches

The Japanese led the world in the development of High Definition Television (HDTV or HD) with the launch of the *Hi-Vision* channel, an analogue terrestrial-based service using the MUSE (Multiple sub-nyquist sampling encoding) standard in 1985, which by the early 1990s offered viewers eight hours of HD content per day.

On analogue television platforms, however, the widespread development and deployment of HD was hampered by a scarcity of the spectrum required to carry the services. That changed in the late 1990s with the advent of digital television offering the bandwidth to support a larger number of HD channels, aided by improvements in signal compression which reduced the bandwidth demands of HD.

HDTV deployments have been made across a large number of countries. Now that there is growing availability of large-screen HD television, coupled with a growing stock of HD content and support from platform operators, the market appears ready to meet consumer demand.

The US was the first to launch digital HD services with coverage of the Superbowl in 2000, marking the first occasion outside Japan when a mainstream event was covered in HD. The first full-time HD channel was launched in the US in 2001 (HDNet) and, since then, well known channel brands such as *Discovery*, *National Geographic* and *MTV* have all begun to produce HD output. At the end of 2005, there were at least thirty national HD channels available along with regional variants of ABC, CBS, NBC, Fox and the CW on pay-satellite (*DirecTV* and *Dish*).

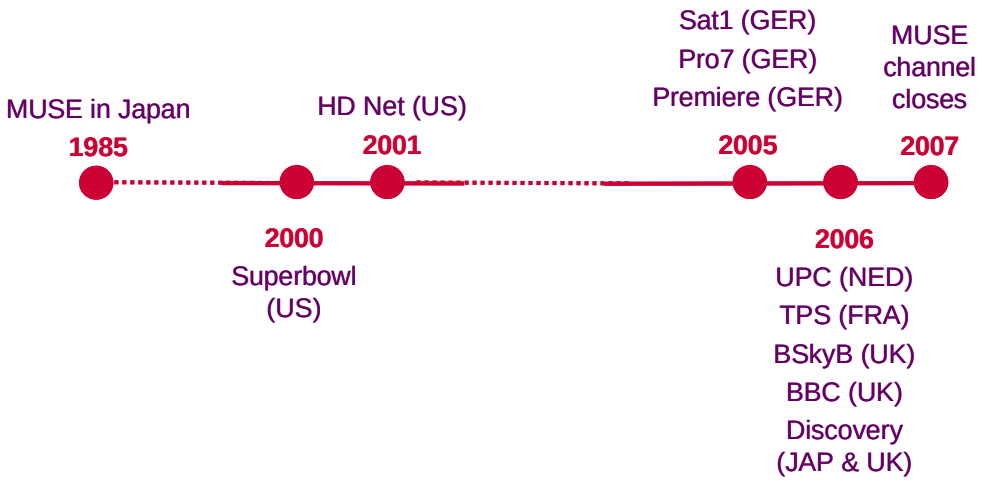
HD platform launches in Europe began in 2005/06, possibly stimulated by the prospect of the 2006 World Cup:

- Premiere in Germany launched its HD satellite service in November 2005, offering films, sport and documentary channels;
- UPC began to support HD services in early 2006 on cable in the Netherlands;
- TPS launched its HD satellite service in France in H1 2006; and
- BSkyB and ntl:Telewest followed suit in May 2006, in time for the 2006 World Cup.

Channels meanwhile have been busy producing and packaging HD content for distribution over these platforms:

- ProSieben and Sat 1 in Germany both began HD transmissions in November 2005 on digital satellite;
- Discovery has announced a roll-out programme for HD channels and has already launched a high-definition channel on Japan's largest cable platform, *J-Com*, on Premiere in Germany, on BSkyB in the UK and on Dish and DirecTV in the US;
- The *National Geographic* channel launched an HD version in the US in early 2006;
- The BBC launched its HD channel on BSkyB and ntl:Telewest ahead of the 2006 World Cup; ITV also broadcast its World Cup matches in HD over the cable platform; and
- M6 in France has made firm output-based commitments to supplying 160 hours of HD output in 2006, and plans to expand this to 500 hours over the following two years.

Figure 3.10: Timeline of platforms and channels offering HD



Source: Screen Digest and Ofcom research

DTT HD pilots have also started

The technical viability of HDTV on the DTT platform is currently being explored in several countries. A UK pilot in London began in mid-2006, following Swedish pay-DTT operator Boxer, which undertook a similar six-month trial in late 2005. SARFT, the Chinese media authority, has published plans for the launch of HD services over DTT, due to start in 2008.

Whether the more limited capacity available on DTT platforms will support the launch of more than a small number of HD channels remains unclear. A move to the MPEG-4 compression standard would be an important step towards mitigating the issue – but this would not get around the problem of there being an installed base of DTT set top boxes in many countries that are not compatible with MPEG-4.

Tariff innovation in Germany to encourage take-up

The economics of HDTV are still in their infancy and levels of consumer interest remain relatively untested. That said, there are signs of innovation and experimentation as HD service providers understand how best to position HD as an attractive consumer proportion.

For example, Premiere has introduced new tariffs that move its HD offer away from a premium service to something more mainstream. At the same time, however, there appears to be some hesitancy from some operators in fully supporting HD before the technical and consumer case has been proved:

- Boxer has provided technical platform support to Sweden's two HD channel operators (SVT and TV4) but has itself chosen to wait until the technology becomes established before launching its own HD film and sports services.

- In Germany, ZDF and ARD have held back from committing to HD, preferring to wait until sufficient numbers of viewers have access to HD screens and receivers.

3.1.7 Public service broadcasters' regulation and funding comes under scrutiny

2005/06 has seen the remit, regulation and funding of several PSBs come under close examination, with a view to clarifying and providing more consistency in television regulatory frameworks:

- The Republic of Ireland government recently announced a proposal to abolish the RTE Authority, which regulates the country's PSB. Instead, RTE and the commercial broadcasters (for example, TV3 and licensed digital television channel providers) will be brought under a single regulatory umbrella in the form of the Broadcasting Authority of Ireland;

- Following a review of its activities by the Japanese government, there is an ongoing debate about whether or not NHK (the licence-fee funded broadcaster) should close two of its three satellite-only channels and have its funding reduced commensurately; and

- The UK government has spent two years reviewing the terms of the BBC's Charter. Its Board of Governors will be replaced in January 2007 by the BBC Trust, whose duties will include undertaking Public Value Tests (PVT) for every new service that the BBC proposes to launch; Ofcom will undertake market impact assessment studies to contribute the PVT.

Differing conclusions are, however, being reached on PSB funding models:

- As part of a review of Public Service Broadcasting in Spain, it had been anticipated that there might be a reduction in the amount of advertising TVE (the Spanish PSB) could carry, to the potential benefit of commercial broadcasters. The Government, however, decided to allow TVE to continue to be financed primarily through advertising; and

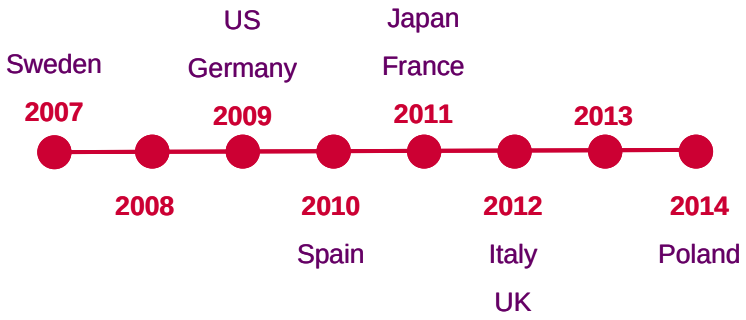
- the UK government, by contrast, continues to put the licence fee at the heart of the BBC's funding model, while at the same time encouraging the Corporation to grow its commercial income and drive down costs.

3.1.8 Digital switchover gathers momentum worldwide

Most countries in this report have a date for digital switchover

All the countries in this study have made a commitment to switch to solely digital television broadcasts. Most have set a target date within the next eight years for the switch to be completed.

Figure 3.11: Switchover dates



Source: DigiTag and Ofcom research

Some countries have already begun the process of switchover, while many have put in place a programme to facilitate the transition to digital television. These programmes typically comprise:

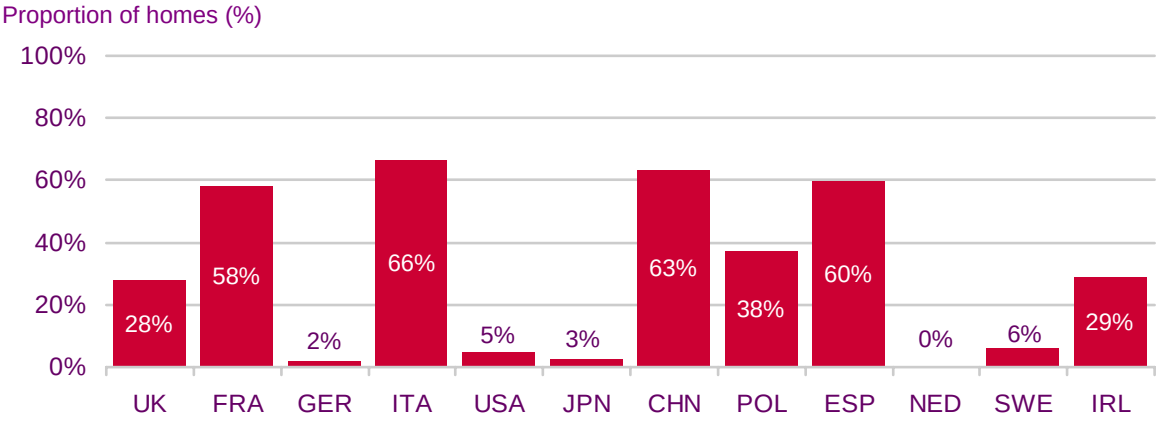
1. A gradual, geographic transition

To ensure a managed and orderly transition to digital television, many of the programmes take a progressive approach to switchover, relying on a region by region approach. Sweden and Germany, both of which have already begun the process, have adopted this approach. The US and Japan are exceptions – each is committed to full national switchover on a single date – 17 February 2009 and 24 July 2011 respectively.

2. A role for DTT in facilitating switchover in many countries

The degree to which people rely on analogue terrestrial television (ATT) on their primary set varies by country. Households in Italy and France, for example, are heavily dependent on ATT, while in Germany, where satellite is more popular, it plays a much smaller role.

Figure 3.12: Proportion of homes relying on ATT on their main set



Source:

Regardless of the level of dependence on ATT, DTT can play an important role in helping to ease the transition to digital-only television. For those countries where ATT is the main reception platform, securing broad and robust levels of DTT coverage is an important step on the journey to switchover. Even where ATT is less widely used, DTT still provides a cheap and simple way for consumers to switch to digital. Most countries are taking steps to roll out DTT ahead of the switchover date.

3. Planning for the future use of released spectrum

Terminating analogue television broadcasts frees up spectrum for other uses. Sweden has already reallocated analogue television spectrum to DTT, so that the platform can carry more channels. Few other countries have yet to arrive at firm conclusions on *how* to reallocate freed-up spectrum (e.g. a free-market solution versus an interventionist approach that specifies what the spectrum should be used for) and, therefore, to *what* purposes it should be put.

4. Marketing and promotions

The UK government has established a designated body, Digital UK (DUK), which is responsible for managing the transition to digital television and for raising awareness and understanding of the need to convert analogue television sets to digital.

Switchover has already begun in Germany and Sweden

Germany and Sweden have already begun to switch off ATT broadcasts.

The German switchover process began as a pilot in Berlin-Brandenburg in 2003. The impact of switchover, while important in freeing up valuable spectrum, is of a lower order in terms of consumer impact, owing to the fact that few homes rely on ATT

In contrast, Sweden's switchover has a higher consumer impact, because a higher proportion of homes rely on ATT broadcast. Their programme began in September 2005, and is due to be completed by 2008. The Swedish government has moved quickly to allocate freed-up analogue spectrum to new DTT channels and a bidding round for the new DTT channels was recently completed.

3.2 The television industry

3.2.1 Television industries have developed at different speeds

PSB principles underpinned the foundation of most television markets

The television industries in most of the countries featured in this analysis have their foundations in radio broadcasting organisations that were set up in the 1920s and 1930s. In Japan and Europe, these radio broadcasters and the television operators that emerged from them were established as public service broadcasters (PSBs) sharing the following characteristics:

- most were established as state-owned companies or corporations;
- they were often part- or fully-funded from a licence fee levied on ownership of broadcasting reception equipment; and
- they were required to promote cultural advancement and educational development.

The pattern of development in the US was different. Its television industry (and the radio industry that came before it) was founded by commercial companies funded from advertisements and programme sponsorship. Public service broadcasting did emerge later on, in the form of the *Educational Television and Radio Center*. This was founded in 1952 with grants from the Ford Foundation and later – in 1970 – became known as the Public Broadcasting Service (*PBS*), funded by a mixture of federal grants and individual/corporate donations.

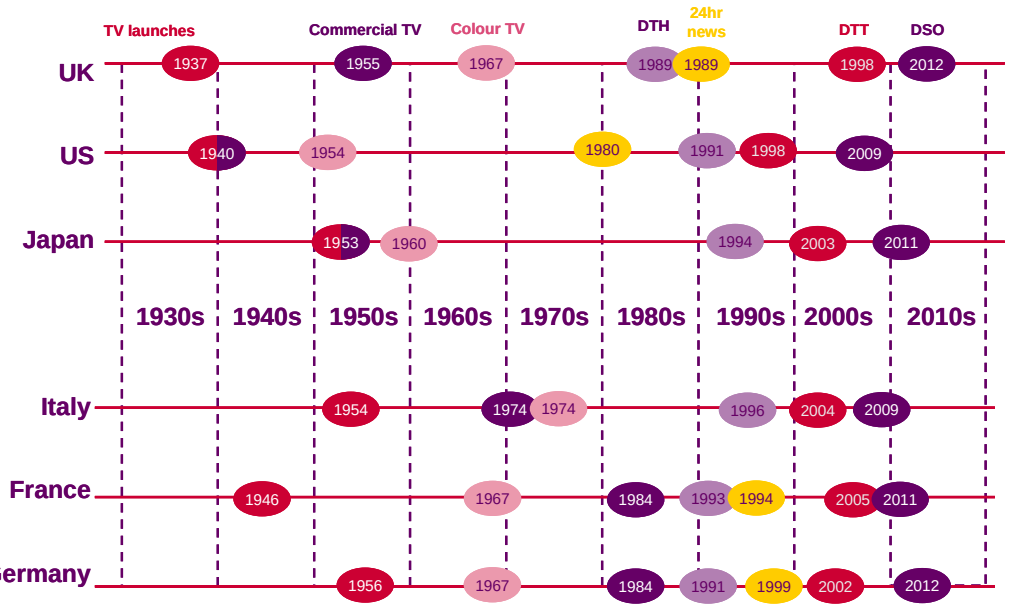
Historically, public service broadcasters often enjoyed a long-lived monopoly over television audiences. Deregulation of television broadcasting markets led to reductions in their share of viewers – although in many countries, that share remains significant to the present day.

The US has often been the industry innovator:

- colour television was first made available there in 1954;
- the first non-terrestrial television channel launched in 1972 (*HBO* on cable); and
- the first encrypted channel was made available on satellite in 1986 (*HBO*).

Other countries took longer to adopt some of these technologies (for example, Italy didn't get colour television until the 1970s), although the lags in adoption have narrowed more recently. For example, the majority of the countries in this study are planning to complete the move to digital television before or at around the time that the US will also terminate its analogue terrestrial broadcasts.

Figure 3.13: A selection of key television market developments by country



Source: Ofcom research

3.2.2 Global television industry revenues

The global television industry enjoys positive revenue growth

In 2005, global television industry revenues (advertising, subscription and public funding) were estimated to be c.£164bn, having grown at an average annual rate of c.7% over the previous four years. This revenue, consisting mainly of advertising, subscriptions and public funding, has been buoyed recently by the development of new digital television platforms that have enabled broader channel offerings to be developed by platform operators. While new revenue streams from services facilitated by digital technologies (for example pay-per-view, shopping, betting, voting and gaming) may in the future help to diversify industry revenue, they still form a relatively small proportion of the total industry income.

Figure 3.14: Global television sector revenues

Source: PricewaterhouseCoopers Global Entertainmtent and Media Outlook 2006-2010
Notes: Includes advertising, sponsorship, public funding and subscription revenue

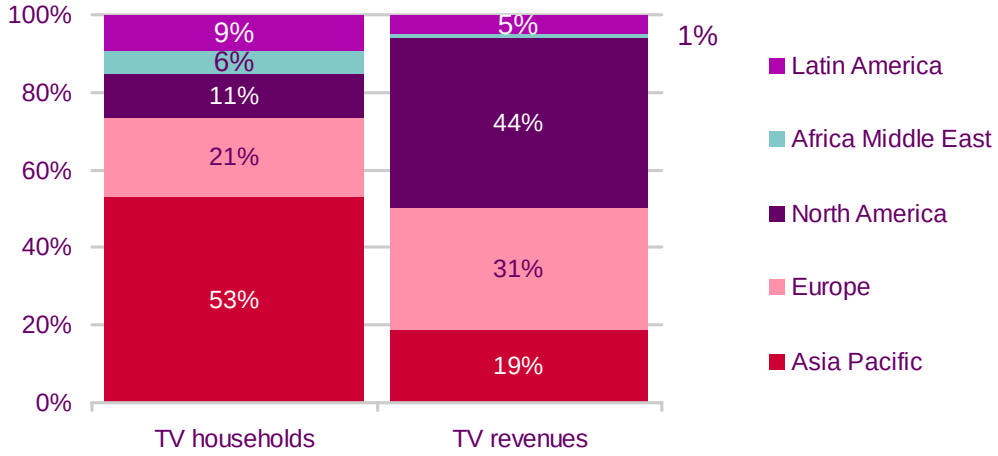
US and Europe are the largest markets by revenue – but not by TV households

Over 50% of all television homes are in the Asia Pacific region (there are 344m television homes in China alone). Europe and the US follow with 21% and 11% respectively, with the three regions together making up 85% of all television homes worldwide.

A different picture emerges, however, when markets are sized by revenue. North American television industry revenues are the largest in the world, at 44% of global revenue, followed by Europe (31%) and then the Asia Pacific (19%).

Figure 3.15: Television households and revenue by region

Proportion of TV households/TV revenues (%)



Source: PricewaterhouseCoopers Global Entertainmtent and Media Outlook 2006-2010

Advertising generates a majority of industry revenue – but its role is declining

Twenty years ago, advertising and sponsorship were the main sources of commercial industry revenue, and they continue to contribute the largest proportion, having grown at c.8% p.a. over the last four years.

However, that dominance has been broken recently by subscription income, which is now the second most significant source of revenue. Together with advertising it accounted for 91% of total industry turnover in 2005. With subscription revenue rising at an average annual rate over the last four years of c.12%, its significant role in the television industry funding mix looks set to continue.

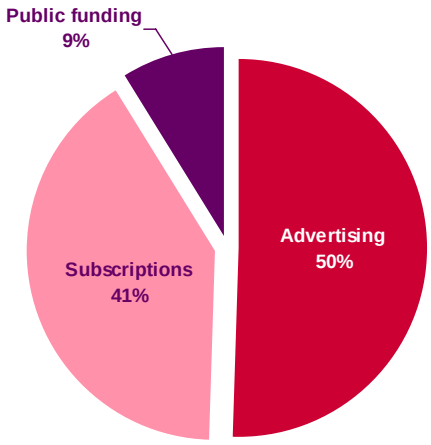
Public funding contributed 9% of global revenue – a relatively small and diminishing component of the global funding mix, which can be explained by:

- **Public funding being limited to a small number of countries** – public funding is a feature of most European countries and Japan, and in some countries makes a significant contribution to overall television revenue. However, there are many more countries where there is little or no public funding at all (for example, Spain and the US).

- **Growth in public funding being limited by policy makers** – licence fees (the most popular public funding mechanism) are often pegged at or near to inflation by policy makers, while other revenue sources have grown significantly in real terms. Public funding is therefore a reducing component of global revenue.

Figure 3.16: Global television sector revenues, 2005

TOTAL REVENUES = £164bn



Source: PricewaterhouseCoopers Global Entertainmtent and Media Outlook 2006-2010

3.2.3 Television industry revenues from countries in this study

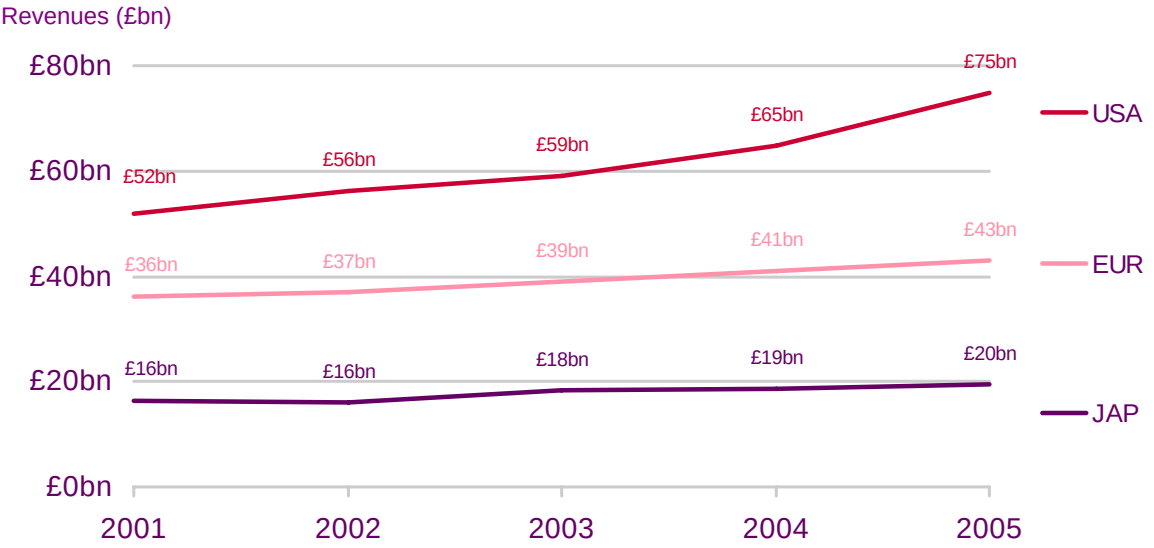
The US dominates the market for television revenues

The countries considered in this study generated television revenues of £138bn in 2005, accounting for 82% of worldwide subscription/advertising revenue and public funding.

Figure 3.17 provides a time series for television industry revenues in the US and Japan. For clarity, it also aggregates the revenues from the remaining European countries in this study.

The US accounted for around 54% of all revenues generated by the television industries in this study (note for the purposes of this analysis, 'revenue' includes advertising revenue, subscription revenue and public funding). Not only that, but US industry revenue growth (along with that of China) was highest over 15% from 2004 to 2005. Measured over a four year period, however, China was ahead (14.3% p.a ersus 9.5%).

Figure 3.17: Comparative analysis of television industry revenue



Source: World Television Markets 2005, IDATE
Note: EUR includes the European countries in this analysis – UK, France, Germany, Italy, Poland, the Netherlands, Sweden and the Republic of Ireland

China is a small but fast growing market

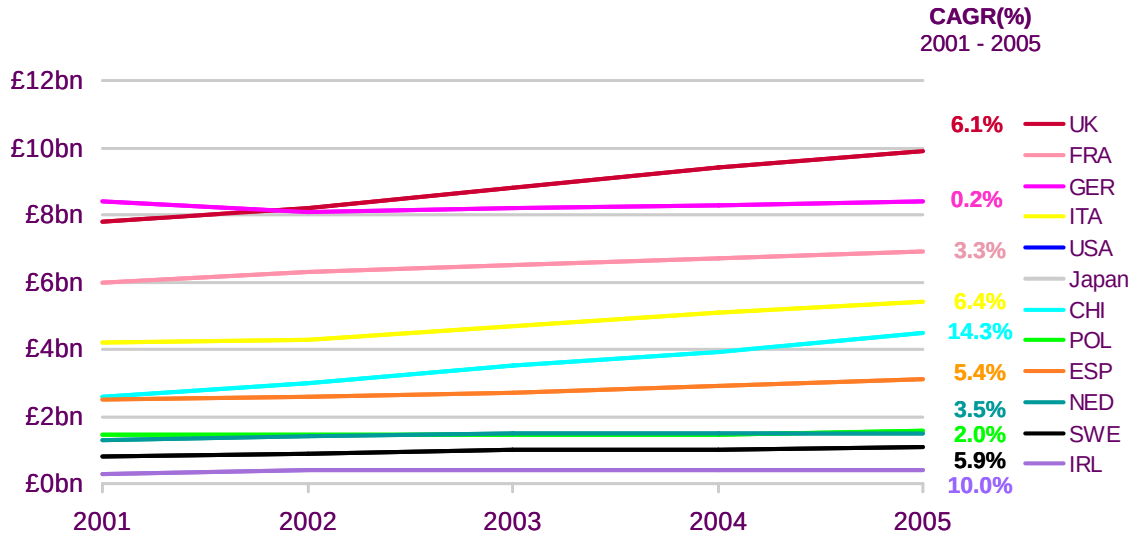
US and Japanese revenues are omitted from Figure 3.18 to allow a comparison of European and Chinese revenues. The UK's television industry is the largest in Europe and the third largest in the world (behind the US and Japan) at £10bn (in 2005); Germany comes second in Europe, followed by France and Italy.

China is the fastest growing television market in this study – owing to the growing popularity of multichannel television services, which have been boosted by the willingness of the Chinese authorities to license new channels. Revenues are small, totalling £4.5bn in 2004, but are fast approaching those of Italy.

Revenue growth across continental Europe, by contrast, has been modest in the last five years. The German television market has experienced the lowest rate of growth, at c.0.2% p.a. (total revenue actually fell in 2002), driven by a depressed advertising market that is only just recovering, along with modest growth in subscription revenue and public funding. Its rate of growth contrasts with that of the UK (at 6.1% p.a.), resulting in total UK industry revenue exceeding that of Germany for the first time in 2002.

Figure 3.18: Revenue analysis of smaller revenue countries

Revenue (£bn)



Source: World Television Markets 2005, IDATE

The US and UK per capita revenues are highest, while China's are growing fast

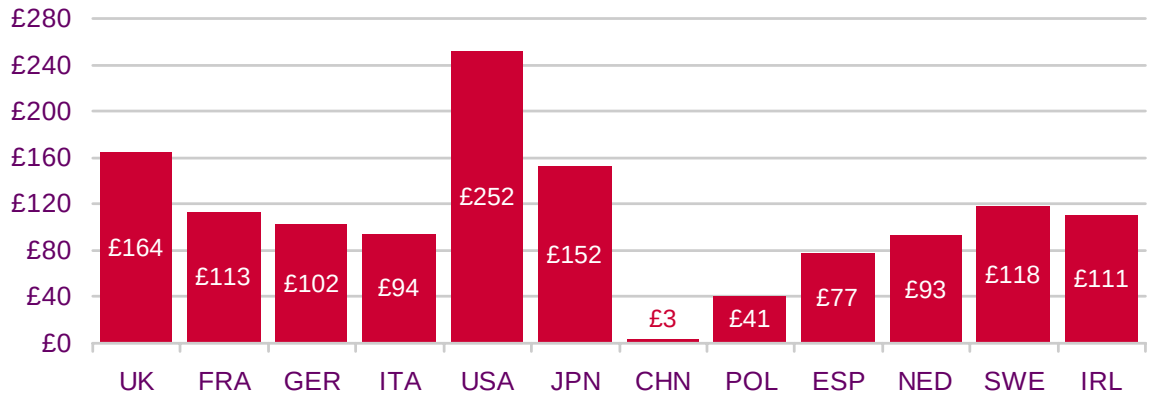
Total industry revenues are driven partly by the size of the consumer market in each country. To illustrate this, Figure 3.19 outlines industry revenues per capita; in the remaining revenue analysis in this section, all figures are illustrated and discussed on a per capita basis, unless otherwise stated.

Even once this correction has been made, the US market remains the best funded in the world at £253 per head of population in 2005. The UK emerges second best (£188), followed by Japan, Sweden, France and the Republic of Ireland.

China generates just £3 per capita, owing to the relative size of industry revenue versus its population. There is a clear gap between its market size and the next nearest in the survey, which is Poland at £40 per head.

Figure 3.19: Television industry revenue per capita

Revenue per capita, 2005 (£)



Source: *World Television Markets 2005 (IDATE) and Ofcom analysis*

Revenue mix varies from country to country

With advertising revenue, subscription income and public funding as common sources of income for television industries, three patterns of funding exist:

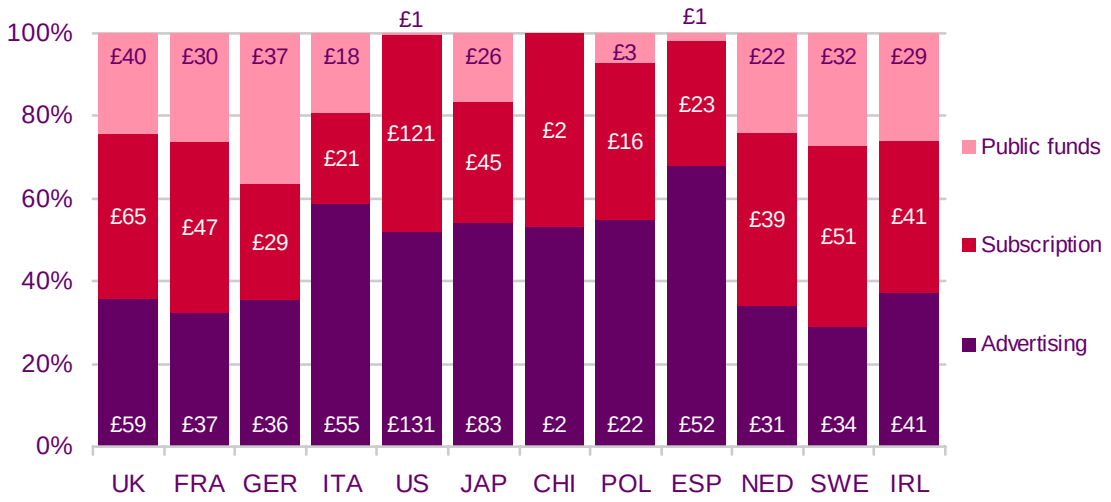
1. Countries where advertising is the major revenue source:
The Spanish, Italian, Japanese and Polish television industries depend heavily on advertising income. This may be explained by the enduring popularity of free-to-air television channels (in, for example, Italy, Japan and Poland), low levels of subscription television take-up (in Spain and Italy) and modest levels of public funding (in Spain and Poland).

2. Countries where advertising and subscription are both significant
Subscription revenue – a relative newcomer to the television industry – has already established itself as an equal contributor to revenue in the US and China. Public funding is not a notable feature in either of these countries – *PBS* income in 2005 stood at $400m. Surprisingly, the Chinese do not fund any television services through the public purse, although China's main television channels, operated by CCTV, are publicly owned and operated.

3. Countries with tripartite funding – ads, subscription and public funds
Public funding plays a significant role in the German, UK, French, Dutch, Swedish and Ireland television industries; it also makes a substantial contribution in Japan and Italy. All of these countries charge a licence fee in return for television ownership.

Figure 3.20: Sources of industry funding by country

Proportion of total revenues (%)



Source: World Television Markets 2005 (IDATE) and Ofcom analysis
Note: Figures inside the bars represent industry revenue per capita

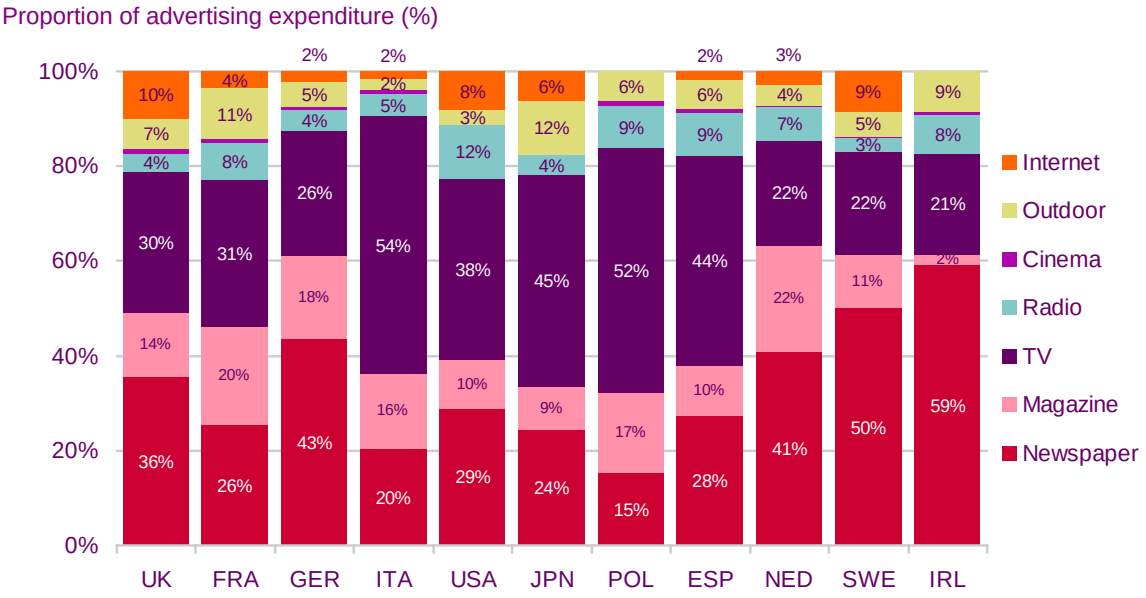
TV advertising still a key medium – especially in Italy, the US and Japan

With a wide range of advertising channels available in most countries, television must compete with radio, newspapers, cinema and magazines to attract revenue. Television tends to take second place behind print, with (on average) 37% of all advertising revenue.

There are, however, substantial variations by country, reflecting the relative efficiency of television as an advertising medium (e.g. overall reach, reach to economically attractive audience demographics etc.).

In Italy, television's take of total advertising revenue is highest at 54%, while in the countries surveyed it is lowest in Germany (26%), alongside the Netherlands, Sweden and Ireland. Internet advertising has emerged as a new and popular advertising outlet, and has overtaken radio in the UK, Japan and Sweden.

Figure 3.21: Breakdown of advertising expenditure by country



Source: World Advertising Trends 2006, World Advertising Research Centre Ltd

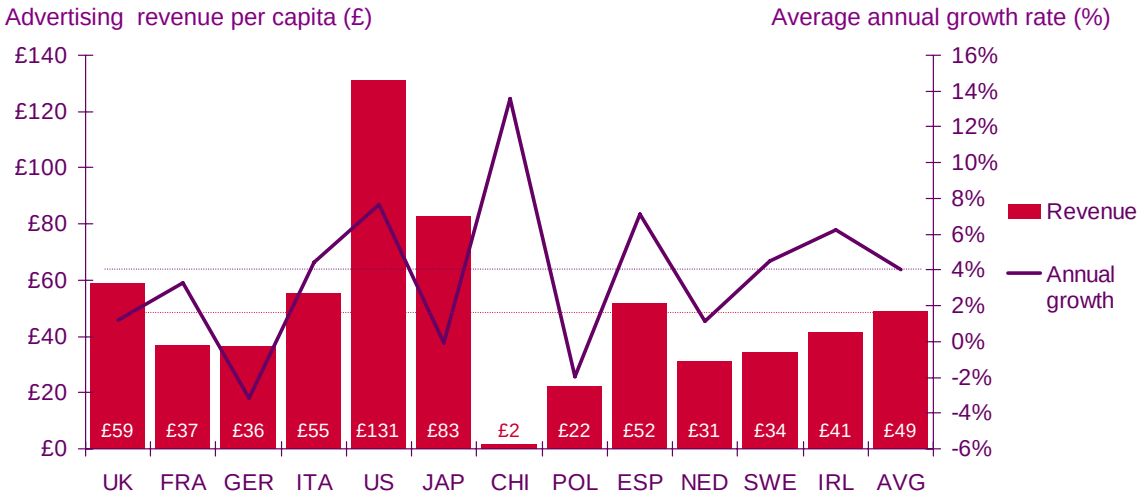
US advertising revenue per capita is the highest and growing fast

The US television advertising market is the longest established in the world, the industry having been founded in the 1940s solely from the fees that advertisers and programme sponsors were willing to pay to the three main networks (NBC, CBS and ABC) and their local affiliates. Contributing £131 per capita to television industry revenues, the US market is the largest among the countries in this study, exceeding Japan by nearly 60%. The UK comes in third at £57 per head.

Reflecting a sustained period of economic prosperity, US advertising income grew by nearly 8% per annum from 2000 to 2004. Reinforcing the link between advertising and economic performance, the Japanese television market saw little growth in its advertising over the same period, as GDP stagnated. Advertising revenue volatility was particularly pronounced in Germany over the period 2000 - 2004. As a result of this, in 2003/04 Italian television advertising revenues exceeded those of Germany for the first time.

Meanwhile, the Chinese television advertising market is showing clear potential growth, averaging around 14% p.a. While on a per capita basis revenues remain small, for the first time, in 2004, total Chinese advertising revenues surpassed those of France.

Figure 3.22: Television advertising revenue per capita



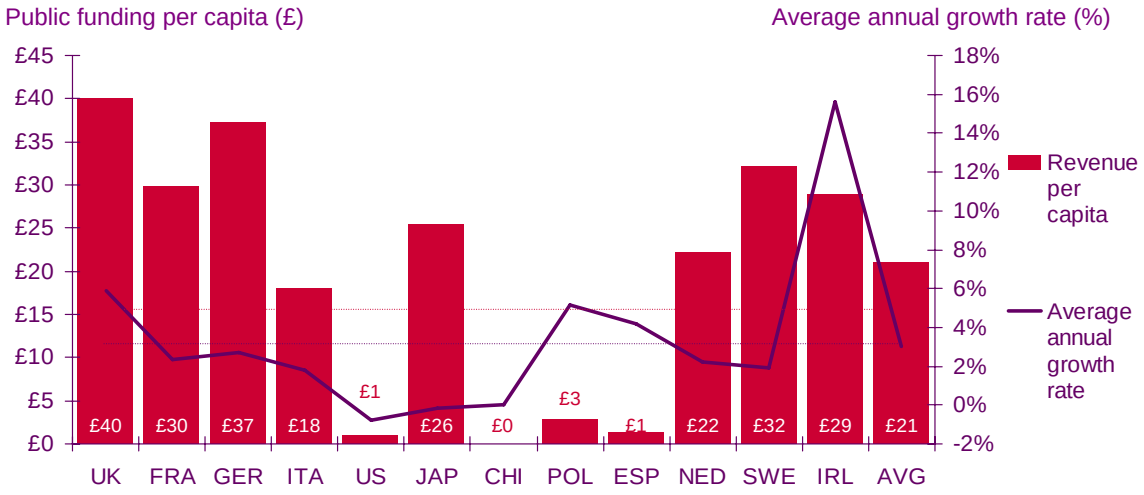
Source: World Television Markets 2005 (IDATE) and Ofcom analysis

UK industry benefits from the largest per capita public funding contribution

At £40 per head, the UK contributes the most public funding to its television industry on a per capita basis, followed by Germany with £37. Sweden, France, Ireland, Japan, and the Netherlands make contributions in the region £22 - £32 per capita per annum. The industries of the US, Spain and Poland benefit the least from public funding with contributions of £1, £1 and £3 per capita respectively. There is no public funding of Chinese television at all.

Tight fiscal discipline exercised by governments over public expenditure, and specific pressure on broadcasters to account for their use of public funds may explain the modest rate of growth in levels of public funding. Only the Republic of Ireland and Poland saw any material rise in revenue in the last four years – and in the case of Poland this significant growth comes from a small base. US public funding has remained relatively stable over the period.

Figure 3.23: Public funds as a source of industry revenue

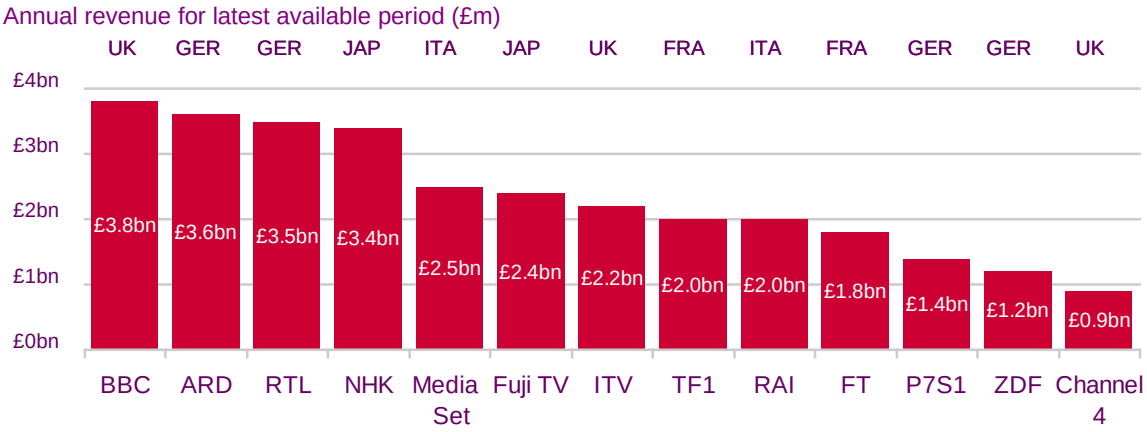


Source: World Television Markets 2005 (IDATE) and Ofcom analysis

BBC, ARD and ZDF are the largest operators funded from ads and public funds

Figure 3.24 shows the revenues of those operators that rely mainly on the advertising and/or public revenue streams described above (it excludes the US channels, owing to the difficultly in identifying the revenues generated solely by the television operations and even among the operators highlighted, groups sometimes run both television and radio channels (e.g. RAI, ARD, NHK, RTL and the BBC), while in other cases they are solely television channel operators (e.g. ZDF, TF1, France Televisions and ITV). Moreover, each operator manages a different number of services - comparisons should therefore be made with caution.

Figure 3.24: Major free-to-air channel operators in smaller revenue countries



Source: IDATE and annual reports

Many of these channel operators have taken advantage of digital television platforms by launching new niche and generalist channels that are supported by advertising:

- France Télévisions launched the free-to-air channel France 4 on the French DTT platform TNT in Q1 2005 and followed it with children's channel *Gulli* in 2006, in a joint venture with Lagardere;

- NOS in the Netherlands has launched five thematic channels focusing on news, history, documentaries, youth and parliamentary affairs.

The strength of the free-to-air market in some countries has also persuaded operators who have traditionally relied on subscription revenue to diversify into advertising-funded television channels:

- Discovery recently acquired German documentaries channel *XXP* and rebranded it as *DMax,* carrying a range of male-targeted free-to-air (FTA) programming;

- Sony Entertainment Television (SET) distributes a branded block of its programming on Spain's FTA DTT channel VEO; and

- Channel 4 in the UK took its pay television channels *E4* and *Film4* free to air in 2005 and 2006.

US dominates the market for television subscription revenue

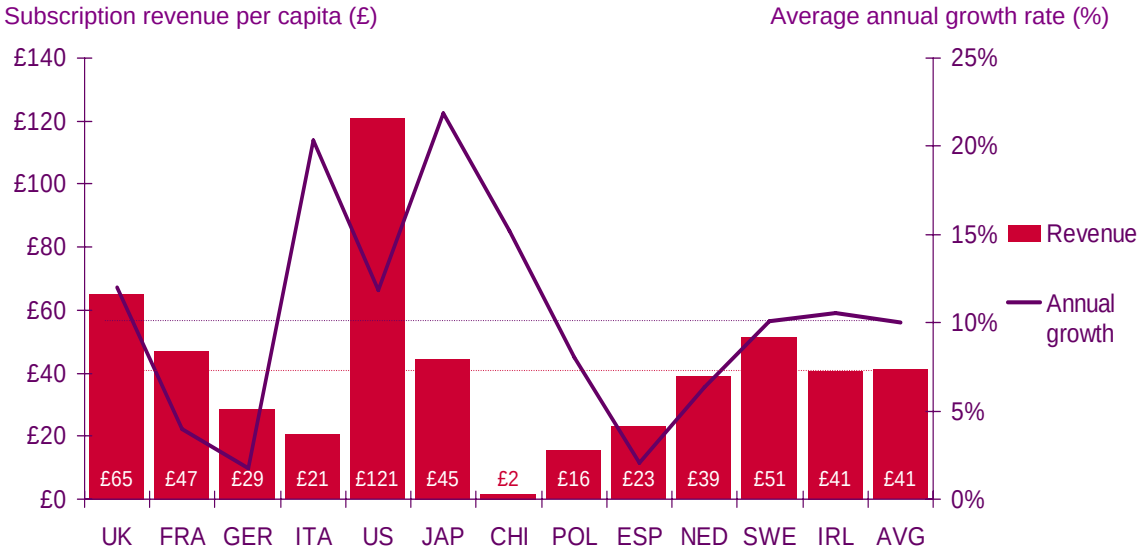
Viewers in some countries (notably Germany and the Netherlands) have grown accustomed to making a small monthly subscription for cable-relay access to terrestrial channels (this is often termed the 'utility model' of channel distribution). However, subscriptions paid by

viewers for access to television channels not freely available to all is a relatively new source of industry revenue, having become possible through advances in encryption technology during the 1980s and 1990s.

In common with advertising revenue, the US market for subscriptions on a per capita basis exceeds that of any of the other countries in this study by a margin of 105%. The next largest contender is the UK, where subscription revenue per capita reached £65 in 2005.

With revenue growth of 22% p.a. over four years, Japan is not just the second largest market for subscription revenue, but also the fastest growing. Other countries experiencing double-digit annual growth include China and Italy (15.2% and 10.3% p.a. respectively). The UK, France and Germany form a tier of lower-growth countries.

Figure 3.25: Subscription revenue per capita

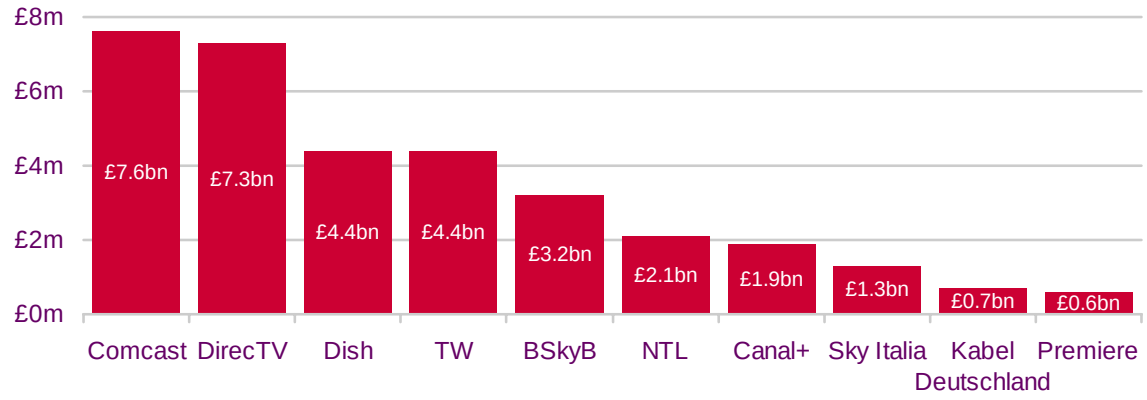


Source: World Television Markets 2005 (IDATE) and Ofcom analysis

US pay-television platforms dominate subscriptions – UK comes second

The well-developed nature of the subscription television market in the US is reflected in the size of the subscription revenues that its cable and satellite industries attract. Comcast, the largest US cable operator, and DirecTV, the biggest satellite operator, together generated £14.9bn of subscription revenue in 2005/06. Among European operators, BSkyB's subscription revenue, at £3.2bn, is the largest.

Figure 3.26: Subscription revenue for a range of pay-TV operators, 2005/06



Source: Latest available annual reports
Notes: NTL revenue includes telephony

Many of these platforms have been formed by the consolidation of smaller operators, and the pace of this consolidation has accelerated over the past five years. Among satellite operators:

- French satellite operators TPS and Canal Satellite agreed to merge in 2005 and, subject to a range of undertakings, the proposal was recently approved by the French competition authorities;
- Sky Italia emerged from News Corp and Telecom Italia's acquisition of Telepiu in 2003, which it merged with its own satellite business, Stream;
- In Spain, Canal Satellite and Via Digital merged in 2002 to form Digital Plus, while in Poland, Wizja TV merged with Cyfra Plus during 2001; and
- JSkyB merged with PerfecTV in 1998 to form SkyPerfectTV; DirecTV pulled out of Japan in 2000.

Cable industries have often been longer established than satellite, with fragmented ownership structures and older analogue technology. They have also consolidated in many countries, though often beginning the process later and proceeding in a more gradual fashion then satellite:

- J-Com in Japan recently acquired Cable West, creating a cable group that is in the region of six times the size of its nearest rival – although the industry as a whole is still highly fragmented;
- Germany recently saw *iesy*, TeleColumbus and *ish* combine to create a cable operator with about 8m subscribers, second only to Kabel Deutschland with 9.9m. These two operators together account for 75% of all cable subscribers in Germany;
- Essent Kabelcom and Casema, two of the Netherlands' largest cable operators, were sold to Cinven and Warburg Pincus in the summer of 2006. With their existing ownership of Multikabel, these acquisitions make Cinven/Warburg Pincus owners of a significant proportion of all cable subscribers in the Netherlands.
- Cinven has also acquired three of the largest French cable operators (France Telecom Cable, Numericable and UPC Noos) and now commands a 90% share of the French cable market, as measured by number of subscribers.

The growing popularity of pay-television platforms has prompted a variety of free-to-air channel operators to diversify into pay television:

- TF1 in France has full ownership of a bundle of pay-television channels that includes *Eurosport*, *LCI* (24 hour news), *Breizh TV* (regional output for Brittany), *Serie Club* (acquired and originated drama series), *Odyssee* (documentaries), *Historie* (history-related programming), *TFOU* (children's channel) and *TF 6* (a second general interest channel);

- TV4 in Sweden has a portfolio of pay-TV channels that includes *TV4 Plus* (a second generalist channel), *TV 400* (youth programming), *TV4 Film* and *TV4 Fakta* (documentaries) and *TV4SportExpressen* (sport); and

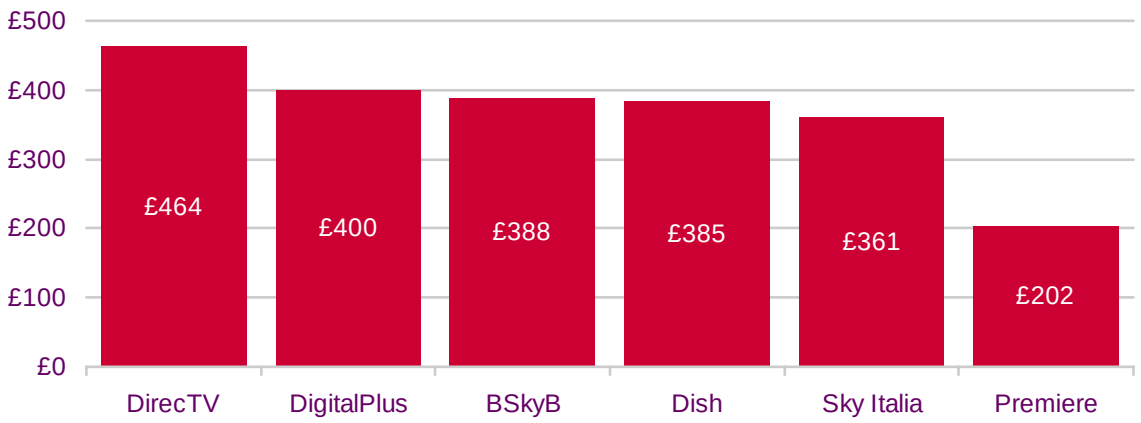
- The BBC made its first foray into pay TV in the early 1990s with *UK Gold* and *UK Living*. It then launched a channel portfolio in a joint venture with Flextech in 1998. That portfolio has now developed into an 11-channel bouquet available on satellite and cable. It has two FTA channels, *UKTV History and UKTV Bright Ideas*.

US platform operators reported the largest ARPU

An analysis of reported annual revenues per user (ARPU) from the pay television satellite operators in a sample of countries reveals that, again, a US operator (DirecTV) takes first place. BSkyB comes second with £388, with US operator Dish and SkyItalia a close third and fourth. Note that cable operators have been excluded from this analysis, owing to the difficulties in separating out television subscription revenue from other sources such as telephony and broadband subscriptions.

Figure 3.27: Stated average revenues per user for a selection of pay-TV operators

Platform operators' reported ARPU (£)



Source: Annual reports from DirecTV, BSkyB, Dish TV, News Corporation, Sogecable and Premiere
Note: It is possible that companies define ARPU differently. Comparisons are therefore for indicative purposes only.

Renewed commercial interest in DTT

While the cable and satellite platforms support well-established pay-television operators in many countries, the experience of pay-television over the DTT platform has proved more mixed:

- Spain's platform, launching as Quiero in October 2000, offered a range of subscription channels with a limited FTA offer. It attracted just 130,000 subscribers and closed down

in June 2002. The Spanish government relaunched the platform as Televisón Digital Terrestre (TDT), a largely FTA offer, in 2005;

- Sweden's DTT platform launched in 1999 with a pay TV offering operated by Boxer, alongside a small number of FTA channels. With limited reach (only 50% of homes could receive the service at launch), modest capacity and high equipment costs, the service initially failed to attract many subscribers. A relaunch in 2002 with greater channel capacity and more FTA channels led to the platform's revival;

- The UK's pay-DTT operator ITV Digital (formerly OnDigital) folded in May 2002, and the platform relaunched as Freeview in late 2002, supported with marketing and promotion by a consortium of PSBs, infrastructure providers and BSkyB.

Pay television has been able to prosper on DTT – but only where there has been a substantial number of free channels:

- MediaSet in Italy owns a 'Premium' pay per view (PPV) service on the Italian DTT platform, which offers access to Serie A Italian football. The service has since expanded into films;

- Canal+ and TPS both offer paid-for content on the French DTT platform, TNT; and

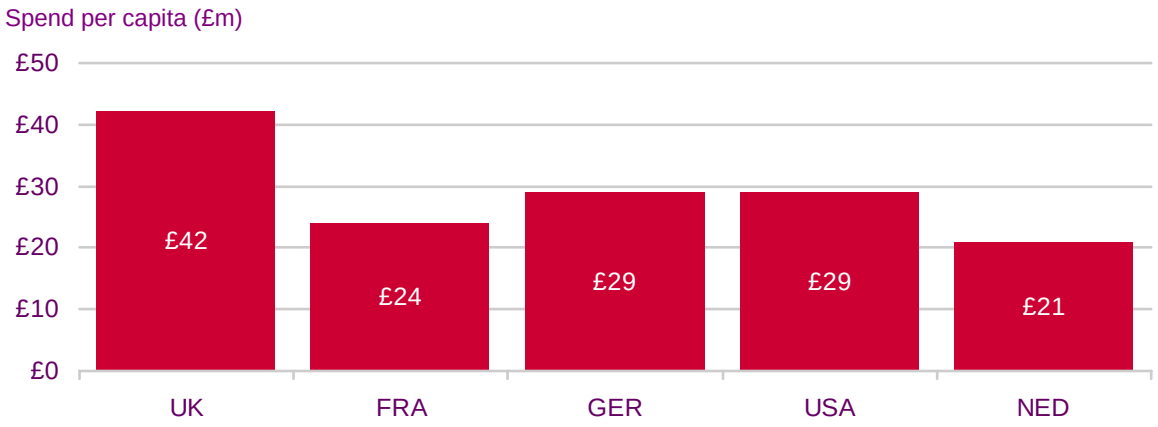
- Top Up TV, a subscription television service in the UK, launched on DTT (but only once the platform had become well established); Top Up TV has since launched an overnight programme download service.

3.2.4 The production sector

The UK invests more in programmes per capita than any other country

Recent and comprehensive data on the global market for television production revenue is hard to come by. One dataset for 2000/01 suggested that among the countries in this study for which data could be sourced, the US was the biggest commissioner of new programmes, spending £10bn in the year; the UK came second with £2.6bn, followed by Germany (£2.4bn) and France (£1.4bn). Correcting for population sizes reveals that, on a per capita basis, the UK invested more in programme production at that time than any other country.

Figure 3.28: Investment in programme production per capita, 2000/01

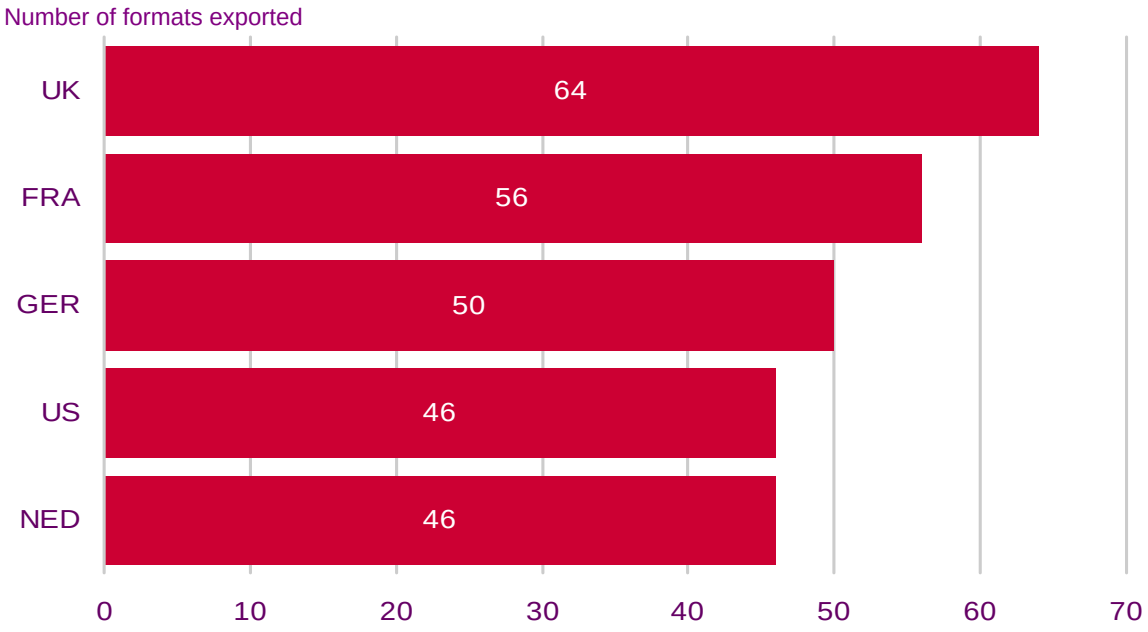


Source: Ofcom analysis using data from 'UK television content in the digital age' *by Oliver&Ohlbaum Associates Ltd for the BBC*

UK, US and the Netherlands are leading programme format exporters

The last ten years has seen significant growth in the size of the market for television format exports – that is those television programmes that can easily be remade for another country (e.g. 'makeover' and game shows). Screen Digest reports that the global value of this market grew by 15% per annum over two years to reach £1.5bn in 2004. In that same year it estimated that the US, the UK, the Netherlands, Poland, France and Germany between them exported 270 television formats to other countries.

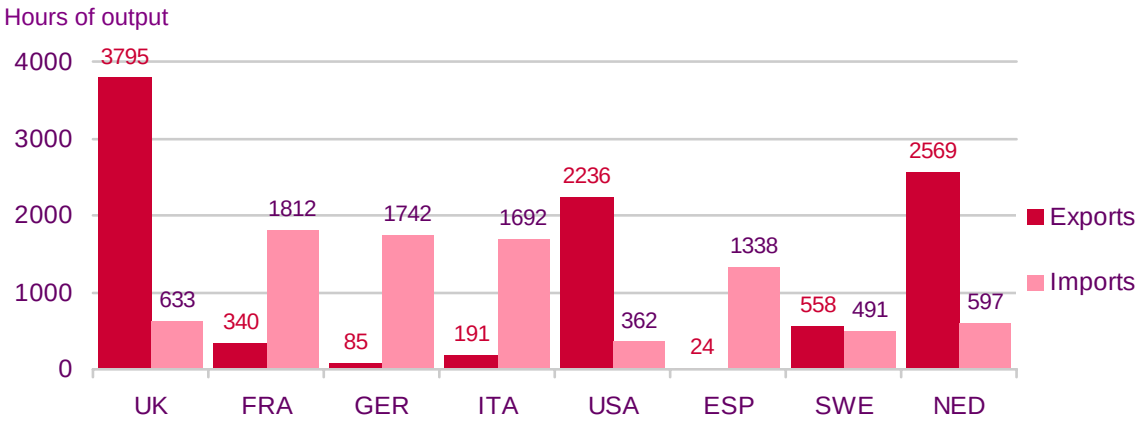
Figure 3.29: Exported formats by country in 2004



Source: Screen Digest, 2005

Taking into account both imports and exports, the UK, the Netherlands and the US were net exporters of formatted television hours. By contrast, France, Germany, Italy and Spain broadcast a far larger number of hours of imported formats than they exported to other countries.

Figure 3.30: Total hours of imported and exported formatted television



Source: Screen Digest, 2005

The UK, France and Germany have a thriving independent production sector

Data from 2004 reveals that France, Germany and the UK each have a substantial independent television production sector (producers that are not owned by a broadcaster), as measured by the number of companies in the industry. From an average revenue-per-producer perspective, the UK and the Swedish markets are the most concentrated, each generating over £1.7m per producer per annum. The German and French markets, with a larger number of producers relative to total industry revenue, generated £1.6m and £0.9m respectively.

Figure 3.31: Independent producer statistics, 2004

	Number		Revenues		
	Total	Per capita	Total	Per indie	Per capita
UK	500	8	£1096m	£2.2m	£18
FRA	700	12	£856m	£1.2m	£14
GER	800	10	£1507m	£1.9m	£18
SWE	30	3	£63m	£2.1m	£7

Source: Screen Digest and Ofcom analysis

Fin-Syn Rules in the US – building up the production sector

The development of a market for independent productions in the UK took off following the launch of Channel 4 in 1982. It was given a further boost with the introduction of independent production quotas for BBC One, BBC Two and ITV1 in the early 1990s. The launch of Five in 1997 opened up yet another opportunity for independent producers.

The US, too, has sought in the past to encourage the development of an independent production sector – a good ten years prior to the UK; its approach was slightly different, however. The FCC enforced Financial Interest and Syndication Rules (Fin-Syn Rules) over television and film entertainment between 1970 and 1995. Under these rules production companies retained the right to the financial returns from TV programmes after their first run, such as profits from syndications. Due to this, production companies were willing to produce programmes at a financial loss, as they were often able to make larger long-term returns. These rules were drafted in an attempt to increase programme diversity and limit the market control of the main broadcasters, ABC, CBS and NBC. This was done by eliminating networks' incentive to produce programmes, thus creating a separation between production and distribution arms.

The Fin-Syn Rules were relaxed in 1991, before their elimination in 1995. This resulted in networks building large in-house production facilities and developing syndication branches. For instance, Fox formed a studio-based television network, and by 1992 NBC was producing the bulk of its prime-time programming. Three concerns that have been raised about the elimination of the rules are: that networks will produce more programmes with high syndication potential; that advertisers may have increased access to production arms as networks now house combined production and distribution centres; and networks may rely more heavily on in-house production facilities, in order to retain syndication rights. It is feared that this may increase the power of networks long-term, while minimizing the financial position of, and reliance on, independent producers.

In support of these concerns, in 2002 the Caucus for Producers, Writers and Directors submitted a Biennial Regulatory Review to the FCC on its Broadcast Ownership Rules which stated:

The pattern of anti-competitive self-dealing that has emerged since the elimination of Fin/Syn is startlingly transparent. In 1992 there were 16 new series that were produced independent of network financial and creative control. This year there was only one. Ten years ago, only 15 per cent of the network series were produced by an entity affiliated with a network. This year the percentage of shows produced "in-house" has risen to 77 per cent.

3.2.5 Television Without Frontiers

European framework for television regulation

The Television Without Frontiers (TVWF) Directive is the EU's main audiovisual policy instrument. It aims to promote the creation of a single market for broadcasting services, enhancing the competitiveness of the EU broadcasting market, while safeguarding fundamental public interest and national cultural objectives.

The Directive relies on two pillars: first, the free movement of television programmes within the EU (this operates on the basis of the 'country of origin' principle); and second, the requirement for television channels to respect certain minimum standards for the protection of minors, human dignity, advertising, and the promotion of European and independent works (where practicable).

TVWF pillars

1. Freedom of movement

- EU Member States cannot restrict retransmission on their territory of television programmes originating in other Member States, provided the programmes comply with legislation in their country of origin.
- Country of origin is the country where the broadcaster's head office is located and where the scheduling decisions are taken.
- Programmes which manifestly and gravely infringe the protection of minors provisions of the Directive may be suspended.

2. Promotion of European works

- Where practicable, broadcasters must reserve a majority of airtime for European works, with at least 10% of transmission time or 10% of programming budget reserved for independent productions.
- The quotas for transmission time exclude time devoted to news, sports, games, advertising, teletext and teleshopping services.

3. Protection of minors and human dignity

- Any content that may 'seriously impair' the physical, mental or moral development of minors is banned, in particular programmes involving gratuitous violence.
- Programmes that are likely to impair (rather than seriously impair) the physical, mental or moral development of minors must be broadcast only at times when minors would not normally hear or see them, unless technical restrictions to control viewing are in place. If the broadcast is unencrypted, such programmes must be clearly identifiable by an acoustic warning or a visual symbol.
- In addition, television broadcasts cannot contain any incitement to hatred on the grounds of race, sex, religion or nationality.

4. Advertising and sponsorship

- Advertising (advertising spots and teleshopping) cannot take up more than 20% of daily airtime and 20% of any one hour of output. Advertising spots alone may not exceed 15% of daily airtime. There are also limitations on programme interruption (depending on programme type).
- The Directive also establishes qualitative requirements on advertising content, for both ethical and programme integrity reasons, and restricts advertisement of certain products (e.g. tobacco).
- It also contains rules for programme sponsorship, for example, the need to ensure the broadcaster's editorial independence and prohibiting the sponsorship of news and current affairs programming.

5. Access to major events

- Member States must ensure the general public has guaranteed free access to major national and non-national sporting events. The events are based on a list drawn up by each Member State and reviewed by the Commission.

6. Right of reply

- Any person whose interests have been damaged by an assertion of incorrect facts in a television programme must have a right of reply. This right shall exist in relation to all broadcasters under the jurisdiction of a Member State.

The Directive was first adopted in 1989. A revision in 1997 clarified some of the basic concepts, such as the jurisdiction of Member States over broadcasters whom they licensed, and introduced new rules for teleshopping and major events coverage.

The TVWF Directive is currently undergoing a review, which aims to modernise the rules in line with technological and market developments over the past decade. In December 2005, the European Commission published a proposal for a new 'Audiovisual Media Services Directive'. The draft rules extend the scope of regulation to all audiovisual media services, including some internet-based, rather than just television broadcasts. It establishes a framework for regulating product placements and significantly liberalises advertising and teleshopping rules. The draft Directive introduces a distinction between linear services (where the service provider decides on the transmission time) and non-linear services (where the user chooses the time of transmission) and proposes two tiers of regulation, with minimum obligations for all audiovisual content services, and an additional stricter layer of rules for linear content.

The proposals are currently being discussed in the European Council and the Parliament, with the final draft expected in 2008 at the earliest. Once the final text is agreed, Member States will have to implement the new rules which are likely to come into force by 2010.

Making space for EU production

The principle of promoting European works places obligations on broadcasters to reserve the majority of their transmission time for European works, where practicable. It also requires broadcasters, where practicable, to allocate 10% of air-time or 10% of programming budget for European independent productions (i.e. produced by companies independent of broadcasters). An 'adequate proportion' of independent productions broadcast should be recent works, transmitted within five years of their production. These quotas are applied to all airtime excluding news, sports events, games, advertising, teletext services and teleshopping.

Figure 3.32 shows the EU-level performance against TVWF quotas, as presented in the latest assessment report by the European Commission. The proportion of qualifying airtime allocated to European works has, in total, exceeded the 50% threshold set by the Directive. It has, however, been declining over recent years. Similarly, while the EU-wide share of independent productions has been well in excess of the 10% minimum, it has dropped by 6.3 percentage points since 2001. The share of independent works produced within the last five years has also dropped, albeit very slightly.

While these key metrics have fallen over time, this has come in the context of a significant increase in the number of channels covered by the Directive:

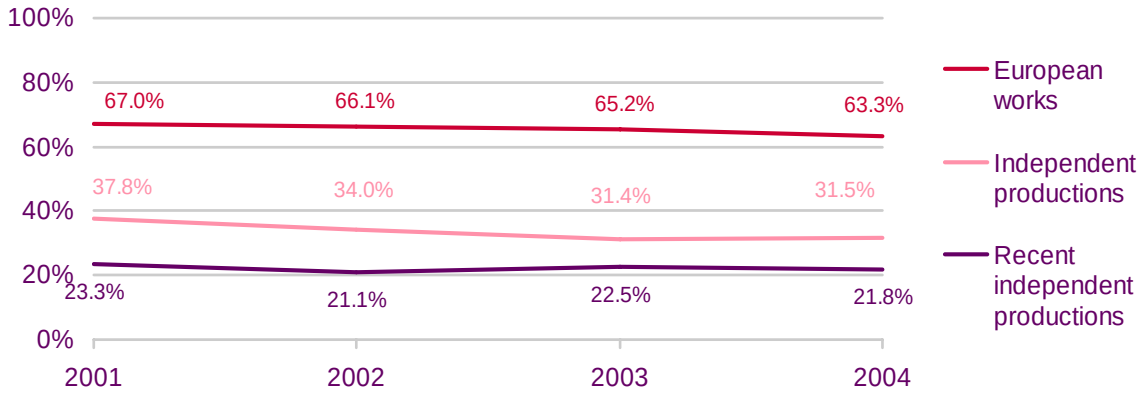
- In the three years to 2004, the number of channels covered increased from 472 to 654 for the EU-15 countries; and

- A further 183 channels originating in the new EU Member States were added in 2004.

Given this dramatic increase in the number of channels covered, it is perhaps suprising that the metrics have not fallen further.

Figure 3.32: EU-wide application of quotas

% of qualifying transmission time



Source: European Commission
Note: 2004 figures include the new EU member states

3.2.6 Public service broadcasters

Public service television channels are available in most countries

The paragraphs to the the television section highlighted the public service broadcasting culture upon which a majority of the TV industries in this study were founded. PSBs continue to attract a significant share of viewing in most countries, and the emergence of digital television platforms in many countries has opened up channel proliferation opportunities that most PSBs have taken advantage of.

Different definitions of public service broadcasting

In many of the surveyed countries, public service broadcasters are defined as those that are partly or fully funded from the public purse, through direct government grants (for example PBS, NOS and TVES) or through a licence fee (for example France Televisions, RAI and ARD); advertising revenue often supplements these PSBs' finances. While commercially-funded channels (such as *TF1* in France) are required to comply with output obligations, they are not, generally speaking, regarded as PSBs in the countries concerned.

The UK's definition of public service broadcasting is broader – its five main terrestrial channels are all licensed and regulated as PSBs and funded from a variety of sources – the licence fee (BBC), advertising (ITV1, Channel 4 and Five) and a government grant (S4C).

However, to help with comparability between countries we have restricted the definition of UK PSBs in this document to mean just the BBC, Channel 4 and S4C – the rationale being that each receives some form of public funding, either directly through the licence fee and/or indirectly through their 'not for profit' status.

Figure 3.33: Public service broadcaster channel portfolios by country

	Operator	Services	Availability	Launch	Channel description
UK	BBC	BBC One	All homes	1932	Mixed genre
		BBC Two	All homes	1962	Mixed genre
		BBC Three	MC homes	1998	Mixed Genre
		BBC Four	MC homes	1999	Arts & culture
		CBBC	MC homes	2000	Older children
		CBeebies	MC homes	2000	Younger children
		BBC News 24	MC homes	1997	News
		BBC Parliament	MC homes	1997	Political coverage
France	France Televisions	France 1	All homes	1963	Mixed genre
		France 2	All homes	1972	Regional output
		France 4	MC homes	1996	Factual/educational
		France 5	MC homes	1994	Arts and Music
		France Arte	All homes	1992	Fraco-German Arts
Germany	ARD	ARD	All homes	1956	Mixed genre
	ZDF	ZDF	All homes	1963	Mixed genre
		Deutsche Arte	tbc	1992	Franco-German Arts
Italy	RAI	RAI 1	All homes	1954	Mixed genre
		RAI 2	All homes	1961	Mixed genre
		RAI 3	All homes	1979	Factual/information
		RAI-Doc RaiFutura	MC homes	n/a	Technology
		RAIUtilie	MC homes	n/a	Factual
		RAI Sport	MC homes	n/a	Sport
		RAI Edu Lab/Cultura	MC homes	n/a	Educational
		RAI News 24	MC homes	n/a	News
USA	PBS	PBS	All homes	1972	Mixed genre
Japan	NHK	NHK	All homes	1953	Mixed Genre
		NHK Education	All homes	1966	Educational
		NHK Digital Hi-Vision	MC homes	2000	HD content
		NHK BS1	MC homes	1989	News & sport
		NHK BS2	MC homes	1989	Culture & entertainment
China	CCTV	CCTV1	All homes	1958	Mixed genre
		CCTV2	All homes	n/a	Business & economy
		CCTV3	All homes	n/a	Arts
		CCTV4	All homes	n/a	International
		CCTV5	All homes	1995	Sports
		CCTV6	All homes	n/a	Movies/series
		CCTV8	All homes	n/a	Drama
		CCTV10	All homes	n/a	Science/technology

Notes: Only the main free-to-air services are illustrated in this table, for reasons of space. Many PSB portfolios are broader and many include subscription television services – these are detailed in the earlier 'developments' section.

There are common features in the objectives of most public service broadcasters, as set out in their various statutes and charters (see fig 3.34). In particular they all place an emphasis on the production and broadcasting of content of a cultural and educational nature.

Figure 3.34: PSB statements of purpose, objectives and/or missions

Country	Channel portfolio
France Televisions	To "provide the public, taken in all its components [diversity], with a set of programmes and services characterised by diversity and pluralism, quality and innovation, respect for people's rights and democratic principles as defined by the constitution". (Open Society Institute, 2005 as in Article 43-11, Law of Freedom of Communication 1986)
ARD / ZDF	To educate, advise entertain and inform.
RAI	"The RAI Law 1975 granted the Commission the right to query and supervise pubic television, with the aim of guaranteeing that it would respect the fundamental principles of public broadcasting, including pluralism, fairness, completeness and impartiality of information" (Open Society Institute, 2005).
PBS	"To inform, to inspire, and to educate."
BBC	To enrich people's lives with programmes and services that inform, educate and entertain."
NPR	"National Public Radio will serve the individual: it will promote personal growth; it will regard the individual differences among men with respect and joy rather than derision and hate; it will celebrate the human experience as infinitely varied rather than vacuous and banal; it will encourage a sense of active constructive participation, rather than apathetic helplessness."
NHK	"To make programmes to enrich people hearts and minds throughout the world, establishing even stronger links with broadcasters everywhere."

Source: Ofcom research

The PSB funding model differs by country

While there are common features in the objectives of PSBs worldwide, the methods of funding their delivery vary in two key respects:

1. The *level* of PSB funding

At one end of the scale, the German PSBs (ARD and ZDF) together benefited from funding in the region of £4.9bn in 2005. At the other end, US public funding for television amounted to c.£220m while – perhaps surprisingly – in China there is no funding of television from the public purse at all, commercial television advertising having been legalised in 1979.

The UK is unique in having a television industry with both a publicly funded PSB (the BBC) and one that relies on advertising income (Channel 4). The BBC is the second best funded PSB worldwide (£2.9bn in 2005), while France and Italy rank third and fourth (£1.6bn and £1.8bn respectively). Differences in public funding relate both to the size of the television licence fee levied on households, and on the number of households per country.

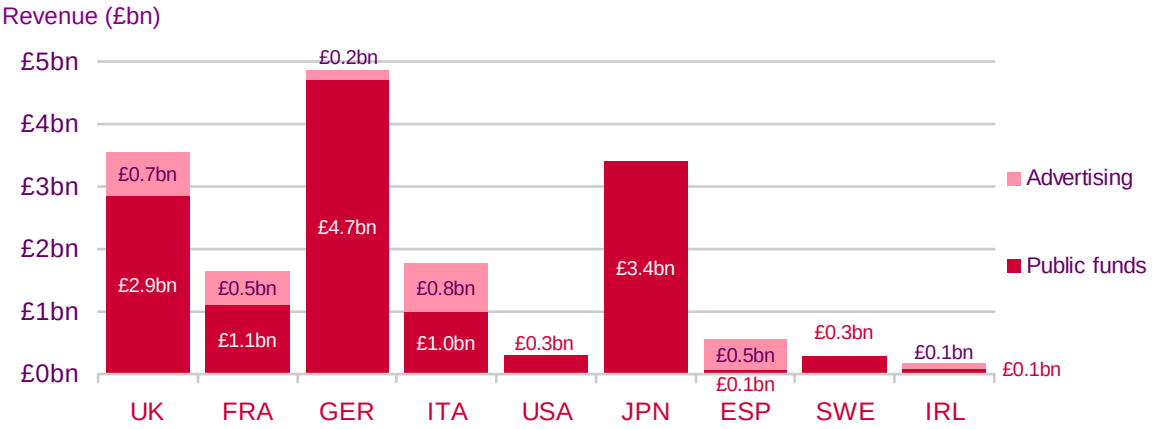
2. The *model* of funding

The UK's BBC, Japan's NHK and Sweden's SVT do not carry any advertising at all; ARD and ZDF in Germany rely very little on advertising (there are limits on the volume of advertising that either can carry); PBS in the US does not carry advertisements at all, but does allow programme sponsorship.

This contrasts with the mixed model of PSB funding – France Télévisions, RAI in Italy, and RTE Ireland all carry advertisements (France Télévisions since 1968) accounting for 34%, 43% and 54% of total revenue respectively in 2004.

These different funding models tend to have roots in the historical development of the television industries in each country, and in the degree to which the argument for purely publicly funded PSBs has been accepted.

Figure 3.35: PSB revenues, 2004/05



Source: Latest available annual reports of the BBC, France Televisions, RAI, PBS, NHK and TVE. Figures for Germany and Sweden from Screen Digest

Notes: Some broadcasters (BBC, RAI, ARD, NHK, RTE) operate television and radio networks – comparisons should therefore be made with caution. UK figures include the BBC's licence fee revenue, S4C's government grant and Channel 4's advertising revenue. PSBs may also receive other commercial sources of revenue (for example, from the exploitation of archive programming and merchandising); this income is not included in the chart above. Time period to which these figures apply varies according to the different financial reporting periods of the PSBs.

PSBs have been losing audiences in all countries – but reductions are declining

While PSBs often acted as the monopoly provider of television content in the early decades of most television industries, the erosion of PSB market share over time has been an inevitable consequence of deregulation and technological innovation.

This erosion has often occurred in three phases:

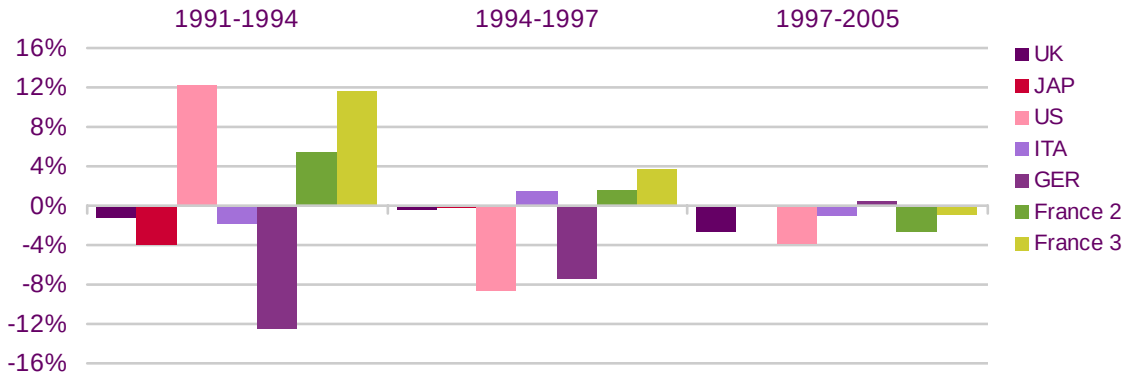
- the licensing of commercial free-to-air broadcasters (e.g. the UK in the 1950s, Italy in the 1970s, France in the 1980s);
- the launch of analogue cable and satellite television platforms, distributing paid-for premium content (e.g. satellite in the UK in 1989 and in Italy in 1991); and
- the launch of digital television networks offering a broader range of channels than their analogue counterparts (e.g. satellite in France and Italy in 1996).

Figure 3.36 highlights that, even in the 1990s, PSBs were still struggling to retain audiences, sometimes decades after market deregulation. The German PSBs were hit particularly hard in the early 1990s (perhaps reflecting the deregulation of the German television market in the 1980s). The BBC was notable among its peers for minimising the loss of share during that period, but even it lost share at 1% p.a.

More recently, however, annual reductions in PSB share have begun to tail off. This may reflect the fact that, far from viewing channel proliferation as a competitive threat, PSBs have embraced it by building up their channel portfolios with generalist and targeted services with which to engage a wider audience.

Figure 3.36: Changes in PSB audience share, 1991 - 2006

Compound Annual Growth Rate (CAGR) (%)



Source: McKinsey analysis for the BBC and Ofcom calculations
Notes: France 2 and France 3 are listed separately owing to the fact that the CAGRs were calculated on a channel by channel basis in the McKinsey analysis

PSBs offer a diverse range of programme genres

Figure 3.37 breaks down European Broadcasting Union (EBU) members' 2005 output by genre (including commissions, acquired programmes and repeated programmes).

Channels included in this analysis

The data provided in this section have been taken from the following PSB channels:

- **UK** – *BBC One*, *BBC Two*, *Channel 4*
- **Germany** – *ARD1* and *ZDF*
- **France** – *France 2* and *France 3*
- **Italy** – *RAI1*, *RAI2, RAI3*
- **The Netherlands** – *Nederland 1*, *Nederland 2*, *Nederland 3*
- **Spain** – *TVE La Primera*, *TVE La 2*
- **Ireland** – *RTE One*, *RTE Two*
- **Sweden** – *SVT1*, *SVT2*

Fiction (also known as drama in the UK, but including films) is a feature common to most schedules, none more so than in the Republic of Ireland, where it accounted for more than half of all hours. Factual programmes by contrast play a relatively smaller role in the schedule in Ireland than other European countries.

PSB channels in the Netherlands, on the other hand, carried more factual output than any of the other countries surveyed in 2005, accounting for over a quarter of total output. News is significant in the scheduling mix of most countries, ranging from 10% of all output in Germany to 34% in the Netherlands.

The UK's European neighbours, France, Spain, Germany and Italy, all allocated a significantly larger proportion of their analogue terrestrial schedules to arts than the UK.

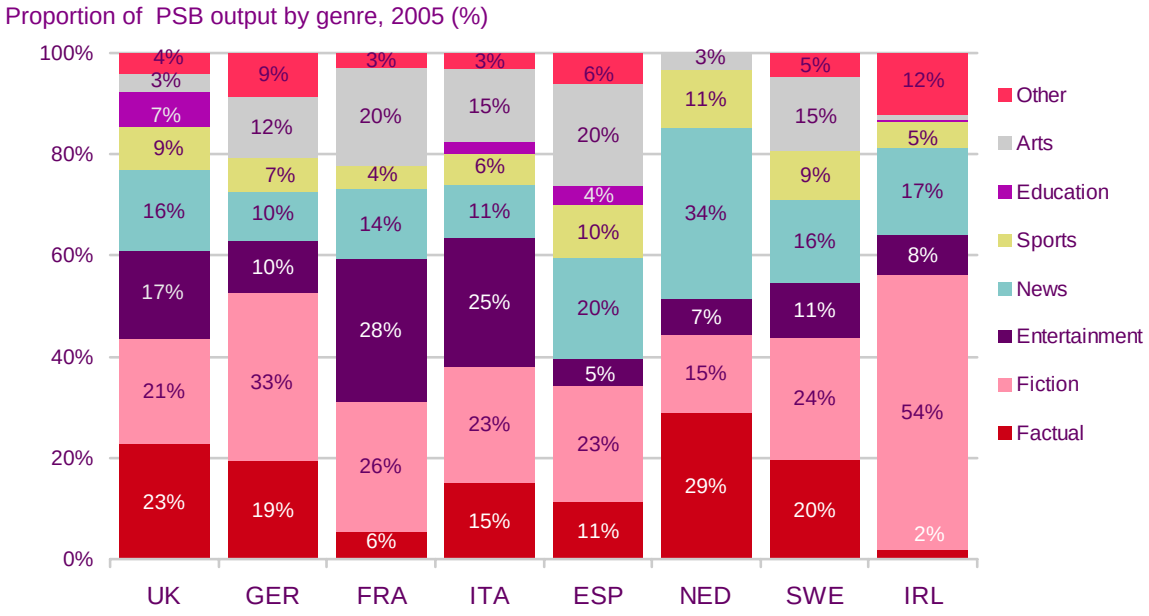
***PBS* investment by genre in 2005 – a diversity of commissions**

Total hours of output by genre is not in the public domain for *PBS* in the US. By *programming dollars* (not hours) in fiscal year 2006, *PBS* shares with its European counterparts an emphasis on investing in a broad range of genres. The peaktime commissioning budget (which took 80% of the total budget) broke down as follows:

- History 24%
- Science/Natural History 17%
- Drama 7%
- Performance/Arts 9%
- Public Affairs 22%
- News 14%
- Cultural Docs 7%

The remaining 20% of the budget was spend on commissioning children's programmes.

Figure 3.37: PSB output by genre, 2005



Source: EBU/ISN
Note: The UK figures include BBC One, BBC Two, Channel 4, and S4C Analogue, but excludes S4C digital

PSBs often prioritise new productions

Figure 3.38 offers a picture of the number of commissions, acquisitions and repeats broadcast by the same set of European PSBs in 2005. Like the genre mix analysis, it reveals a range of different approaches to scheduling.

Defining own production, acquisitions and repeats

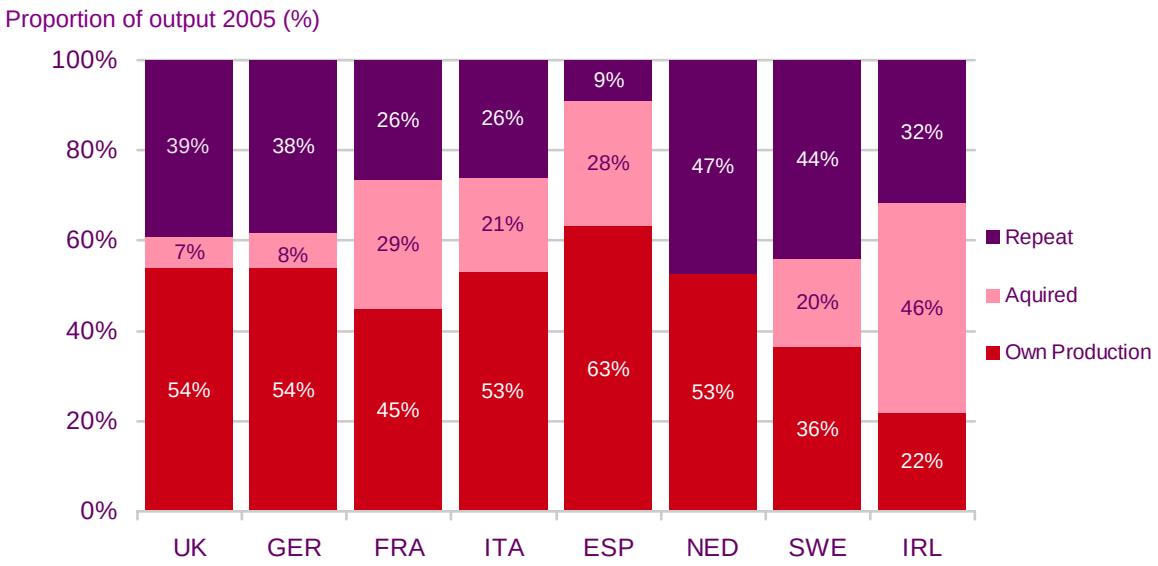
- an **own production** is a programme that has been transmitted on a channel for the first time. It can be produced in house or commissioned from an independent producer;
- an **acquisition** is a programme (or feature film) purchased by a channel from a third for transmission; and
- a **repeat** is a programme that has previously been shown on that channel.

In the main, own production and acquisitions make up a good proportion of most broadcasters' schedules (the exceptions being Sweden and the Netherlands) – reflecting the priority that PSBs attach to keeping their output fresh. Moreover, a majority of all output comes from own production alone in all countries except France, Sweden and Ireland.

Acquired programmes play a small role in UK and German PSB schedules (7% and 8% respectively relative to the sample average of 20%). Reflecting its emphasis on drama, however, Ireland had the highest number of acquired programmes in its schedules in 2005. RTE One, for example, broadcasts programmes such as *The Bill*, *Hollyoaks*, *Neighbours* and *Eastenders* that are purchased from UK broadcasters.

Repeats, often the subject of much attention in the UK, continue to play a prominent role in UK schedules along with those of the Netherlands, Germany and Sweden. In contrast, Spain broadcast a much lower proportion of repeats in 2005.

Figure 3.38: Proportions of own-productions, acquisitions and repeats



Source: EBU/ISN
Note: The UK figures include BBC One, BBC Two, Channel 4, and S4C Analogue, but exclude S4C digital. The Netherlands are unable to provide data on own production vs acquired programming. This has all been shown as own production.

3.3 The television consumer

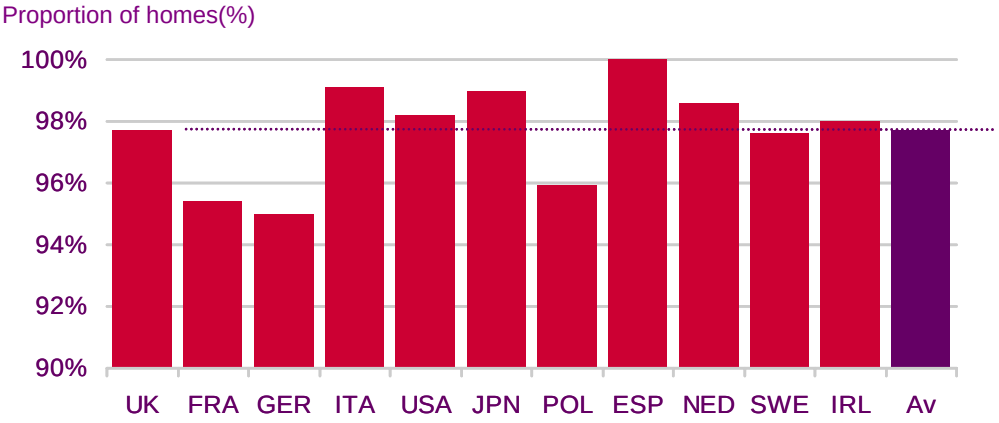
3.3.1 Access to devices

Almost all homes have at least one television set

Television sets can be found in the vast majority of homes in the developed world, with a 97.7% penetration (not weighted for population) for the countries in this study.

Spain, Italy and Japan show marginally above-average levels of television take-up, while Poland, France and Germany have slightly lower than average penetration of television sets. However, all countries lie in the 95-100% range.

Figure 3.39: Television homes as a proportion of all homes



Source: Ofcom research

Methods of television reception differ from country to country

The mix of platforms through which households access television on their main sets varies from country to country. This can be explained by factors including differences in topography and geographical features; the degree to which platform operators have invested in upgraded networks and differences in public policy frameworks.

The platform ecologies of countries break down into two clear groups:

1. One main platform

Analogue terrestrial television is the main method for receiving television broadcasts in China, Italy and France, accounting for 63%, 66%% and 58% of all households respectively. In these countries the digital switchover challenge remains greatest, with many homes yet to commit to digital.

German households are unusual in having a large number of homes dependent on analogue cable. The German analogue switchoff programme is therefore a less challenging proposal, as it affects only a small number of homes.

2. A diverse platform mix

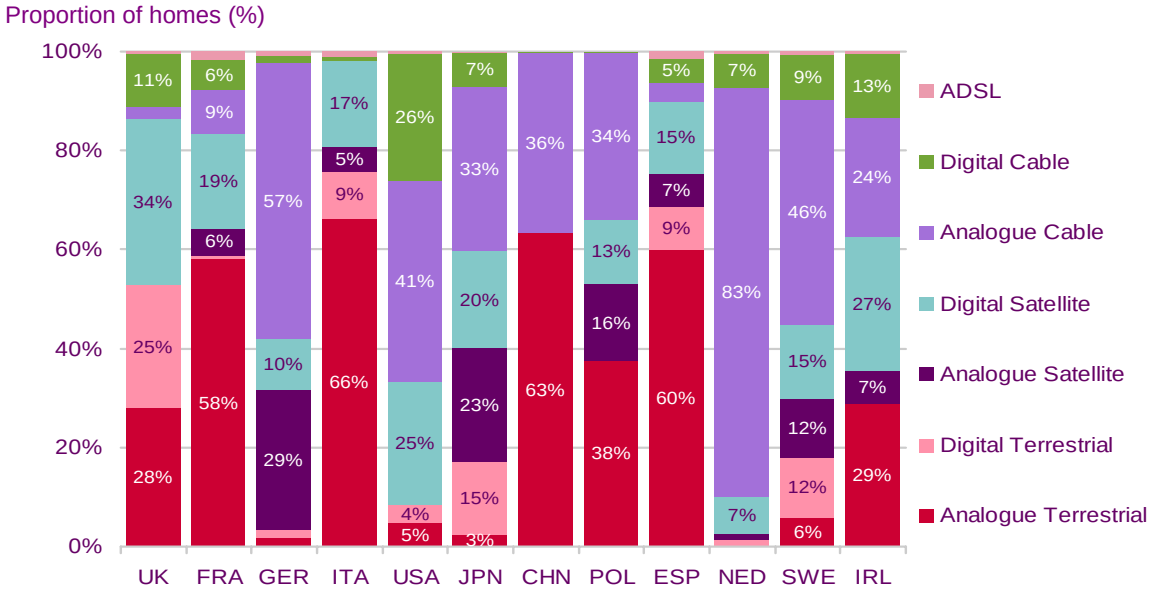
In Japan, the US and the UK no one platform dominates:

- in Japan, analogue cable and satellite are the majority platforms with 54% of all homes, which can be partly explained by the early deployment of cable in 1955;

- in the US, digital and analogue satellite and analogue cable serve a majority of homes, again driven by early roll-out of cable networks; and

- in the UK, analogue and digital terrestrial television coupled with digital satellite are the larger platforms, thanks to the recent success of Freeview and the established market presence of BSkyB.

Figure 3.40: Reception devices connected to the main television set



Source: World Television Markets 2005, IDATE

Americans pay for more TV while Italians/Germans watch free-to-air channels

Free to air (FTA) television is the principal method for receiving television on the main set in the home in a majority of countries in this study.

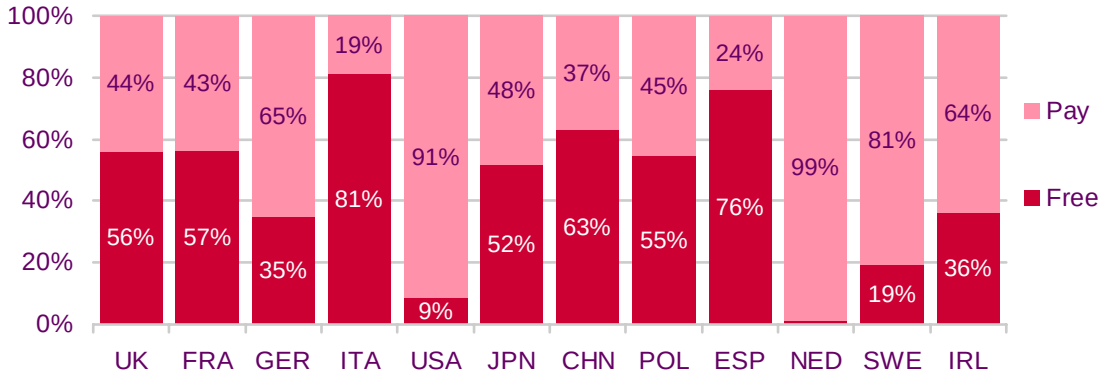
In Germany, Italy, the Netherlands and Spain, pay television has yet to become widely established with most homes still only accessing FTA channels. This may reflect the wide choice of FTA channels that viewers in these countries enjoy.

Among the remaining countries, the UK, Japan, France, Sweden and Ireland are seeing ever higher numbers of households paying for extra television channels – households in all five having originally relied heavily on ATT broadcasts. The fact that pay TV is a common feature in homes in these countries may be connected to the more restricted choice of FTA analogue channels.

The US stands out as the one country in the world where the vast majority of households already subscribe to some form of subscription-based encrypted television service.

Figure 3.41: Proportion of homes with FTA versus pay television

Proportion of homes (%)



Source: World Television Markets 2005, IDATE
*Note: The Netherlands and German figures **overstate** the takeup of 'pay' television, because the figures include 'cable relay' subscribers who pay a small monthly fee for access to terrestrial channels.*

Many main sets are still connected to analogue reception devices

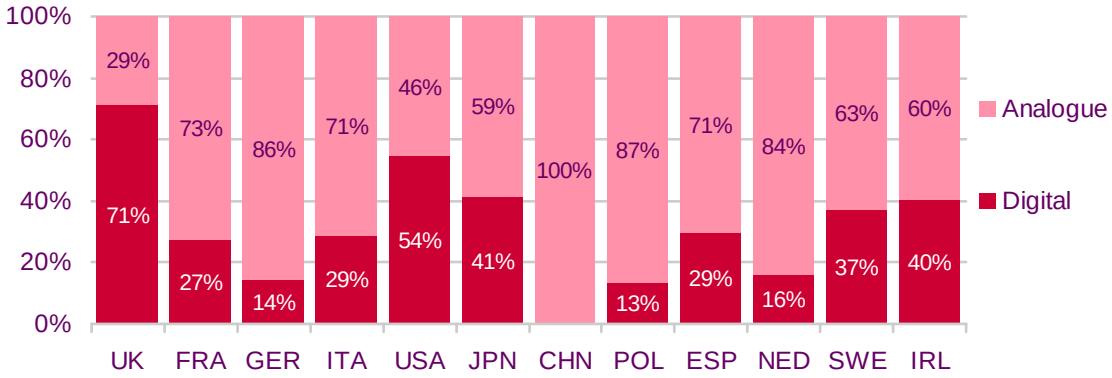
Many television sets in countries in this study are still connected to an analogue reception device – although the platform varies significantly by country:

- Chinese, Spanish and Italian homes rely mostly on analogue terrestrial television;
- in Germany and the Netherlands analogue cable is the dominant platform; and
- the French and Polish watch TV through a mix of analogue satellite, cable and terrestrial.

The UK, by contrast, leads the countries in this analysis in the proportion of main television sets that are connected to a digital reception device (terrestrial, cable or satellite) – followed some way behind by Japan and the US. The growing popularity of Freeview in the UK has made a significant contribution to the conversion of analogue homes to digital – a trend that may become a pattern across other European countries (e.g. France and Spain) as they promote DTT as a means of facilitating digital switchover.

Figure 3.42: Proportion of homes connected to digital and analogue platforms

Proportion of homes (%)



Source: World Television Markets 2005, IDATE

3.3.2 The channels available in different countries

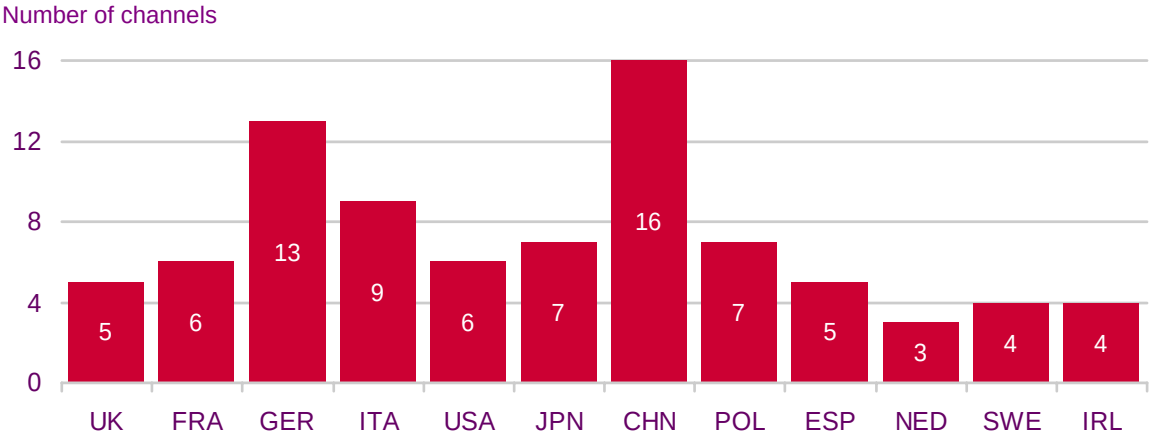
China and Germany have the largest number of FTA channels on ATT

The range of channels available in different countries varies by platform (terrestrial, cable, satellite) and technology (analogue, digital). For the purposes of making a reasonable comparison between countries, figure 3.43 provides an analysis of the number of free-to-air channels available on each country's analogue terrestrial platform.

Chinese and German households have access to the largest number of ATT FTA channels (16 and 13 respectively) followed by Italy with 9 channels. The UK offers the fewest with five. This may have had a bearing on the ease with which pay television operators have been able to persuade subscribers in the UK to pay for additional television channels.

France stands out as the one country that still offers an encrypted subscription-only channel on the ATT platform - Canal+ launched in 1984 and is still available. The BBC experimented with a similar service in the early 1990s (BBC Select), aimed at businesses and offering professional development programmes to subscribers during night-time hours.

Figure 3.43: Number of FTA channels available on ATT



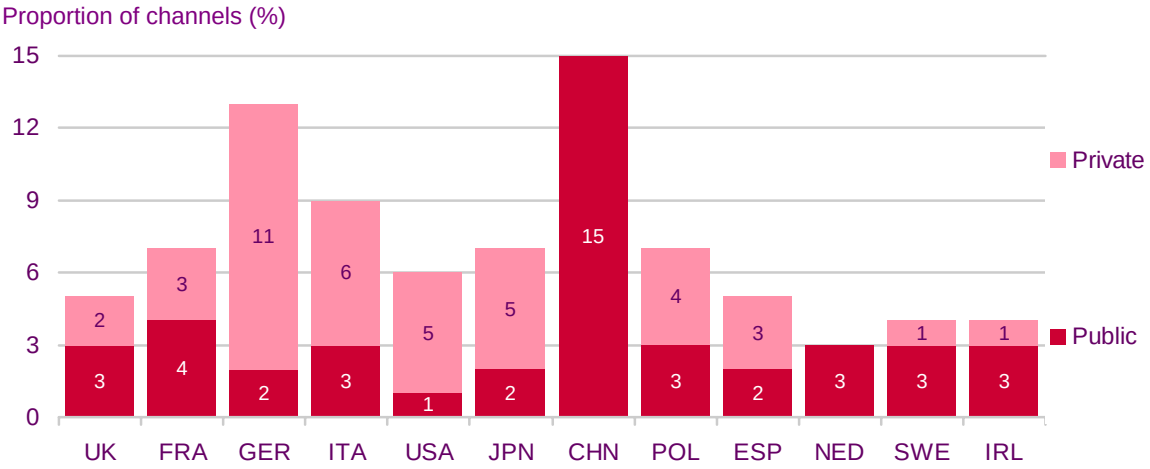
Source: European Audiovisual Observatory 2005

A majority of FTA channels in France are part-financed from public funds

In France, the Netherlands, Sweden and Ireland, a majority of channels on the ATT platform rely partly on public funding. The UK ranks second with three out of five of its FTA ATT channels benefiting from direct or indirect public funding (the BBC is funded mainly from the licence fee; Channel 4 is a publicly-owned corporation with no obligation to maximise return on its assets, nor does it pay a market rate for the spectrum it uses).

In the US and Germany by contrast, a large majority of FTA channels are funded from advertising revenue.

Figure 3.44: Proportion of FTA channels that are part-financed from public funds



Source: European Audiovisual Observatory 2005

3.3.3 Paying for television

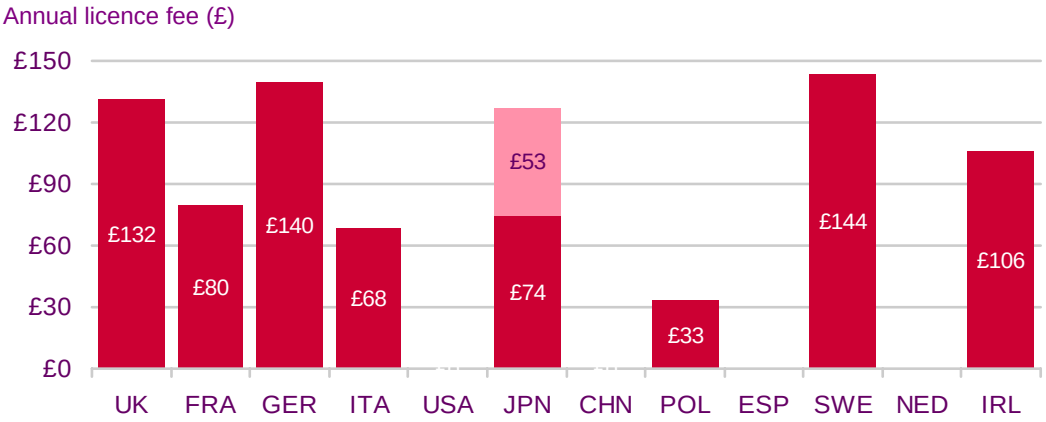
Germans pay the largest licence fee – Italians the smallest

The television licence fee is a feature common to the majority of the countries in this study – the exception being the US. Generally speaking, the fee is a flat-rate sum levied on a per-household basis.

The level of the licence fee is influenced by a variety of factors that include (i) the extent to which the publicly-funded broadcaster relies solely on the licence fee; (ii) the scope of activities that the broadcaster undertakes (e.g. television only versus television, radio and online); and (iii) the extent to which the broadcaster is permitted to engage in other commercially-funded activities in order to generate additional cashflow:

- At £144 p.a., the Swedish licence fee is the highest. The German licence fee comes in second at £140 p.a., while the UK's comes third at £132;
- The Polish licence fee, at £33 p.a., is the lowest of the countries in this study that have a licence fee; and
- The Japanese fee comes in two parts – one of which is levied on all households with television sets, with a supplement applying to those who can access NHK's satellite-only channels.

Figure 3.45: The cost of a television licence, 2006

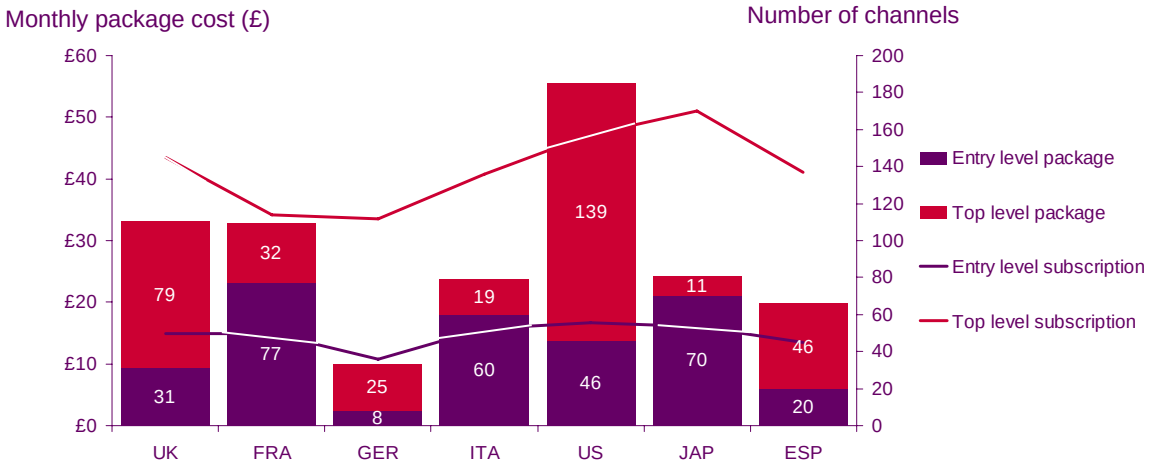


Source: Ofcom research and relevant licensing authorities' web sites
Note: The Japanese licence fee comes in two parts - £74 for terrestrial homes with an additional £53 for those who can receive NHK's satellite channels

Entry costs to satellite-based pay television lowest in Germany

Making cross-country comparisons between pay-television packages is difficult, owing to differences in the range of channels available and the challenges of meaningfully converting prices into a single currency. That said, Figure 3.46 offers an outline of the subscription packages available on satellite across a range of countries.

Figure 3.46: Examples of costs and channels on offer through pay satellite



Source: Ofcom research using the websites of CanalSatellite (France), Premiere (Germany), SkyItalia (Italy), DirecTV (US), SkyPerfecTV (Japan) and DigitalPlus (Spain)
Note: 'Entry level' is defined as the smallest bundle of channels to which a household can subscribe. 'Top tier' is defined to be the broadest bundle of channels to which a household can subscribe, including all premium tier bundled channels, but excluding any a la carte channels. Free-to-air channels, which are available without a subscription, are not included in this analysis.

3.3.4 Watching television

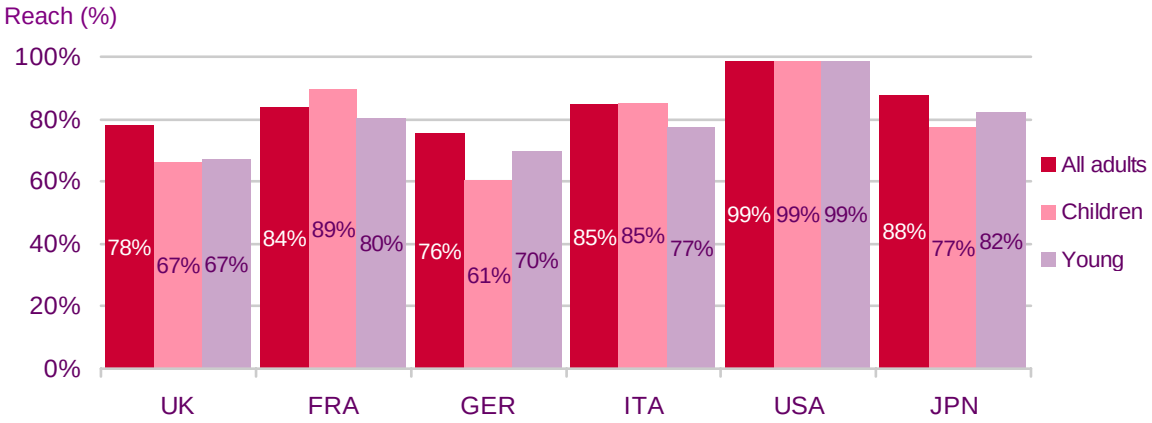
TV reach is highest among the Japanese and US populations

Figure 3.47 outlines the daily reach to television services across countries. Acquiring comparable data across countries has proven difficult – while the UK and German figures

relate to 3 minute and 1 minute daily reach respectively, the remainder relate to 1 second daily reach.

There is a consistent pattern of consumption for children in the UK, Italy, China and Germany who watch television less frequently than adults – an effect that is especially pronounced in Germany where just six in ten children watch one minute or more of television on a daily basis. In France, by contrast, one second daily reach to television services is higher among children than it is adults, with almost nine in ten children watching at least one second of television on a daily basis.

Figure 3.47: Daily reach of all television services



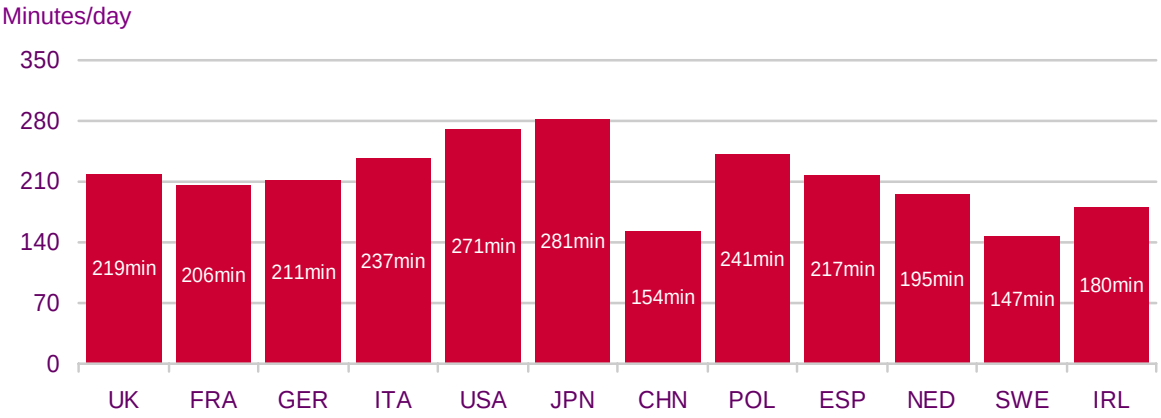
Source: IDATE, based on national audience measurement systems
Notes: German figure represents 1 minute daily reach; UK figure represents 3 minute daily reach; all remaining figures are 1 second reach. This explains why the UK and German reach figures tend to be lower than other countries illustrated in the figure.

The Japanese watch the most TV; the Chinese watch the least

Japanese viewers are the heaviest consumers of television, notching up 281 minutes (4.7 hours) of daily viewing. They are followed by Americans with 271 minutes (or 4.5 hours) per day. These results are broadly consistent with the one minute daily reach analysis outlined above.

Among European viewers, there is little variation. On average, Europeans consume around 218 minutes of TV per day (3.6 hours), with variances between countries of +19 minutes and –12 minutes. The Chinese and Swedish are lighter television viewers, with average viewing times of just 154 minutes per day (2.6 hours) and 147 minutes (2.5 hours) respectively. In the case of China, the difference is likely to be explained by different patterns of activity across the day (for example, longer working hours).

Figure 3.48: Minutes per day of television viewing per head



Source: One Television Year in the World 2006, Eurodata/Mediametrie

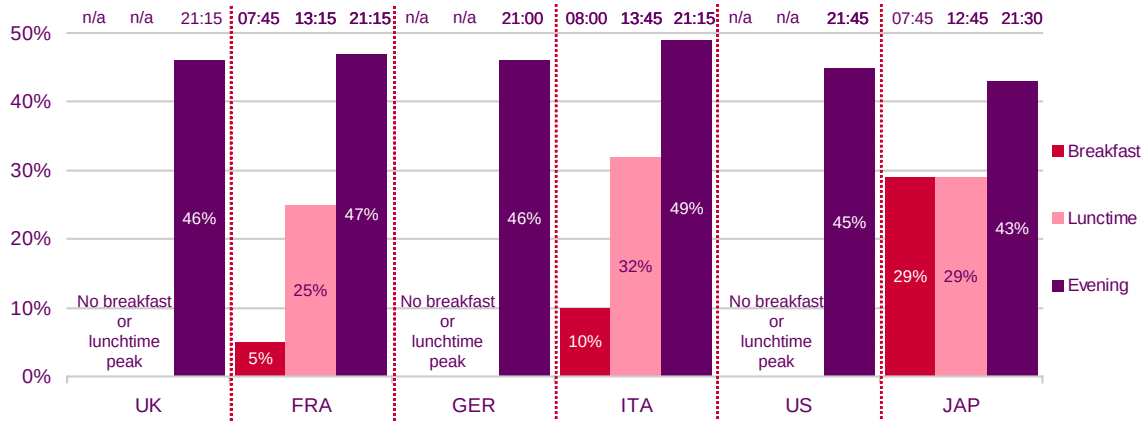
France, Italy and Japan have viewing peaks at lunch; Japan also at breakfast

Patterns of television viewing by day-part are a good illustration of the different lifestyles led by viewers in different countries.

Germany, the UK and US share a similar consumption profile over the day. Television viewing times rise gradually through the day, with just one viewing peak in the middle of the evening. The German and UK peaks occurs at between 21:00 and 21:15. The US peak comes later at 21:45.

Differences in consumption habits, however, emerge in France and Italy, where there are two substantial viewing peaks – one in the evening and a lunchtime peak of 25% and 29% respectively of the total available audience. In Japan, there are three substantial viewing peaks - beginning at 07:45 when 29% of the population watches television – just as big as the lunchtime peak and just 26% short of the evening peak.

Figure 3.49: Proportion of people watching television by daypart



Source: IDATE based on national audience measurement systems

Viewing concentrated among a few channels in France, Japan and Poland

The collective share of the top five channels in each country gives an indication of how concentrated television viewing is in each country. The five-channel collective shares vary significantly by country.

Poland, France and Japan all exhibit relatively concentrated patterns of viewing, with the top five channels attracting 80% of all viewing hours.

German and UK viewing habits are less concentrated (65% and 70% respectively), reflecting the fact that there is a large established market of FTA analogue television channels in Germany, while the take-up of multi channel television in the UK has reached a point where a large proportion of homes now have access to at least the Freeview bundle of channels, if not more.

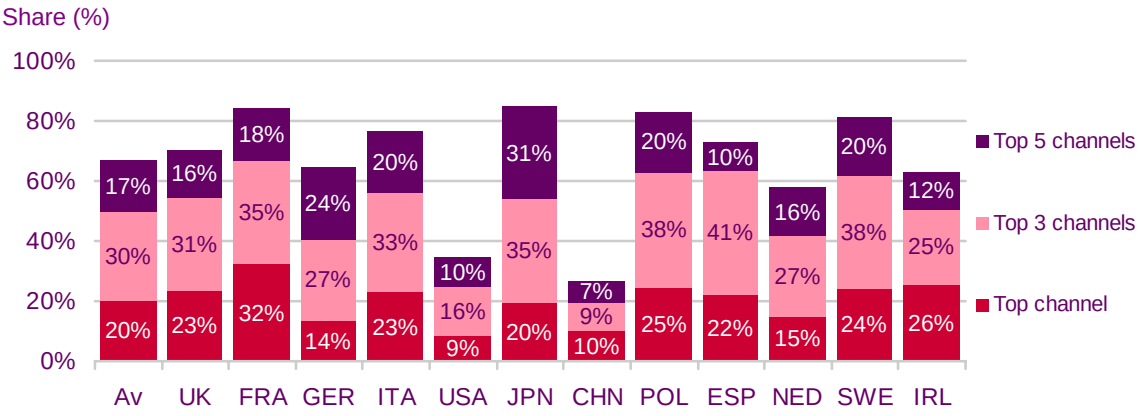
Figure 3.50: The six most popular television channels by country in 2005

UK	FRA	GER	ITA	USA	JPN	CHN	POL	ESP	NED	SWE	IRL
BBC1	TF1	ARD III	RAI1	CBS	Fuji TV	CCTV1	TVP1	Tele5	NED2	SVT1	RTE1
ITV1	France 2	ZDF	Canale 5	NBC	NTV	CCTV8	TVP2	Antena3	RTL4	TV4	TV3
Channel 4	France 3	ARD	Italia 1	ABC	TV Asahi	Hunan Sat	Polsat	TVE1	NED1	SVT2	RTE2
BBC 2	M6	RTL	RAI2	Fox	TBS	CCTV6	TVN	LA2	SBS6	TV3	BBC1
Five	France 5	Sat 1	RAI3	Nick	NHK	CCTV3	TVP3	CanalSur	NED3	Kanal5	UTV
ITV2	Canal+	Pro 7	RETE 4	Nick at Nite	TV Tokyo	Shandong	TVP4	TV3	RTL5	ZTV	Channel 4

Source: One Television Year in the World 2006, Eurodata/Mediametrie
Note: red denotes a public service broadcaster

Figure 3.51 shows that US viewers exhibit the least concentrated patterns of viewing, reflecting the wider choice available to the large proportion of homes that subscribe to pay television.

Figure 3.51: Collective share of the top one, three and five channels



Source: One Television Year in the World 2006, Eurodata/Mediametrie
Note: The pink increment represents the additional share added from the second and third most popular channels. The purple increment represents the additional share added by the fourth and fifth channels.

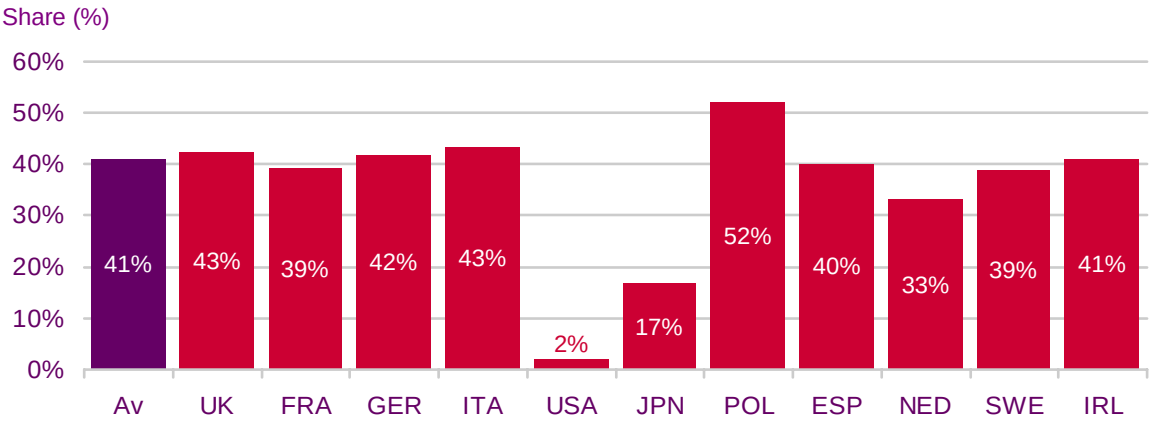
European PSBs' share consistent at c.40% of all viewing

Viewing of PSB channels can be divided into two broad categories:

1. PSB viewing remains popular - An analysis of the consumption of the main PSB channels (i.e. not the digital spin-offs) in Europe reveals a relatively consistent pattern of consumption, with about 40% of all viewing attributable to those channels. This comes despite years of market deregulation, coupled with the more recent entry of pay television operators and further channel expansion following the launch of digital television platforms.

2. PSB viewing modest - The Japanese PSB, NHK, is far less popular than its European counterparts, attracting less than 20% of all viewing. In the US, PBS has never had a substantial share of audience viewing – due in part to the large number of channels available in the majority of US homes.

Figure 3.52: PSB share of viewing



Source: One Television Year in the World 2006, Eurodata/Mediametrie
Note: UK figures include BBC One, BBC Two and Channel 4/S4C

3.3.5 The public's attitudes towards public service broadcasting

NHK recently undertook a worldwide comparative survey of public attitudes towards public service broadcasting in seven countries. Its aim was to understand how public service broadcasting is perceived by viewers and what roles the public believe it should play.

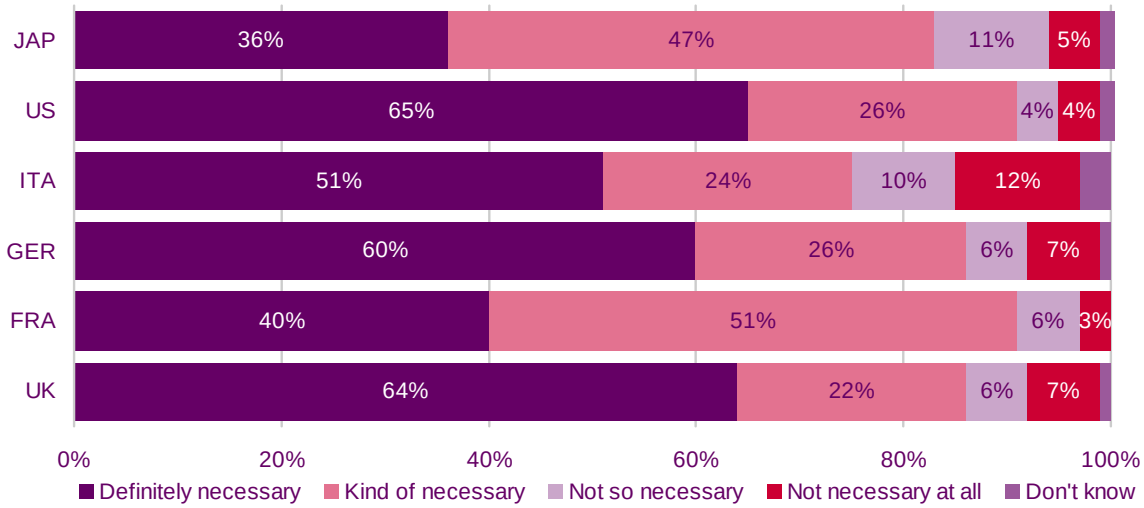
Methodology

- The seven countries studied were the UK, France, Germany, Italy, the US, Japan and Korea (not used in this study).
- The telephone survey work was conducted between 27th February 2006 and 5th March 2006. A sample of 1000 people aged 20 or over were selected using random digit dialling.
- For the purposes of this survey 'public service broadcasting' was taken to mean those broadcasters financed to some extent by public funding such as licence fees and/or subsidies i.e. the BBC, France Televisions, ARD, RAI, PBS and NHK. In the UK survey, Channel 4 was not included in the definition.

Strong support for public service broadcasting across countries

When asked about their support for public service broadcasting, respondents in the US, France, Germany and the UK all showed strong support for public service broadcasting most believing it to be 'definitely' or 'kind of' necessary. Italy stood out as the one country where nearly a quarter of respondents believed it was not so necessary or not at all necessary to have public service broadcasting.

Figure 3.53: Belief in the need for public service broadcasting



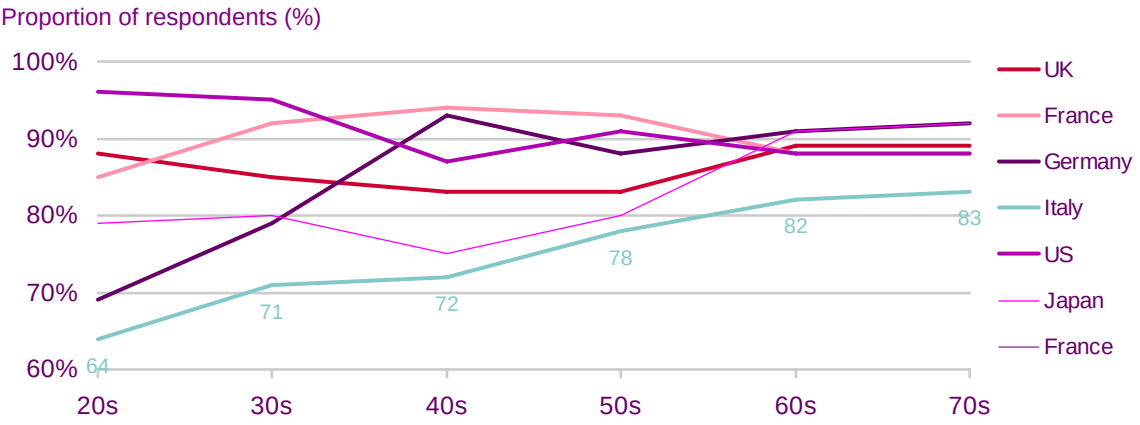
Source: NHK (translation)

But declining support in Italy and Germany among younger people

The survey also examined attitudes towards the need for public service broadcasting by age. It revealed that in many countries there was a broad pattern of increasing regard for public service broadcasting as people get older, but with differences in levels of appreciation by country. It also revealed a greater spread of attitudes at the younger end of the age spectrum, while the beliefs of older people in all countries tended to converge.

Italians of all ages were least likely to believe that public service broadcasting was necessary; the youngest Germans were also most likely to hold a similar view (although regard rose rapidly with age).

Figure 3.54: Proportion of respondents agreeing that public service broadcasting is necessary

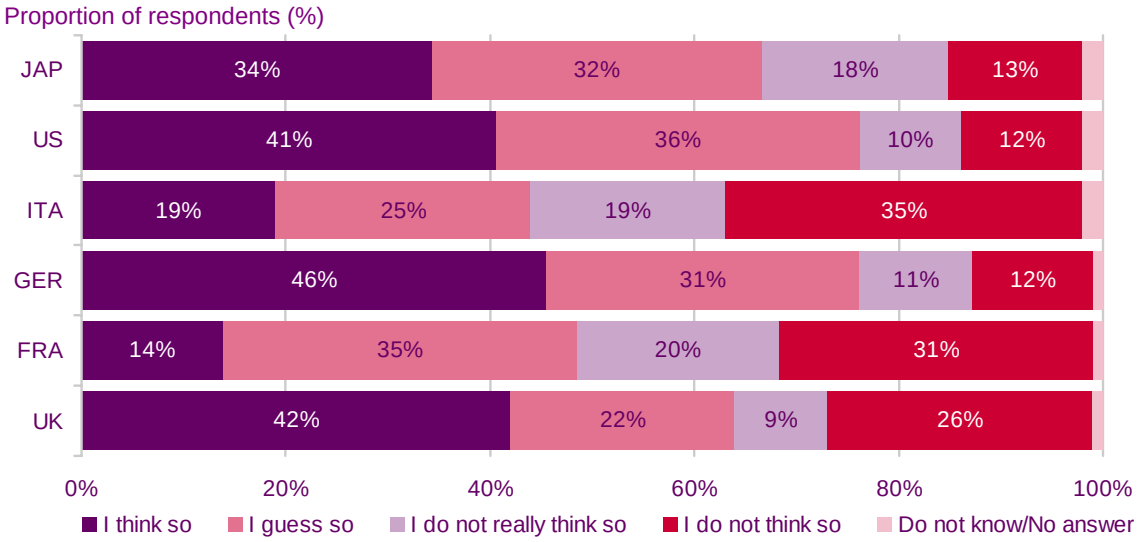


Source: NHK (translation)

Strong support for licence fee in Germany and Japan – less in Italy and France

In response to a question about public funding, patterns of support reflected those relating to support for public service broadcasting generally. Germans and Japanese people were most likely to show some degree of support for public funding, while the French and Italians showed less.

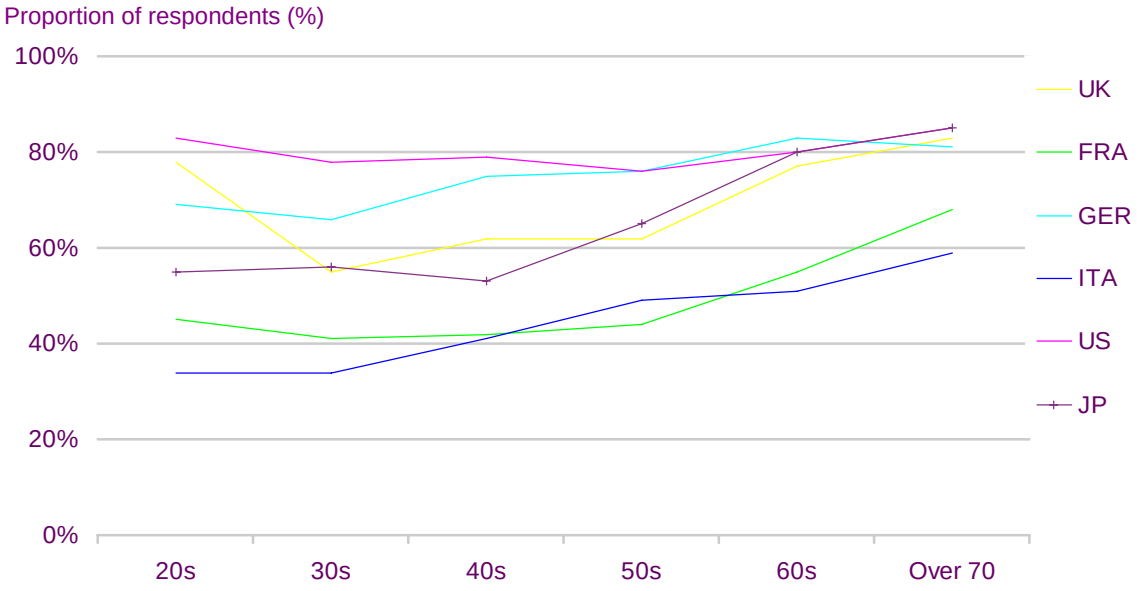
Figure 3.55: Is it worth paying the licence fee?



Source: NHK
Note: In the US there is no licence fee. The question put to US respondents was therefore 'It is important to make a donation to maintain public broadcasting'.

Analysing responses by age revealed that people of all ages in the US generally thought the licence fee was worth paying. People in their twenties in the UK were unique among the sampled countries in showing a higher level of support for public funding than to those ten or twenty years older. In France, Italy and Germany, support for the licence fee rose consistently with the age of the respondent.

Figure 3.56: Those who think it is worth paying the licence fee by age



Source: NHK

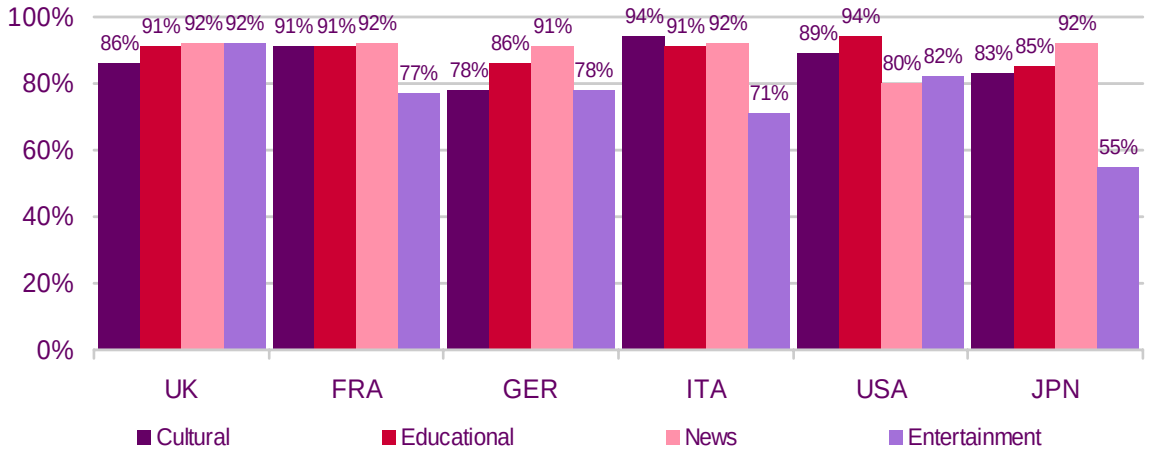
Consistent views on PSB principles and what content they should broadcast

Respondents were given the chance to choose which types of output PSBs should invest in from a list of cultural, educational, news and entertainment content. These genre categories were chosen because they are specified in broadcasting legislation relating to NHK.

A pattern of strong support for the first three categories emerged across all countries, but views were more mixed when it came to entertainment-based output. UK viewers were as likely to agree that entertainment was part of the PSB remit as the other genres. The French, Germans, Italians and Japanese were less likely to agree and the effect was particularly pronounced in Japan.

Figure 3.57: The programme genres expected from a PSB

Proportion of respondents (%)

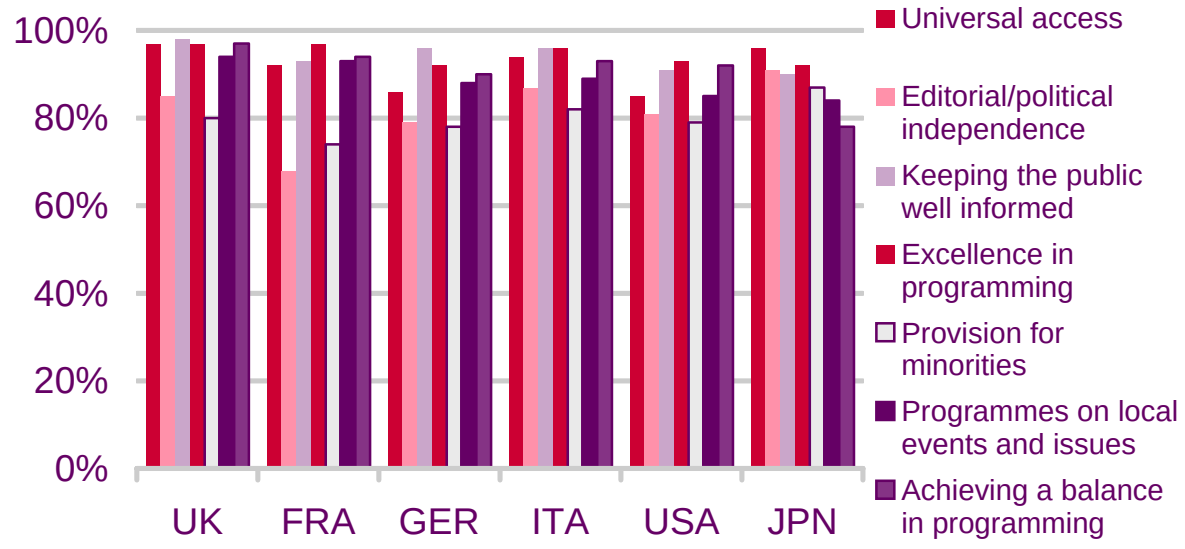


Source: NHK

Turning to the underlying principles of public service broadcasting, broad agreement was found across respondents in all the countries surveyed.

Figure 3.58: The broader requirements of a PSB

Proportion of respondents (%)



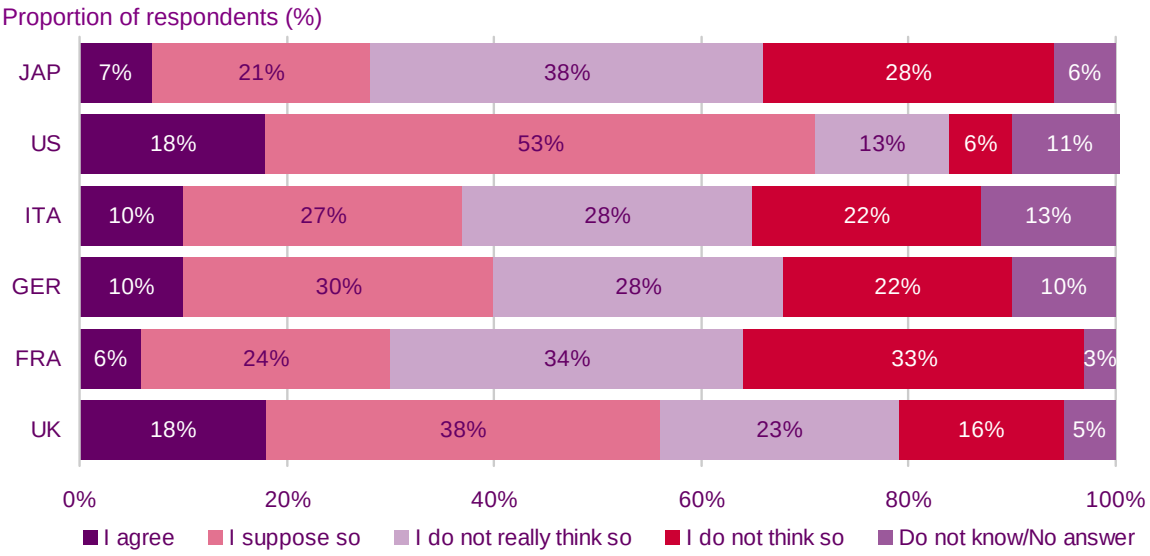
Source: NHK

But many respondents still feel that PSBs are not transparent or accountable

In response to questioning about transparency and accountability, however, respondents in a majority of countries showed significant levels of dissatisfaction - 67% of French respondents, 64% of Japanese and 50% of Germans and Italians. The exceptions to this

pattern were in the UK and the US, where 56% and 71% of respondents respectively showed some belief in the transparency and accountability of the PSB.

Figure 3.59: Level of agreement with the statement that PSBs are transparent



Source: NHK

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The International Communications Market 2006

4 Radio

4.1 Radio market developments

This section examines the characteristics of the radio markets of the UK, France, Germany, Italy, the US, Japan and China. Where data is readily available, information has also been provided on Poland, Spain, the Netherlands, Sweden and the Republic of Ireland.

Figure 4.1: Key radio market indicators

	UK	France	Germany	Italy	US	Japan	China
Total industry revenue	£1.2bn	£1.1bn	£2.2bn	£0.8bn	£11.0bn	£1.9bn	£0.2bn
Revs per capita	£21	£18	£26	£14	£39	£15	£0.13
% public funding	50%	55%	80%	56%	0.8%	53%	0%
Number of stations	384	437	327	118	8903	300	273
Listening per head per day	195 mins	174 mins	171 mins	125 mins	167 mins	122 mins	89 mins
Four top station share	41%	35%	51%	28%	n/a	n/a	n/a

4.1.1 Digital radio has a worldwide presence

Digital radio services offer the advantages of interference-free audio and a more efficient use of spectrum. In ten years, digital radio standards and platforms have been developed and deployed worldwide, and some form of digital radio is now available in most of the countries in this study.

Five digital radio platforms available

The first digital radio platform was launched in 1995 in the UK, using DAB technology. This was followed by satellite-based services in the US in the late 1990s and then HD ('HD' stands for 'Hybrid Digital', not 'High Definition'), a terrestrial-based high quality audio standard which gained approval in 2002. Digital Radio Mondiale (DRM) followed in Geneva in 2003 and, separately, the Japanese opted for a single digital standard for television and radio broadcasts (ISDB-T; which is not considered further in this analysis).

These standards can be distinguished by their technical characteristics and the degree to which they can be freely used by broadcasters:

- **DAB** was developed by a pan-European research and development body (EUREKA). An open standard operating on a 'single frequency' principle, it allows a larger number of national DAB stations to be broadcast within a defined spectrum band, compared to FM encoding.

- **HD Radio** was developed by iBiquity as a proprietary digital radio standard for the US market. DAB development has been prevented by the US military's use of the spectrum allocated to DAB;

- **DRM**, sometimes described as "digital AM" developed as an open standard. Using spectrum currently allocated to AM transmissions, stations coded in DRM are capable of travelling long distances; they can also be transmitted on the same frequency as a standard analogue AM radio transmission; and

- **Satellite radio** services have the advantage of a large 'footprint' that allows any individual sight of the transmitting satellite to receive radio services delivered from it. In the US, terrestrial 'repeaters' ensure that satellite radio is available in places that are not in view of the satellite (e.g. under bridges).

Figure 4.2: The main digital radio platforms

	DAB	Satellite radio	HD Radio	DRM
Distribution technology	Terrestrial	Satellite and Terrestrial relay	Terrestrial	Terrestrial
Spectrum use	174MHz - 240MHz 1452MHz - 1492MHz	2320 - 2333 MHz	AM and FM frequency bands	AM frequency bands
First available	1995	1998	2002	2003
Current availability	UK, France, Germany, Italy, China, Japan	US, Africa, South East Asia	US	US, China, Europe, North Africa
Business model	Advertiser-funded	Subscription and advertising revenue	Advertiser-funded	Advertiser-funded
Lowest set cost	£30	£30	c.£100	c.£600
Number of stations broadcasting	In excess of 400	100 stations, 40 ad free (Sirrius)	1015 nationwide in the US	115

Source: Ofcom research

UK leads the world in the roll-out of digital radio

The speed at which these platforms and services have been deployed has varied from country to country, and regulatory intervention has been commonplace – driven by the need for orderly allocation of spectrum:

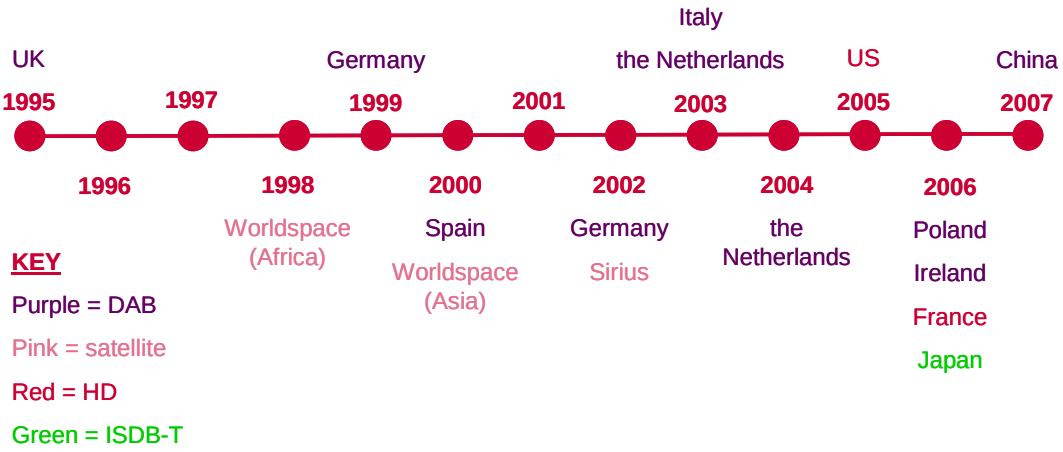
- The UK's DAB launch was followed four years later by Germany, but other European countries took some time before choosing to roll-out DAB infrastructure. France has yet to launch DAB, although it has piloted the technology in Paris and made a commitment to a full launch at the Regional Radio Conference in 2006. Not all countries have found success with DAB, however. The Swedish government suspended its investment in the roll-out of DAB transmission infrastructure following complaints of low receiver availability;

- Satellite radio went live in the US in the late 1990s, although organisations had been set up to exploit the technology in the first part of the decade. The US government issued invitations to tender for two satellite digital audio radio service licences in 1997, which were won by Sirius Radio and XM;

- HD Radio is a US standard for terrestrial radio broadcasts. It was approved for use by the FCC in 2002, and allows analogue radio broadcasters to simultaneously carry analogue and digital versions of their service on a single frequency; and

- DRM transmissions first began in 2003 and by September of that year, 26 stations were on air, including the *BBC World Service*, *China International Radio*, *Radio France* and *Voice of Russia*. In the UK, several commercial broadcasters undertook a DRM pilot in mid-2005, with services that included *Virgin Classic Rock*, *Classic Gold Digital*, *Asian Sound Radio* and *Premier Christian Radio*.

Figure 4.3: Timeline of digital radio platform launches worldwide



Source: Ofcom research

Coalitions have proved popular in the development of digital radio services

With most digital standards (open or proprietary) there has been a coalition-based approach to development. Service providers, retailers and device manufacturers coming together in a joint effort to promote the service, for example:

- The World DAB forum consists of 120 members from 40 countries including Sony, Microsoft, LG, Channel 4, regulatory agencies and some government departments;
- The DRM consortium was founded in 1998 and now includes 90 members from 30 countries, including NHK, Panasonic, RAI, Texas Instruments, the EBU and Radio France including; and
- The HD Digital Radio Alliance in the US is a consortium of broadcasters including ABC Radio Networks, CBS Radio and Clear Channel. Its aim is to raise the profile of HD Radio among consumers.

Satellite radio has shown that subscription services can work

The satellite services available in the US – Sirius and XM – overturned the decades-old free-to-listen radio business model by charging a subscription for access. Some of their radio channels are, as a result, able to run without adverts, a fact that is heavily promoted by the service providers. Far from remaining a niche service, the installation of Sirius radios in some makes of car has enabled satellite radio to break into the US mainstream. By July 2006, Sirius and XM had attracted a total of about 12m subscribers, and the two companies together reported revenue of £444m in their latest annual results. WorldSpace has launched a similar subscription-based service in Africa, South East Asia and parts of Europe which has 115’000 subscribers and is planning to launch in the US.

Figure 4.4: A comparison of the three radio satellite operators

	Sirius Satellite Radio	XM Satellite Radio	World Space
Founded	1990 as CD Radio	1992 as American Mobile Radio Corp	1990
Service	125 channels	150 channels	220 channels (not all available everywhere)
Availability	US	US	130 countries in South East Asia, Africa and parts of Europe
Channels	Includes 68 Music and 55 sports	Includes 73 music, 49 news, 21 regional traffic and weather and 23 sports	At least 33 music, 15 news, 3 talk, 5 spiritual, 3 sport
Subscribers	4.7m (July 2006)	6.9m (July 2006)	115,000 (2005 Annual Report)
Entry-level equipment price	$50	$50	$70
Monthly subscription	$12.95	$12.95	$5 - $10
Other service information	• Some stations are entirely advertising free • Offers exclusive coverage of some major US sports • Some celebrity presenters (e.g. Howard Stern) • Fitted in some cars as standard	• XM uses an antenna in receivers to transmit services to ipod-sized battery operated devices • XM music downloads available via Napster, and some services available through DirecTV • Also used by some US airlines	• Service launch in US planned • Not all channels available to all • Cost of subscription varies by country • Stations available in 17 languages • XM is an investor • 10 models of receiver available

Source: Ofcom research

Different standards compete in some countries, but complement in others

The degree to which standards have competed with one another has varied by country. The growing popularity of satellite radio in the US is believed to have encouraged terrestrial radio broadcasters to adopt HD Radio as a means of offering services of a comparable audio quality. By contrast, DAB and DRM have been characterised as natural complements to one another – so much so that hybrid radio receivers are now in development and will be able to decode DAB and DRM alongside AM and FM.

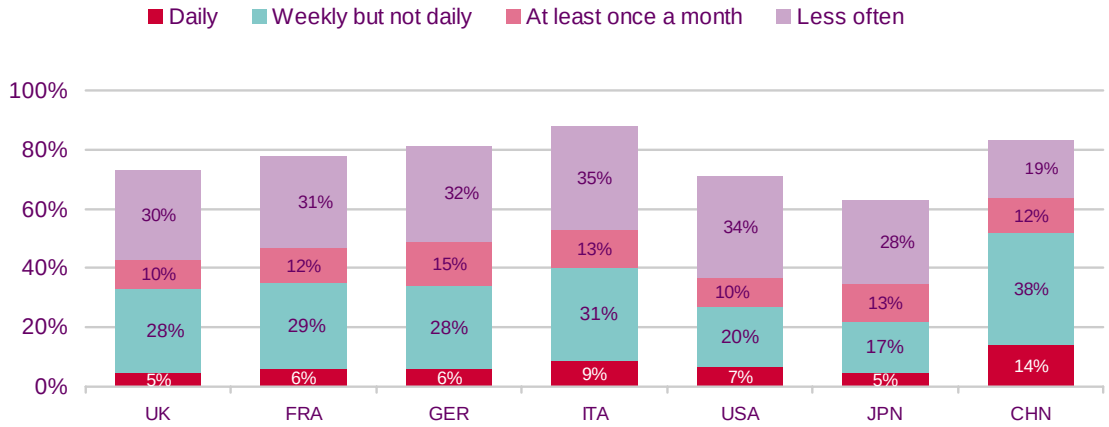
4.1.2 Broadband users not substituting listening for surfing

As part of this study, Ofcom commissioned an online quantitative survey of broadband users in the seven main countries under consideration (UK, France, Germany, Italy, US, Japan, China). Part of the survey looked at the relationship between new media and established media consumption habits.

Results of the survey showed that in all countries at least six in ten respondents with broadband at home have at some point listened to a radio station over the internet – Italy had the largest proportion of respondents who said they had done so (88% having ever listened) and Japan the smallest proportion (63%). Italy also had the most intensive internet radio consumers, with 9% of broadband users reporting daily listening. Respondents in Japan and the UK were least likely to consume internet-based radio services on a daily basis, with just 5% of those surveyed doing so.

Figure 4.5: Internet radio consumption patterns

Proportion of adults with broadband at home (%)

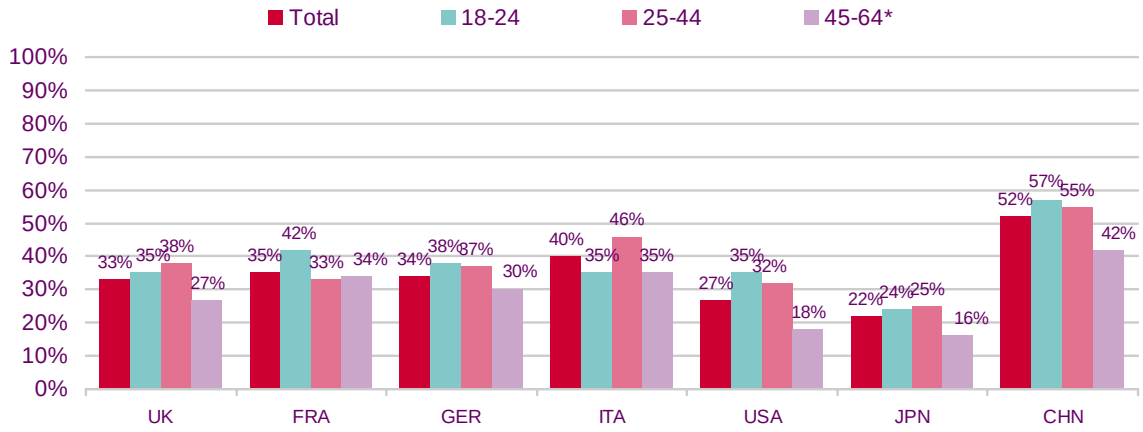


Source: Ofcom research, fieldwork carried out by Synovate in October 2006

Figure 4.6 shows those listening to radio online on at least a weekly basis by age. Across all countries, respondents in the oldest age group of 45-64 listen to radio online less than the total proportion of all respondents doing so (although not significantly so for all countries). The degree of 'drop off' is greatest among respondents in the US (18% vs. 27%) and least pronounced in France (34% vs. 35%).

Figure 4.6: Weekly listening to online radio stations by age

Proportion of adults with broadband at home (%)



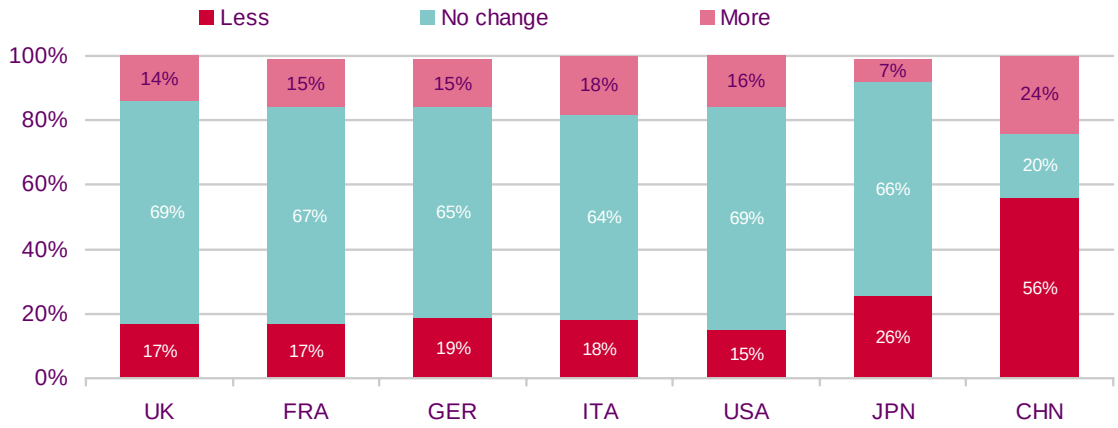
Source: Ofcom research, fieldwork carried out by Synovate in October 2006

The time that broadband users spend online The respondents in the survey were asked about changes in their media consumption since starting to use the internet. Internet use does not appear to have had a substantial impact on offline radio consumption habits when compared of its impact on other media platforms. This may be connected to the ambient nature of radio, which allows listeners to multi-task. Around one in five respondents said that they listened to the radio offline less, and just under one in five said that they listened to it more since using the internet, in all countries except Japan. In Japan, one in four respondents say they have decreased their offline listening, and less than one in ten say that they have increased it.

This result is perhaps consistent with lower overall levels of radio listening in Japan, alongside substantially higher levels of television viewing at breakfast, which is traditionally radio's most popular period of listening.

Figure 4.7: Change in offline radio since first using internet

Proportion of adults with broadband at home (%)

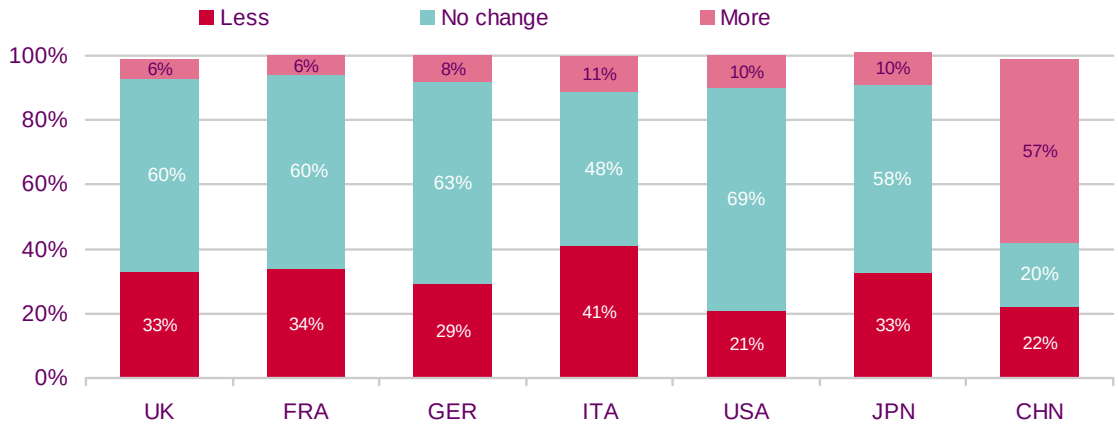


Source: Ofcom research, fieldwork carried out by Synovate in October 2006

These results suggest that, even without online distribution strategies, the pattern of increasing internet consumption does not necessarily imply a decline in listening to traditional analogue stations. Add to this the fact that a large number of radio stations are now available online, and the benefits of the internet towards radio networks could well offset any threats posed by substitution. This contrasts with offline television consumption which suffers from reduced consumption as a result of internet access.

Figure 4.8: Impact of internet access on offline television viewing

Proportion of adults with broadband at home (%)



Source: Ofcom research, fieldwork carried out by Synovate in October 2006

4.2 The radio industry

4.2.1 By 1930, radio markets were well established in many countries

The earliest audio services were launched in the late nineteenth century delivering music news-based content to telephone handsets.

Broadcast-based radio services first launched in the 1920s and by the 1930s had become well established in the more developed economies. As with television, radio industries in a majority of the countries examined in this study were set up with a public service ethos. These broadcasters were often state-owned and had a mission to promote cultural and educational development.

The exception was the US, where from the outset, the industry was built on an advertiser-funded model. In the early 1920s, the UK-owned firm Marconi disposed of its US-based radio operators to the Radio Corporation of America (RCA). 1926 saw the formation of the National Broadcasting Corporation from the radio assets of AT&T, creating a broadcasting brand that lasts to this day.

Advertising-funded radio broadcasting took longer to arrive in many other countries (for example in the 1970s in Italy and the UK), often following (though sometimes accompanying) the deregulation of the national television market. The first commercial operators were mostly local, with national commercial radio only being licensed in the 1980s and 1990s.

The last ten years have seen digital distribution infrastructure becoming widely available:

- Live and on-demand radio services launched on the internet;
- DAB networks established in many countries;
- Satellite-based digital radio services launched in the US and Europe;
- HD radio launched in the US; and
- DRM developed as an alternative broadcast-based digital radio standard.

By 2006, DAB services were available in most of the countries under consideration in this study; satellite radio was well established in the US and the internet was being used by a wide variety of radio station operators to widen the reach of their services and make content available to listeners in new formats.

4.2.2 Global radio industries reach £25bn in 2005

Global radio industry revenues reached £25bn in 2005, and grew at an average annual rate of 4.0% p.a. over the period 2001 – 2005. Commercial revenue took the larger portion of that total, accounting for 75% or £18bn in 2005. Public funding accounted for the remaining 25% or £6bn. Commercial sources of revenue also showed the greatest capacity for growth in that period, having expanded at an average annual rate of 4.5% p.a. while public funding increased at just 2.5% p.a.

Figure 4.9: Global radio industry revenues, 2001 - 2005

Source: *PricewaterhouseCoopers Global Entertainmtent and Media Outlook 2006-2010*

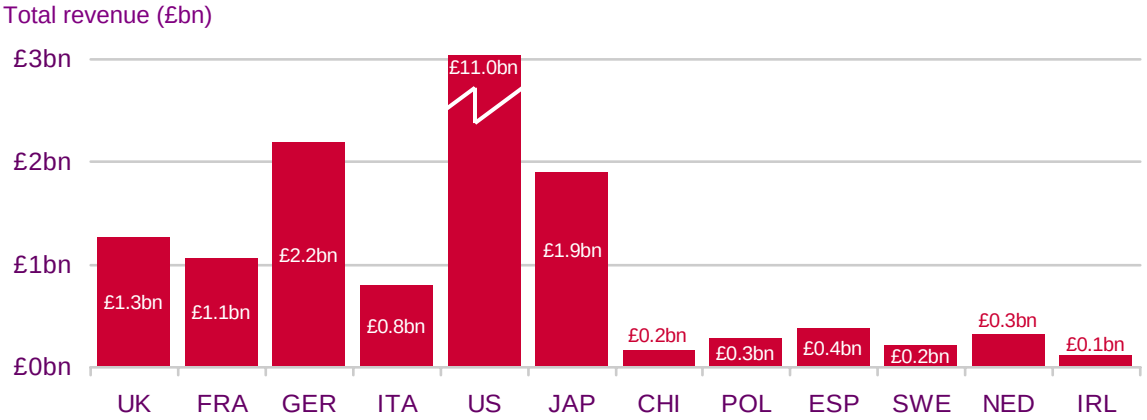
4.2.3 US revenues the largest at £11bn; China, Poland and Ireland growing fast

The US radio market is the largest in the world in revenue terms, generating income in the region of £11bn in 2005.

Ninety five per cent of this is drawn from advertising with merely 5% from satellite subscription-based radio services such as Sirius and XM. Less than 0.5% of the total is accounted for by public funding, with National Public Radio (NPR) receiving £96m in the last available accounting period.

Of the remaining countries in this study the German radio industry ranked second by revenue in 2005 with £2.2bn, followed by Japan with £1.9bn. The UK came in fourth place with £1.2bn.

Figure 4.10: Radio industry revenue, 2005

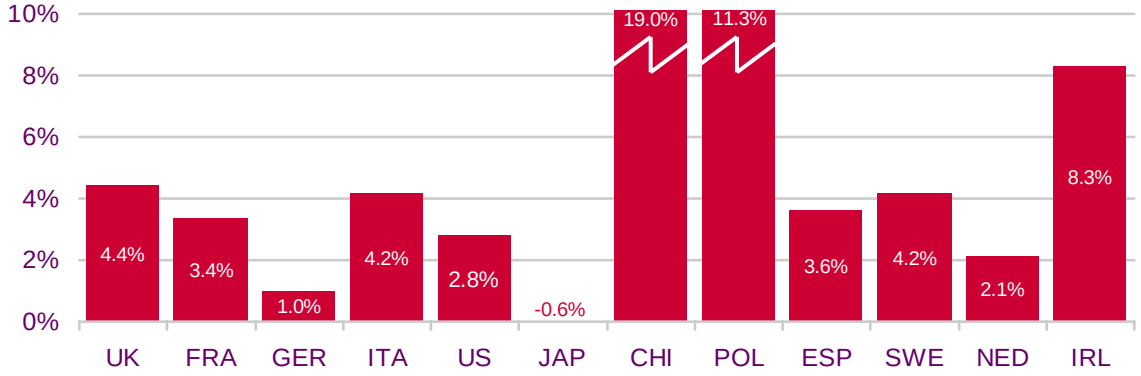


Source: *PricewaterhouseCoopers Global Entertainmtent and Media Outlook 2006-2010*

The radio industries in China, Poland and Ireland have all enjoyed double digit or near double digit growth over the period 2001 – 2005. In China and Poland this has been driven by strong advertising revenue growth, while in Ireland, both advertising revenue and public funding have shown significant growth over the period.

Figure 4.11: Radio industry revenue growth, 2001 - 2005

Total revenue (£bn)



Source: *PricewaterhouseCoopers Global Entertainmtent and Media Outlook 2006-2010*

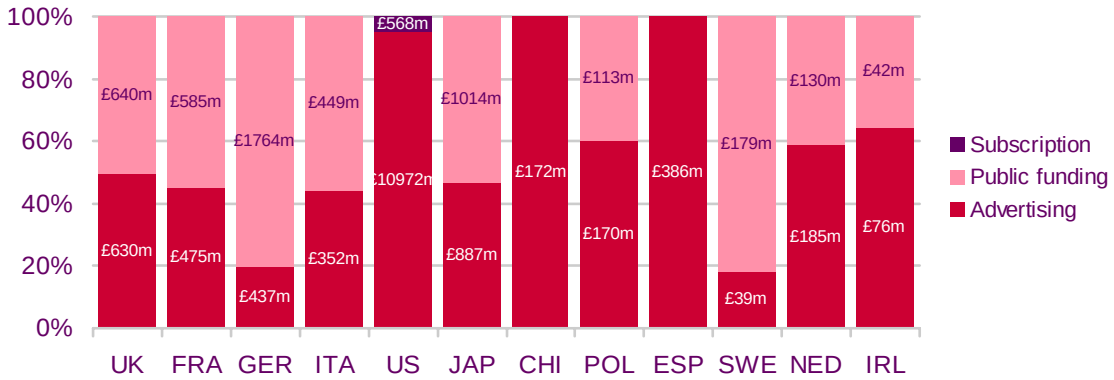
The Swedish and German radio markets are primarily publicly funded

The model of radio industry funding varies from country-to-country. The Chinese and Spanish radio industries are funded entirely from advertising. The US market is mainly supported by advertising revenue, although a small but fast-growing proportion is generated from subscription radio.

At the opposite end of the spectrum, the Swedish and German industries are heavily funded from the public purse. France, Japan and Italy are all (roughly) equally funded from advertising and public funds. So is the UK, but it is worth noting that the UK PSB radio market tends to be defined more broadly than in other countries – including publicly funded operators, advertiser-funded radio groups, and community radio broadcasters. For the purposes of the remaining analysis, however, PSB radio is defined to mean those groups in receipt of public funding.

Figure 4.12: Proportion of radio industry revenue, by source

Proportion of total revenue (%)

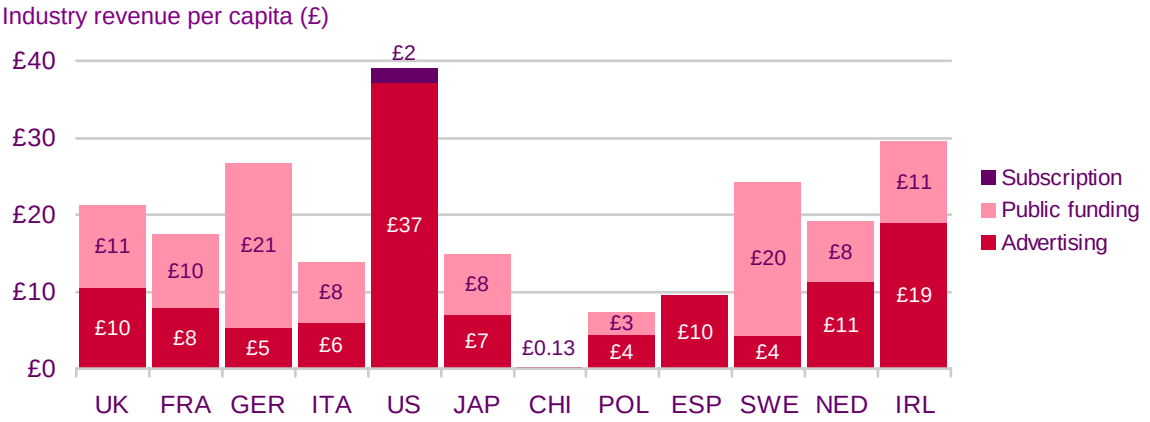


Source: *PricewaterhouseCoopers Global Entertainmtent and Media Outlook 2006-2010*

The US industry is also the largest on a per capita basis

On a per capita basis, the US still ranks as number one, generating £39 per head of population. Perhaps surprisingly, Ireland comes second at £26 per head (perhaps explained in part by the fact that ROI commercial radio stations can be received by listeners in Northern Ireland). At £26 per head, Germany ranks third while Sweden comes in at £24.

Figure 4.13: Radio industry revenues per capita

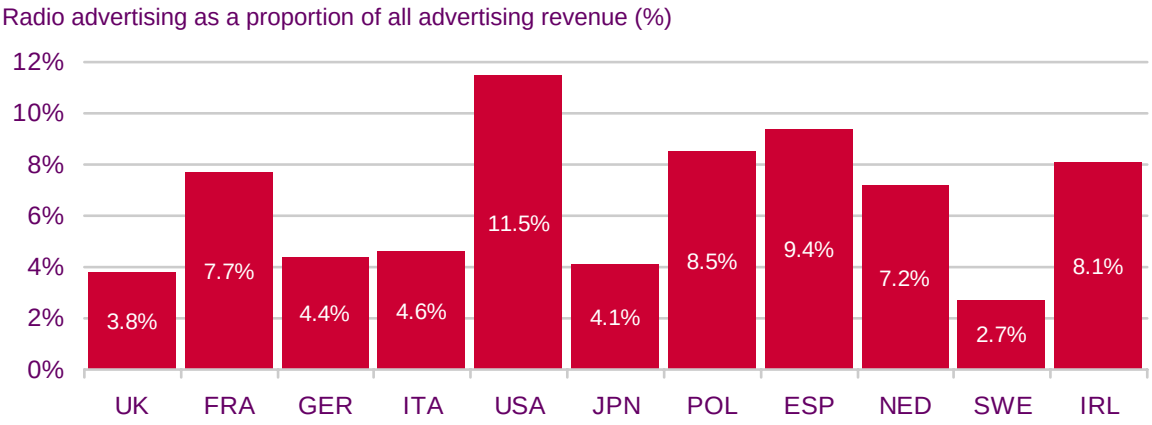


Source: PricewaterhouseCoopers Global Entertainmtent and Media Outlook 2006-2010 and Ofcom analysis

4.2.4 Radio accounts for a significant proportion of total US ad revenue

The role of radio advertising varies substantially by country. In the US, radio makes up a significant proportion of all advertising revenue, accounting for 12% of total spend. In other territories, radio advertising falls into two main clusters: France, the Republic of Ireland, the Netherlands and Poland fall in the range 6%-9%, while the UK, Japan, Germany and Italy come in the range 2% - 4% of the total advertising spend.

Figure 4.14: Radio advertising as a proportion of total advertising spend 2005



Source: World Advertising Trends 2006, World Advertising Research Centre Ltd

Many markets occupied by a small number of large radio groups

Across most of the countries in this study, the PSB radio operator still takes a significant share of industry revenue. Many of these radio providers are now related to television networks – providing powerful cross-promotional opportunities. Such operators include RAI in Italy, NHK in Japan, ARD in Germany and the BBC in the UK. Radio France, which operates independently of France Télévisions, is the exception to this pattern.

Among commercial radio operators, Clear Channel in the US has grown rapidly to become the largest radio group in the world (as measured both by the number of stations and by revenue), due to the US government's progressive deregulation of the number of licences that could be held by a single operator in any one market. The company held 43 licences in

1995 but following the most recent deregulatory steps, taken in the *Telecommunications Act 1996*, it was able to push ahead with an ambitious acquisitions strategy, resulting in its radio portfolio growing to over 1,200 stations by 2006.

The German commercial radio market, by contrast, is characterised by a set of cross-group shareholdings in the country's biggest radio stations – so that, for example, RTL and Axel Springer each have minority shareholdings in Antenne Bayern and Radio Hamburg.

Figure 4.15: Major radio operators with example stations, by country

Country	Operator/investor	Status	Example stations
UK	BBC	Public	BBC Radio 1-5Live, 1Xtra, 6Music, BBC7, 3 x nations, 42 local radio
	GCap	Private	Classic FM, XFM, Choice FM, Capital Gold
	Emap	Private	Magic. Kiss, Kerrang, Heat, The Hits, Mojo, Smash Hits, Q
	Chrysalis	Private	Galaxy, Heart, LBC, Arrow
France	Radio France	Public	France Inter, France Bleu, France Info, France Musiques, France Culture
	RTL Group	Private	RTL, Fun Radio, RTL2
	NRJ Group	Private	Chérie FM, Nostalgie, NRJ, Rire and Chansons
	Lagardère Active	Private	Europe 1, Europe 2, RFM
Germany	ARD	Public	NDR 1, Bayern 1, Eins Live, WDR 4, MDR 1, SWR 4, hr4
	RTL	Private	Radio NRW, Antenne Bayern, Radio Hamburg, Radio Regenbogen
	Axel Springer	Private	Radio NRW, Antenne Bayern, Radio Hamburg, Radio RSH
	Hubert Burda Media Holding	Private	Antenne Bayern, Hit-Radio FFH, Hit-Radio Antenne
Italy	RAI	Public	Radio Uno, Radio Due, Radio Tre, Isoradio,Nottumo Italiano
	Eruppo Editoriale L'Espresso	Private	Radio DeeJay, Radio Capital, m2o
	Finelco Holding	Private	RMC Radio, Montecarlo, Radio 105 Network
	Suraci Group	Private	RTL 102.5 HIT Radio
US	Clear Channel	Private	Owns 1200 stations
	Cumulus radio	Private	Owns 266 stations
	CBS radio	Private	Owns 180 stations
	Cox	Private	Owns 79 stations
	NPR	Public	Supplies programming to 800 not for profit radio stations
Japan	NHK	Public	NHK Radio 1 (AM), NHK Radio 2 (AM), NHK-FM
	Japan FM Network	Private	Tokyo FM Broadcasting
	Japan Radio Network	Private	TBS Radio (AM)
	National Radio Network	Private	Nippon Cultural Broadcasting (AM), Nippon Broadcasting System (AM)

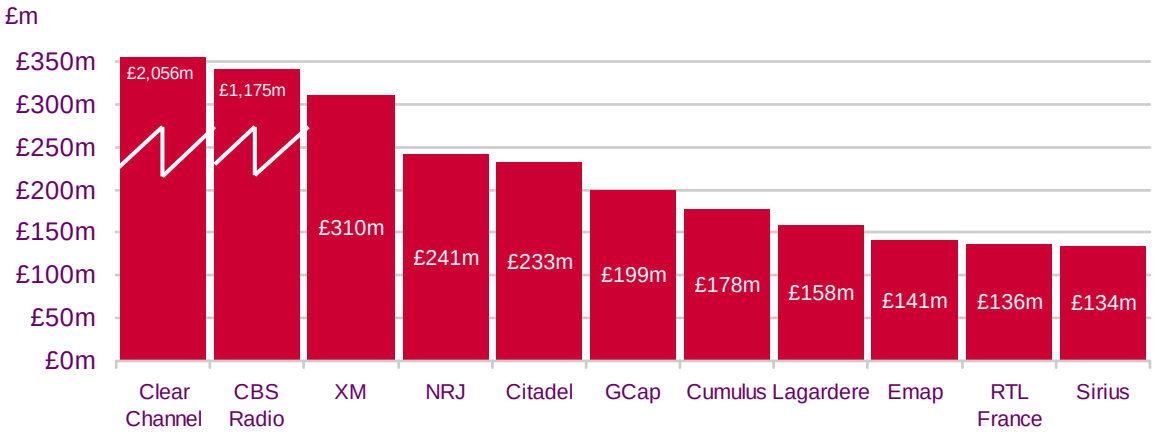
Source: Ofcom research

French and UK radio groups generate largest revenues in Europe

Clear Channel reported revenues of £2,056m in 2005, making it the largest radio group in the world, while CBS Radio came second in that year with revenues of £1.bn.

The strength of the satellite radio market in the US is illustrated by XM's third place in this ranking of selected commercial radio groups, with reported annual revenue of £310m. NRJ is the largest European radio group with reported revenues of £241m in 2006, closely followed by Cidadel in the US (233m) and GCap in the UK (199m).

Figure 4.16: Radio group revenues for the latest financial year



Source: Latest annual reports
Notes: Figures taken from latest available annual reports. Wherever possible, radio broadcasting-related revenue has been separated from other sources of income; however it is possible that non radio-broadcasting revenue remains in these figures quoted, which would tend to overstate total revenue. Comparisons are therefore for indicative purposes only.

Some operators have expanded internationally

The international export of radio formats, in the sense that this occurs with television formats, is not widespread. This may be owing to (i) the dominance of music in many radio station schedules (ii) the personality-driven nature of the speech that often surrounds the music and (iii) the fact that speech output is often closely tied to a country's language and culture.

That said, the US has often been credited with the development of new creative approaches and techniques in radio broadcasting – for example the growth in popularity of the 'zoo' format (where a main radio presenter is joined by a gang of friends who actively contribute to the talk-based elements of a radio show) which can trace its history back to US morning radio shows in the 1980s. Furthermore, the growth of so-called 'shock-jocks' (exemplified by Howard Stern) came about as a result of the abolition in the US of the fairness doctrine that required balance and impartiality to be maintained in broadcasts.

While the nature of the radio medium may not lend itself well to format exploitation in the way that television programmes do, some of the larger radio groups have undertaken a programme of international investment and expansion:

- Clear Channel now owns or has an equity stake in 240 radio stations in Australia, New Zealand and Mexico;
- NRG, founded in France, has focused its attentions on European markets, and now has operations as far afield as Norway and Switzerland; and
- RTL in Europe has a long history of pan-European radio broadcasting from its original base in Luxembourg.

Figure 4.17: Location of overseas radio stations owned by main radio groups

Country	Operator/investor	International interests
UK	Emap	Republic of Ireland
France	NRJ	Germany, Austria, Switzerland, Belgium, Sweden, Finland, Norway, Denmark
Luxembourg	RTL	France, The Netherlands, Belgium, Luxembourg, Spain, Portugal
US	Clear channel	New Zealand, Mexico, Norway, and Australia.

Source: Ofcom research

PSB radio stations carry a diverse set of genres

An analysis of PSB radio output by country and genre reveals a common commitment to genre diversity, with unique characteristics by country.

Radio output genre analysis - explanation

The European Broadcasting Union (EBU) collects annual data on PSB output by radio station and by genre. With the permission of those broadcasters that had already lodged their 2005 data with the EBU, a single set of genre hours was created for each country by aggregating output data from each PSB radio station in that country.

The BBC had not, at the time of writing, lodged its output data with the EBU, and consequently, its most recent annual report was used to provide proxies for the genre categories used by the EBU. These proxies are imperfect in three regards:

1. The hours of 'music' broadcast by BBC Radio 1, 1Xtra, Radio 2 and 6 Music were all included in 'modern music'.

3. 'Other music' was used as the category for the Asian Network

4. 'Science and education' was used for BBC Radio's arts, factual and schools output

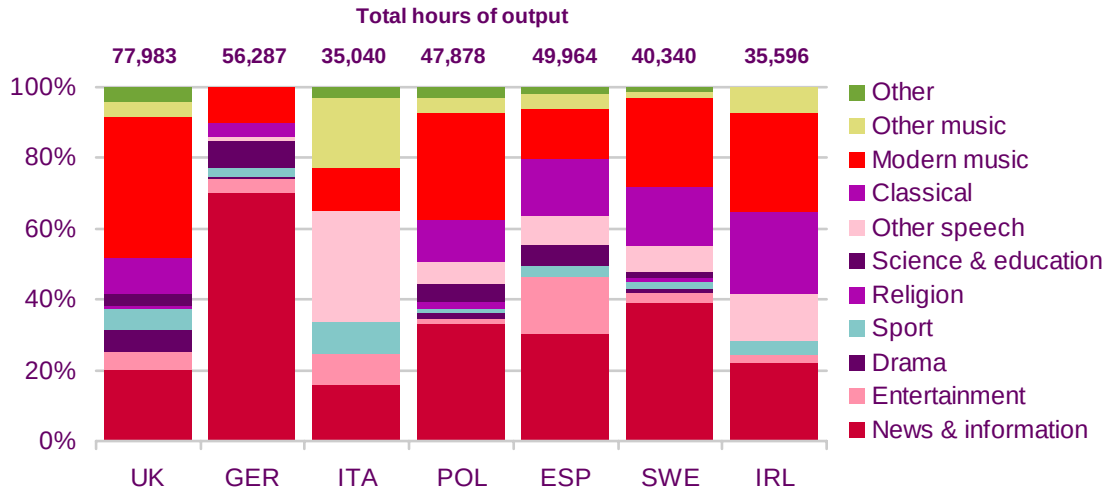
News, weather and current affairs are a strong feature of all PSB radio schedules; ARD in Germany placed particular emphasis on this category with nearly 70% of all hours devoted to it. RAI's radio networks focus least on news and information, concentrating instead on other speech output (for instance phone-ins, pundit-based shows etc).

Classical music is a feature of the PSB radio schedules in a number of countries – notably Spain and Ireland, with some classical output in Sweden, Poland and the UK. Modern music (which includes the EBU definitions of rock, hip-hop and middle-of-the-road music) is also a popular choice with most PSBs, with the exception of Italy and Germany.

The UK's PSB radio market distinguishes itself by devoting a small but notable proportion of its output to drama – Poland is the only other country where a PSB reported any material level of drama output at all.

Figure 4.18: PSB output by genre

Proportion of output (%)



Source: Relevant country operators and Ofcom analysis
Note: EBU music definitions of 'middle of the road' and 'hip hop and rock' were consolidated into 'modern music'.

4.3 The radio listener

4.3.1 Most countries now broadcast radio over all the major platforms

The radio transmission standards familiar in the UK are widely available across the world, although the timing of their introduction and the pace of roll-out has varied by country.

AM was the transmission standard on which most inaugural radio transmissions were based in the 1920s. Experimentation with FM began in the US in 1937, although full FM broadcasts did not become commercially available until 1945, and the market only really began to develop in the 1950s, when the BBC also began FM broadcasts. Other countries adopted FM in the years that followed.

Today, the full FM broadcast band is set at 87.5MHz to 108.5MHz, with the most notable exception being Japan where the band is narrower (76.0MHz to 90MHz).

Analogue radio standards

There are two main analogue radio standards:

AM Radio (Amplitude Modulation) – A method of radio transmission in which information is encoded through variations in the amplitude of a carrier wave. Depending on the carrier frequency the bands used for AM radio transmission are referred to as Short Wave (SW), Medium Wave (MW) or Long Wave (LW). While lower frequency signals (as used in AM compared to FM) can travel further, AM is very susceptible to interference and has poor quality compared to FM.

FM Radio (Frequency Modulation) – In FM radio transmission information is encoded through variations in the frequency of a carrier wave. This method results in higher-fidelity sound than in AM (making it more suitable for music) and higher tolerance to interference. FM radio operates in the VHF band between 87.5MHz and 108MHz which limits its range when compared to AM radio.

DAB roll-outs worldwide have ranged from successful national deployments, through more localised experimentation, to the cancellation of roll-out plans in some countries:

- Germany and the UK currently rank as two of the highest countries for DAB coverage. Germany first began DAB roll-out in April 1999 and about 85% of the population can now receive a DAB signal. The UK made its first DAB broadcasts in London in September 1995 and in 1997 a national roll-out plan was announced. Around three and a half million UK homes (11%) own at least one DAB set. The range of stations available is set to expand now that Ofcom has announced its terms to licence a second national multiplex.

- China's Beijing and Guandong provinces can now receive DAB services, covering a population of 27m. It has been reported by the World DAB Forum that orders for 500,000 receivers were recently placed and that China has made plans to roll out DAB on a wider scale in time for the 2008 Beijing Olympics.

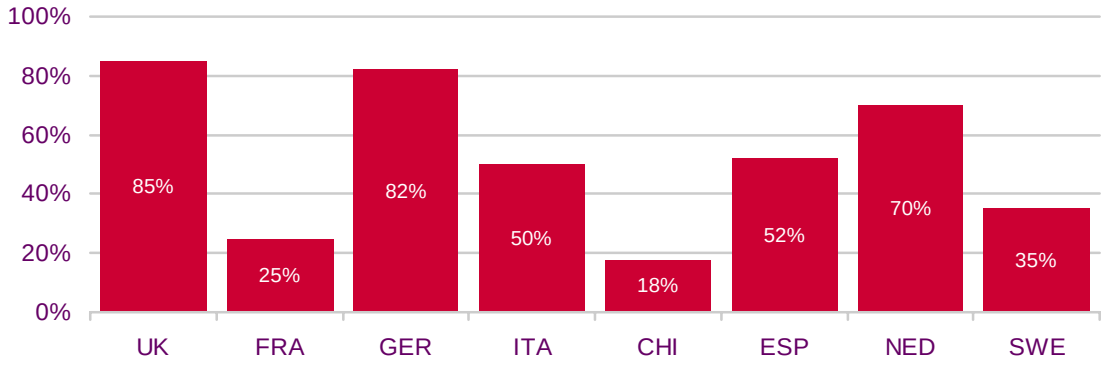
- A six-month DAB pilot was run in Paris in 2006, while in Ireland national broadcaster RTE undertook a similar trial in the first half of 2006, with two transmitters carrying six DAB channels.

- In Poland the national public broadcaster Polskie Radio broadcasts five services out of Warsaw. Poland's Office of Telecommunications and Post Regulation (URTiP) is now in the process of planning a digital switchover programme for television, which would provide space for additional DAB services.

- DAB in the Netherlands and Sweden has received a more mixed reception, with roll-out and investment in both countries having recently been suspended to assess the opportunities offered by alternative technologies. In the meantime, however, Stockholm and a number of other Swedish cities can still receive DAB transmissions.

Figure 4.19: DAB coverage by country

Percentage of population covered



Source: World DAB Forum and Digital Radio 2006, © Eureca Research, UK

Digital radio standards

In digital radio, voice or music is digitised and compressed before transmission. This allows for more efficient use of the available spectrum, allowing more channels to be carried per frequency unit and higher tolerance to interference and greater potential for new services.

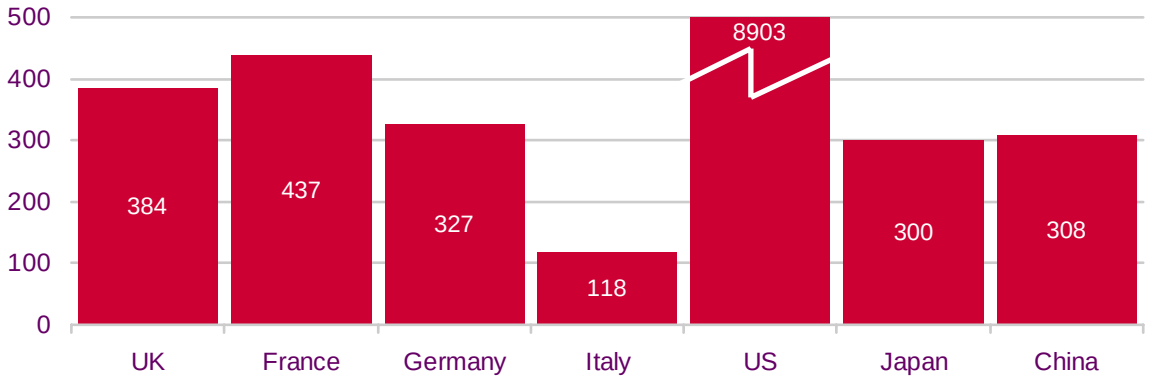
DAB (Digital Audio Broadcasting) - In Europe, DAB radio is based on the Eureka147 standard that employs MPEG2 audio coding. Individual radio streams are combined to form multiplexes transmitted over single frequency bands. The most popular frequency bands for DAB are Band III and L-Band.

DRM (Digital Radio Mondiale) – A digital audio broadcasting standard based on MPEG-4 encoding (more efficient than MPEG2). It is designed to be used in the AM (MW) band, providing more capacity and higher quality (compared to FM) while using the same AM transmitters, thus minimising new investment.

Broadcast radio stations per country typically in the low hundreds

Most countries in Western Europe and in Japan have licensed a few hundred stations, ranging from just over 100 in Italy to around 500 in the UK, a large proportion of which are local. The exception is the US where there are at least 8,900 stations – mostly local.

Figure 4.20: Number of local and national radio stations per country

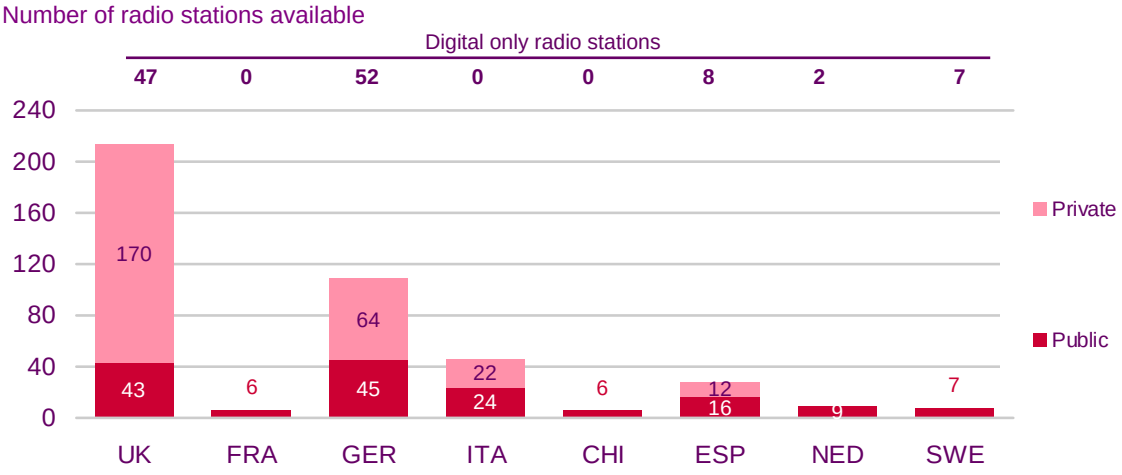


Source: AMR International Ltd, FCC, World Dab Forum and SARFT

In those countries where DAB is available, the number of radio stations available varies considerably from country to country. The UK offers the largest number of channels over the platform, although many of these are regional services and are therefore only available to part of the population. Germany ranks second with 109 channels (including many regional services) while Italy comes third with 66.

The UK stands out as the country with the greatest degree of private-sector involvement in the DAB platform – 80% of the stations on the platform are funded by the private sector. Along with Germany, the UK also offers the largest number of stations that are only available over DAB and other digital platforms.

Figure 4.21: Radio stations available over DAB



Source: Digital Radio 2006, © Eureca Research, UK

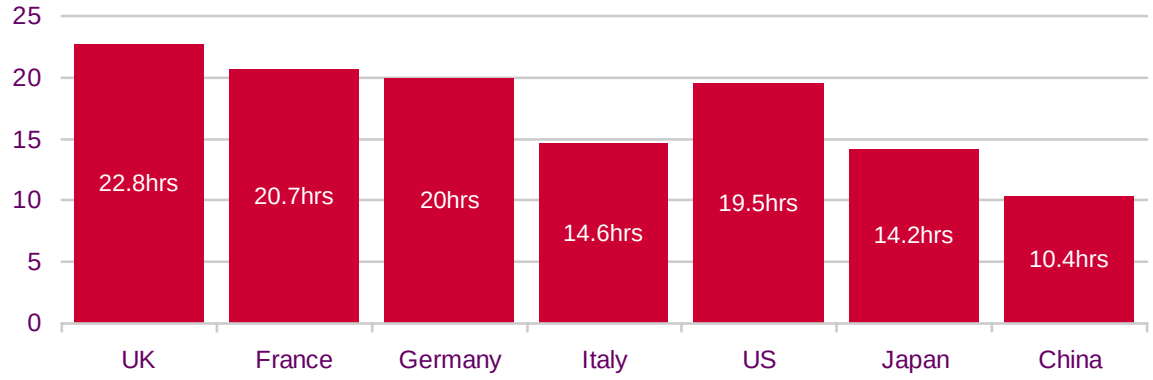
People in the UK listen to the most radio

People in the UK listen to more radio than those in any other country in this study, averaging 22.8 hours per week or 195 minutes per day. They are followed by French, German and US listeners, who all listen to around 20 hours per week, or 171 minutes per day. By contrast, the Italians and Japanese listen less at around 15 hours per week or 129 minutes per day.

The lightest radio consumers – in common with their television consumption habits – are the Chinese, who listen to just 86 minutes of radio per day. This may, as with television, be connected to a different pattern of activities during the day (for example a longer working day).

Figure 4.22: Weekly listening hours, 2005

Hours



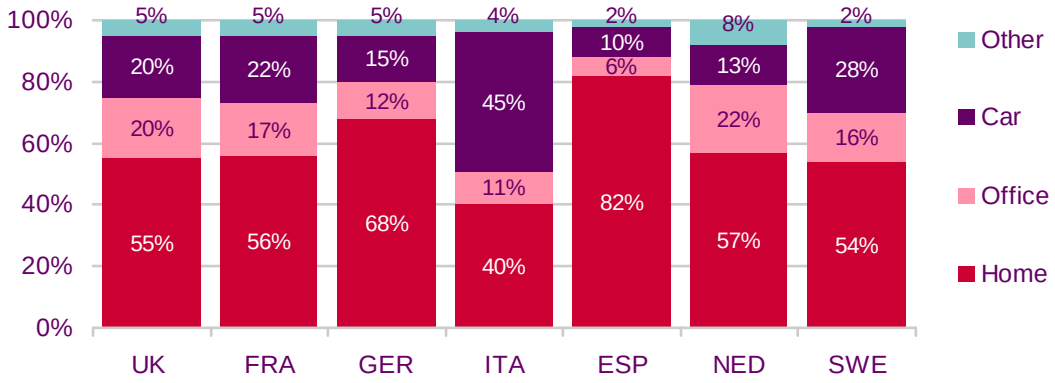
Source: AMR International Ltd, Mediametrie, SARFT

In-car listening is favoured by Italians; the Spanish listen mostly at home

The location of listening to radio differs from country to country, probably also influenced by differences in patterns of activity throughout the day. For example, a large proportion of Italian listening is in the car, in contrast to the Spanish who mostly listen at home. Listening in the office is least popular with the Italians, the Germans and the Spanish.

Figure 4.23: Location of all radio listening, 2003

Proportion of all listening (%)



Source: Public Radio in Europe 2004 (EBU) and Ofcom analysis

Radio listening more concentrated in Sweden and Poland – fragmented in Italy

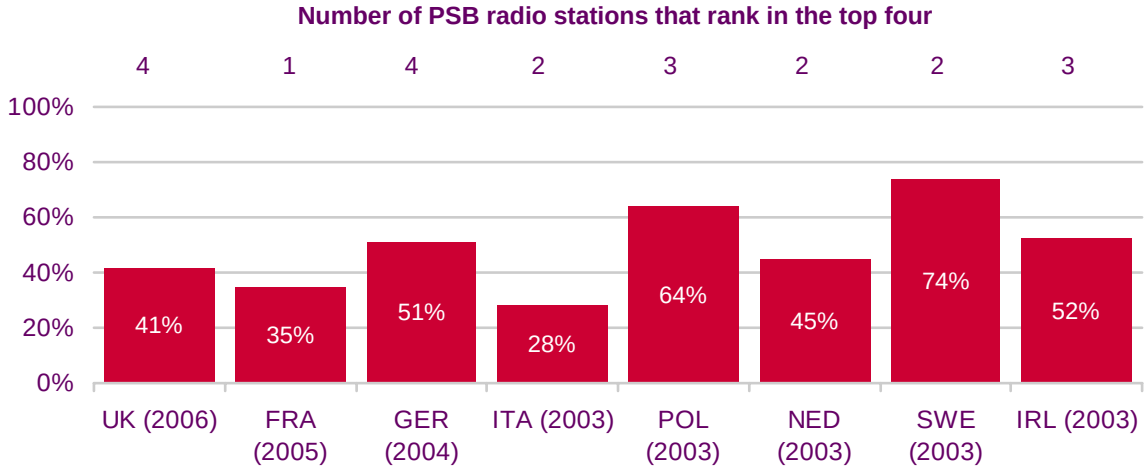
Swedish listeners show loyalty to fewer radio stations than those in other countries surveyed, with the aggregate share of the four most popular stations accounting for 74% of all listener hours; three of the four are PSB stations. Polish listening patterns are also concentrated, with four stations accounting for 64% of hours, of which two are PSBs.

France, Germany, the Republic of Ireland, the Netherlands and the UK all have four-station concentration figures in the region of 39% - 51%. In France, only one PSB radio station features in the top four. At the opposite extreme, all four top slots in the UK are taken by BBC national stations.

At the opposite end of the spectrum, Italy presents the least concentrated radio market in this study, with the four most popular stations accounting for just 28% of all listening - with two RAI stations in the top four.

Figure 4.24: Top four-station listening share

Proportion of listening (%)

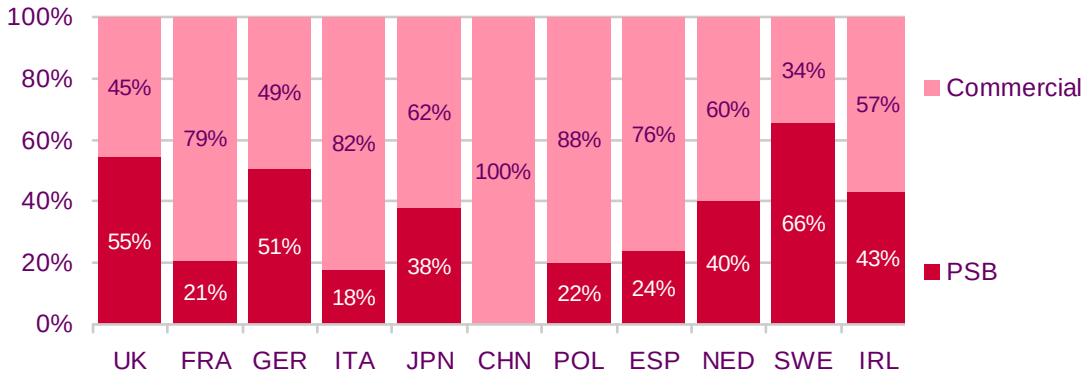


Source: Public Radio in Europe 2004 (EBU) and MediaMetrie

4.3.2 PSB radio's share is strong in the UK, Sweden and Germany

The availability of cross-promotional opportunities and access to sizeable budgets has ensured that in many territories, PSB radio commands a sizeable share of audience listening – so much so that in Germany, Sweden and the UK, PSB attracts a majority of hours. ROI and Dutch listeners devote approximately 40% of their listening to PSB radio stations, while in Italy, France, Spain and Poland the figure is closer to 20%.

Figure 4.25: PSB radio share of listening, 2003



Source: Public Radio in Europe 2004 (EBU) and Rajar

The International Communications Market 2006

5 Country Profiles

Introduction

The section below provides a brief overview of each of the key comparator countries used in this report. The profile of each country includes basic demographic and economic data and market data for the telecoms and broadcasting industries, as well as a synopsis of the relevant political structure, regulatory environment and recent communications market developments.

This is not intended to constitute an exhaustive study of the countries concerned, and the summarising nature of the text means that certain important organisations or events may have been omitted. Furthermore, differences in the political, legislative and market structures, as well as technical definitions, make inter-country comparability very difficult. Nevertheless the section should still provide a context for analysing the trends described in this publication, as well as a flavour of the communications market in each of the key comparator countries.

The telecoms major operator data lists the top three fixed operators by lines, mobile operators by subscriptions, and broadband operators by connections. The broadcasting data lists the top three channels by audience share.

Sources used for these country profiles include: Analysys, Datamonitor, Global Insight, Global Competition Review, IDATE, national audience measurement systems, PricewaterhouseCoopers, Reuters, Screen Digest. Other figures come from the operators directly.

5.1 UK

5.1.1 Basic country data (2005 figures)

Size (Sq Km)	**224,820**
Population (m)	**60.4**
Households (m)	**25.5**
GDP (£bn)	**1,225**
GDP per capita (£)	**20,343**

5.1.2 Political structure

The United Kingdom of Great Britain and Northern Ireland consists of four constituent parts: England, Scotland, Wales, and Northern Ireland. It is a parliamentary monarchy, with a bicameral legislative structure. Members of the House of Commons (lower house) are directly elected on a first-past-the-post basis. The House of Lords (upper house) consists wholly of appointed members, known as peers, and has, by convention, a revising role. It was reformed in late 1999, following which most hereditary peers lost their seats.

Executive power is exercised on behalf of the monarch by the Prime Minister, who heads the Cabinet. The Prime Minister is appointed by the monarch on the basis of ability to form a government with the support of the House of Commons. At the time of writing the Labour Party was in power under Prime Minister Tony Blair.

In 1999, following pre-legislative referenda in both countries, devolved legislatures were established in Scotland and Wales. The Scottish Parliament has responsibility for most aspects of domestic, economic and social policy, whereas the Welsh Assembly does not have the power to make primary legislation, but may make secondary legislation and fast-track primary legislation via Westminster. In Northern Ireland a devolved legislature was established in 1998 but is currently suspended due to a failure of the local political parties to agree to share executive power, as required by the Good Friday Agreement.

5.1.3 Communications legislation and regulatory environment

The communications market in the UK is regulated by Ofcom, a statutory corporation established by act of Parliament and independent of government. As regulatory authority for the UK communications industries Ofcom's responsibilities cover television, radio, telecoms and wireless communications services, including competition powers. Regulation of the market is governed by the Communications Act of 2003. Ofcom's principal duty under the Communications Act is to further the interests of (i) citizens in relation to communications matters and (ii) consumers in relevant markets, where appropriate by promoting competition.

The Department of Trade and Industry (DTI) and the Department for Culture, Media and Sport (DCMS) formulate government policy to implement the EU directives.

In the telecoms market, the incumbent, British Telecommunications Group Plc, is fully privatised.

There are restrictions in the broadcasting sector on the ownership and control of broadcasters. For example political bodies and advertising agencies may not hold

broadcasting licences. There are also cross-ownership restrictions designed to ensure a plurality of voices across different media in each region.

Competition in the communications market is concurrently regulated by the Office of Fair Trading (OFT), the primary competition regulator in the UK, and Ofcom. Ofcom and the OFT consult one another, although Ofcom takes the lead in competition investigations in the communications market. The Competition Appeals Tribunal (CAT) hears appeals against some of Ofcom's decisions. Appeals are referred to the Competition Commission if they concern price control.

5.1.4 Telecoms

Figure 5.1: Telecoms Market data

	2002	2003	2004	2005
Revenues (£m)				
Fixed-line	10,260	9,644	9,165	8,892
Mobile	10,944	12,312	13,817	15,116
Internet	4,036	4,651	5,062	5,472
Total	25,239	26,607	28,044	29,480
Take-up (m)				
Fixed-line connections	35.0	34.6	33.7	32.9
Mobile subscriptions	50.9	54.5	61.0	66.2
Broadband connections	1.4	3.1	6.2	9.7
Penetration (%)				
Fixed-line (individuals)	58%	58%	56%	54%
Mobile (individuals)	85%	91%	101%	110%
Broadband (households)	6%	12%	25%	38%

Figure 5.2: Major operators (Q4 2005)

Fixed-line	BT NTL Telewest	25.9m lines 2.5m lines 1.9m lines
Mobile	O2 T-Mobile* Orange	16.0m subscriptions 15.3m subscriptions 14.9m subscriptions
Broadband	BT NTL** AOL	2.4m connections 1.7m connections 1.3m connections

* Includes Virgin Mobile
** Excludes Telewest

5.1.5 Broadcasting

Figure 5.3: Market data

	2002	2003	2004	2005
TV revenues (£m)				
Subscription	3,215	3,283	3,352	3,488
Public funding	2,804	2,941	2,941	3,010
Advertising	4,036	3,762	4,036	4,104
Total	10,055	9,986	10,328	10,602
Radio revenues (£m)				
Subscription	0	0	0	0
Public funding	570	580	610	640
Advertising	563	601	638	630
Total	1,133	1,181	1,248	1,270
TV take-up (m)				
TV homes (m)	24.4	24.6	24.9	25.1
Multichannel homes (m)	11.6	13.3	15.9	18.7
Digital TV homes (m)	9.9	12.1	15.2	18.2
Penetration in TV homes (%)				
Multichannel homes (m)	47%	54%	64%	75%
Digital TV homes (m)	41%	49%	61%	73%

Figure 5.4: Major channels'/stations' audience share (Q4 2005)

TV	BBC1 ITV1 Channel 4 & S4C	23.3% 21.5% 9.7%
Radio	BBC Radio 2 BBC Radio 4 BBC Radio 1	15.5% 11.8% 9.8%

5.1.6 Recent market activity

There has been growth in the take-up of broadband, mobile and digital TV services. However, because of falling prices, UK household spend on communications has fallen slightly in the last year. The reach of communications services has been extended through the increased availability of 3G, broadband and unbundled local exchanges.

More and more companies are offering bundled services resulting in a range of triple and quadruple play offers, and this is being driven by broadband take-up. Bundled broadband offers are the subject of fierce price competition following the introduction of several offers where the broadband component of an offer has been marketed as free.

In the television market spin-offs of the mainstream networks continued to do well, and their success has by degrees reduced the impact in the loss of audience share experienced by the mainstream channels. Many new services have been launched recently including TV over broadband, on-demand content, and TV to mobile. Take-up of personal video recorders (PVRs) and High Definition TV (HDTV) has been particularly strong.

In the radio market, the BBC has sustained the increase in share it has gained over commercial radio over the past couple of years. Within commercial radio, local commercial radio's share has continued to decrease throughout 2006.

5.2 France

5.2.1 Basic country data (2005 figures)

Size (Sq Km)	**545,630**
Population (m)	**60.7**
Households (m)	**25.2**
GDP (£bn)	**1,168**
GDP per capita (£)	**19,189**

5.2.2 Political structure

The French Republic's parliamentary structure is bicameral. Members of the National Assembly (lower house) are directly elected from individual constituencies, and are led by the President. The President has certain executive powers, but greater powers are held by the Prime Minister he appoints.

Members of the Senate (upper house) are indirectly elected by local councils for a period of nine years. The Senate's legislative powers are limited; in the event of a disagreement between the two houses, the National Assembly has the final say.

At the time of writing the ruling party was the conservative Union pour un Mouvement Populaire (UMP).

5.2.3 Communications legislation and regulatory environment

The telecoms market is regulated by the Autorité de Régulation des Communications Electroniques et des Postes (ARCEP). ARCEP is an independent regulator, which until May 2005 was called the Autorité de Regulation des Telecommunications (ART). The renaming in 2005 was in recognition of the regulator's additional responsibilities for the postal industry.

The telecoms market in France has been liberalised since the 1996 Telecoms Law came into force. Since then France has opened up different segments of the telecoms market to competition. Incumbent operator France Telecom has been partially privatised. Currently, the French state is still the largest shareholder (32.5% share) but there are opportunities for further privatisation.

The retail telecoms market has recently been deregulated. In September 2006 ARCEP withdrew most of the obligations imposed on France Telecom in the national and international calls markets and there are further plans to deregulate the business call market.

The broadcasting regulator is le Conseil Supérieur de l'Audiovisuel (CSA). Its functions include nominating state-owned radio and television stations, issuing of DTT, FM and AM broadcasting licences, as well as overseeing programme quality. TV and radio activities are defined and regulated by the 1986 Radio and TV Law on Freedom to Communicate.

There are restrictions in the sector on the (cross-)ownership and control of broadcasters. These restrictions aim to preserve competition and media pluralism by limiting the share that one entity may hold in different broadcasters.

Cable, satellite and ADSL distribution networks must broadcast the state-owned TV channels, the Parliament TV channels and *TV5* free of charge. Cable and ADSL networks must broadcast local TV channels free of charge.

Other agencies involved in the regulation of the media and telecoms sectors are the French Frequencies Regulator (Agence Nationale des Fréquences - ANFR), the French National Broadcasting Authority and the Competition Council.

5.2.4 Telecoms

Figure 5.5: Market data

	2002	2003	2004	2005
Revenues (£m)				
Fixed-line	9,234	8,823	8,208	8,071
Mobile	9,918	10,944	11,901	12,654
Internet	2,668	3,078	3,352	3,762
Total	21,819	22,845	23,461	24,487
Take-up (m)				
Fixed-line connections	34.0	33.8	33.9	33.8
Mobile subscriptions	37.3	40.4	42.5	45.8
Broadband connections	1.7	3.7	6.8	9.8
Penetration (%)				
Fixed-line (individuals)	57%	56%	56%	56%
Mobile (individuals)	62%	67%	70%	76%
Broadband (households)	7%	15%	27%	39%

Figure 5.6: Major operators (Q4 2005)

Fixed-line	France Telecom Neuf Cegetel Iliad	33.7m customers 3.1m customers 1.6m customers
Mobile	Orange SFR Bouygues	22.4m subscriptions 17.2m subscriptions 7.5m subscriptions
Broadband	Orange Free (Iliad) Neuf Cegetel	4.5m connections 1.6m connections 1.2m connections

5.2.5 Broadcasting

	2002	2003	2004	2005
TV revenues (£m)				
Subscription	2,531	2,668	2,736	2,804
Public funding	1,710	1,710	1,778	1,778
Advertising	1,984	2,052	2,189	2,257
Total	6,224	6,430	6,703	6,840
Radio revenues (£m)				
Subscription	0	0	0	0
Public funding	566	572	579	585
Advertising	414	431	455	475
Total	980	1,003	1,033	1,060
TV take-up (m)				
TV homes (m)	23.2	23.5	23.7	24.0
Multichannel homes (m)	5.9	6.7	8.0	8.8
Digital TV homes (m)	4.5	4.9	6.1	7.2
Penetration in TV homes (%)				
Multichannel homes (m)	25%	29%	34%	37%
Digital TV homes (m)	19%	21%	26%	30%

Figure 5.7: Major channels'/stations' audience share (Q4 2005)

TV	TF1 France 2 France3	32.3% 19.8% 14.7%
Radio	RTL France Inter Europe 1	11.6% 7.9% 7.9%

5.2.6 Recent market activity

French consumers are moving away from fixed-line telephones to VoIP. France is at the forefront of VoIP usage in Europe. At the end of 2005, France Telecom had 830,000 VoIP subscribers. In June 2006, France Telecom relaunched itself under the Orange brand. The rebranding was supported by converged products such as Unik, a phone which can be used as both a fixed line and a mobile.

Illiad, the company behind France's Free broadband ISP, has announced an investment of one billion Euros in a fibre-to-the-home (FTTH) access network in Paris and a number of other dense metropolitan areas. Iliad plans to deploy to 4 million households. Once areas are upgraded to FTTH, it is intended that 100% of existing customers will be migrated onto Illiad's FTTH service, away from its LLU service.

In mobile telecoms, several more MVNOs entered the market in 2006 including Coriolis Telecom and Tele2. Despite this, the share of MVNOs at the end of June 2006 was only 1.46%.

In broadcasting, the next stage of DTT roll-out in France was announced in June 2006. Coverage stood at 50% in June and was expected to reach 66% by October and 70% by March 2007. Cable companies are now obliged to provide all cable homes with the country's free-to-view DTT channels, even if the households are not subscribers.

2006 saw consolidation within the pay TV industry, with the merger of Canal Plus Groupe and TPS. Vivendi is the major shareholder in the unified group. The merger was approved on the condition that the combined group must make channels more widely available and not bundle them together.

5.3 Germany

5.3.1 Basic country data (2005 figures)

Size (Sq Km)	**349,520**
Population (m)	**82.4**
Households (m)	**38.8**
GDP (£bn)	**1,534**
GDP per capita (£)	**18,612**

5.3.2 Political structure

Germany is a parliamentary federal republic. It consists of 16 states, all of which have an elected legislature. State governments and parliaments have considerable responsibilities, including education and policing. Federal legislative power is vested in both the government and two chambers of parliament. Parties must win at least 5% of the national vote, or three constituency seats, to gain representation in the Bundestag (lower house). Members of the Bundesrat (upper house) are nominated by the state governments.

The Federal government is led by the Chancellor, elected by the Bundestag on the nomination of the federal president. In October 2006 the Government was composed of a coalition of the Christian Democratic Union (CDU), the Christian Social Union (CSU) and the Social Democratic Party (SDP), and led by the CDU leader, Angela Merkel.

5.3.3 Communications legislation and regulatory environment

The telecoms market is regulated federally according to the conditions of the 2004 Telecoms Act. In July 2005 the independent regulator was renamed the Federal Network Agency for Electricity, Gas, Telecommunication, Post and Railway (Bundesnetzagentur). Until that time it was called the Regulatory Authority for Telecommunications and Post (RegTP). RegTP was established in 1998.

Germany's telecoms market was fully liberalised in January 1998. The German regulator has particularly promoted competition in the long-distance market and in carrier pre-selection. The German state owns 14.62% of the incumbent telecoms operator Deutsche Telekom.

According to constitutional law, only technical provisions for broadcasting are covered at the federal level. The State media agencies are responsible for granting broadcasting licences, supervising commercial broadcasters and allocating transmission capacities.

There are no restrictions on the ownership and control of broadcasters. A company is entitled to operate an unlimited number of nationwide television channels unless it is able to exercise a controlling influence on public opinion. Distribution networks in all states have an obligation to carry certain programmes. The programmes of the public broadcasting institutions for the relevant German state are usually classified as must-carry programmes. The specific nature of the obligations varies according to whether the platforms concerned are terrestrial radio, analogue or digital cable.

Other organisations involved in the regulation of the communications sector include the Federal Ministry for Economics and Labour, which prepares draft amendments to the Telecoms Act, and the Federal Cartel Office, which is responsible for merger control.

5.3.4 Telecoms

Figure 5.8: Market data

	2002	2003	2004	2005
Revenues (£m)				
Fixed-line	13,543	13,133	12,585	11,628
Mobile	15,869	17,031	17,510	17,715
Internet	4,309	4,378	4,720	5,130
Total	33,721	34,542	34,815	34,473
Take-up (m)				
Fixed-line connections	39.8	39.7	39.2	38.9
Mobile subscriptions	59.2	64.8	71.3	75.0
Broadband connections	3.4	4.6	6.9	9.0
Penetration (%)				
Fixed-line (individuals)	48%	48%	48%	47%
Mobile (individuals)	72%	79%	87%	91%
Broadband (households)	9%	12%	18%	23%

Figure 5.9: Major operators (Q4 2005)

Fixed-line	Deutsche Telekom Freenet* Arcor	35.2m telephone lines 4.9m customers 1.4m connections
Mobile	T-Mobile Vodafone D2 GmbH E-plus	29.5m subscriptions 29.2m subscriptions 10.7m subscriptions
Broadband	T-Online (Deutsche Telekom) United Internet Arcor DSL	4.4m connections 1.8m connections 1.1m connections

5.3.5 Broadcasting

Figure 5.10: Market data

	2002	2003	2004	2005
TV revenues (£m)				
Subscription	2,189	2,394	2,326	2,394
Public funding	2,873	2,941	3,010	3,078
Advertising	3,010	2,873	2,941	3,010
Total	8,071	8,208	8,276	8,482
Radio revenues (£m)				
Subscription	0	0	0	0
Public funding	1,685	1,701	1,711	1,764
Advertising	407	396	423	437
Total	2,092	2,097	2,134	2,201
TV take-up (m)				
TV homes (m)	37.9	38.1	38.3	38.5
Multichannel homes (m)	3.6	37.0	37.4	37.9
Digital TV homes (m)	2.7	3.2	3.7	5.2
Penetration in TV homes (%)				
Multichannel homes (m)	97%	97%	98%	98%
Digital TV homes (m)	7%	8%	10%	13%

Figure 5.11: Major channels'/stations' audience share (Q4 2005)

TV	ARD III ZDF ARD	13.6% 13.5% 13.5%
Radio	WDR SWR NDR	15.2% 13.8% 12.2%

5.3.6 Recent market activity

In the fixed telecoms market the incumbent, Deutsche Telekom, is facing increasing competition. Carrier pre-selection was introduced for long-distance calls in 1998, and for local calls in July 2003. Between 2002 and 2004, Deutsche Telekom competitors' lines tripled from 0.65 to 1.95 million.

In March 2006, Deutsche Telekom announced that it would be partnering with Microsoft to launch an IPTV service, which will be delivered by its new VDSL broadband network.

Germany is one of Europe's more advanced MVNO markets; MVNOs had 21% of the mobile market at the end of 2005 and there have been further market entrants in 2006, for example MangoMobile. A number of established mobile players such as T-Mobile and E-Plus have also launched low-cost pre-paid brands, with a view to increasing penetration and targeting lower income niche groups. In May 2006, Germany's four mobile network operators launched trials of DVB-H mobile TV services.

The television market has been dominated by the two largest television companies, ProSieben Sat1 and RTL. In 2005, Axel Springer, Germany's largest newspaper publishing house, launched a takeover bid for ProSieben Sat1. This was dropped in February 2006 after numerous objections by the regulator. Subsequently the antitrust authority launched an

investigation into possible market domination by ProSieben Sat1 and RTL. In July 2006, the two companies introduced basic encryption of their channels to protect their content from piracy. This was criticised by German PSBs as being tantamount to them becoming pay TV channels.

5.4 Italy

5.4.1 Basic country data (2005 figures)

Size (Sq Km)	**301,230**
Population (m)	**58.1**
Households (m)	**22.1**
GDP (£bn)	**969**
GDP per capita (£)	**16,471**

5.4.2 Political structure

The Italian Republic has a bicameral national legislature, consisting of a Senate (upper house) and a Chamber of Deputies (lower house). The President is elected by representatives of the Senate, the Chamber of Deputies and the Regions. The President has no executive powers, but appoints the Prime Minister on the basis of ability to form a government with parliamentary support.

Legislative power is vested in both the government and the two chambers of parliament. The Judiciary is independent of the executive and the legislature. The government at the time of writing was the left of centre Unione, formed by Romano Prodi in May 2006.

5.4.3 Communications legislation and regulatory environment

The communications market is regulated by the Autorità per le Garanzie nelle Comunicazioni (AGCOM), the independent communications regulator established in 1997. AGCOM spans the broad responsibilities of supervising and enforcing compliance with legislation in the telecommunications, media and press-publishing sectors. AGCOM was established by and is accountable to Parliament. Its statutes are also defined by, and its members appointed by, Parliament.

The Ministry of Communications reviews filings of declarations for general authorisations for electronic communications, grants public broadcasting licences, and approves the national spectrum allocation plan.

The Italian telecoms market has been fully liberalised since January 1998, in accordance with EU directives. The incumbent operator, Telecom Italia, has been fully privatised.

Until April 2006, the major shareholder in the largest commercial television company in Italy, MediaSet, was the Prime Minister Silvio Berlusconi, who lost the general election to Romano Prodi this year. The new Government has not announced any plans to reduce the number of Mediaset's networks or advertising revenue. The antitrust authority has ruled that state subsidies used since 2004 to encourage take-up of DTT are legal.

There is proposed legislation to compel both Mediaset and RAI to move one of each of their three network channels on to DTT by the end of 2008. This is currently awaiting parliamentary review.

5.4.4 Telecoms

Figure 5.12: Market data

	2002	2003	2004	2005
Revenues (£m)				
Fixed-line	6,703	6,703	6,566	6,224
Mobile	11,012	11,970	12,927	14,159
Internet	1,710	2,120	2,736	3,215
Total	19,425	20,793	22,230	23,598
Take-up (m)				
Fixed-line connections	27.2	27.5	27.1	26.6
Mobile subscriptions	54.3	56.6	59.8	66.6
Broadband connections	1.1	2.5	4.8	6.6
Penetration (%)				
Fixed-line (individuals)	47%	47%	47%	46%
Mobile (individuals)	94%	98%	103%	115%
Broadband (households)	5%	11%	22%	30%

Figure 5.13: Major operators (Q4 2005)

Fixed-line	Telecom Italia Tele 2 Italia Wind	32.1m lines in service 2.5m customers* 2.3m customers
Mobile	TIM Vodafone Italia Wind	28.6m subscriptions 18.5m subscriptions 13.7m subscriptions
Broadband	Alice (Telecom Italia) Libero (Wind) FastWeb	4.8m connections 1.0m connections 0.7m connections

* June 2005 report

5.4.5 Broadcasting

Figure 5.14: Market Data

	2002	2003	2004	2005
TV revenues (£m)				
Subscription	684	821	1,026	1,231
Public funding	1,026	1,026	1,026	1,026
Advertising	2,668	2,804	3,146	3,215
Total	4,378	4,651	5,198	5,472
Radio revenues (£m)				
Subscription	0	0	0	0
Public funding	431	437	444	449
Advertising	260	294	355	352
Total	691	730	800	801
TV take-up (m)				
TV homes (m)	21.2	21.2	21.3	21.4
Multichannel homes (m)	3.3	3.8	5.6	7.5
Digital TV homes (m)	2.6	2.7	4.5	6.4
Penetration in TV homes (%)				
Multichannel homes (m)	15%	18%	26%	35%
Digital TV homes (m)	12%	13%	21%	30%

Figure 5.15: Major channels'/stations' audience share (Q4 2005)

TV	RAI 1 Canale 5 Italia 1	22.9% 21.8% 11.5%
Radio	RAI Elemedia Gruppo Finelco	18.0% 11.0% 8.0%

5.4.6 Recent market activity

Competition is intense in the broadband market, as alternative players compete with Telecom Italia. Operators are increasingly competing on speed, in addition to price, as a strategy to win customers. Although the incumbent currently dominates the Italian broadband market, largely as a result of the success of its consumer proposition, it is losing market share to other big players such as FastWeb and Wind.

In mobile telecoms there has been strong growth in 3G adoption and a corresponding increase in revenues from data services. In April 2006, TIM and H3G released plans to deploy mobile TV using DVB-H technology - making Italy the first European country to launch commercial mobile TV services based on the technology.

In September 2006, Telecom Italia unveiled plans to separate its mobile subsidiary from its fixed network. Conflict with the government over these plans led to the resignation of the Telecom Italia chairman. There followed speculation that Telecom Italia would try to sell its mobile arm, but in October 2006 the company sought to dispel such rumours.

There is also strong competition in the television market. Telecom Italia's focus has shifted towards content and TV, and it plans to bundle telecoms and TV services. In January 2006,

Mediaset, the largest TV company, announced the expansion of its pay-per-view offering with Italian drama and top American series, and in July 2006 launched its own music download portal. Sky Italia was profitable for the first time in 2005. In its 2006 annual report News Corporation announced that it was the company's fastest growing asset and that it regarded the channel as a prime vehicle for growth given the relatively low levels of pay-TV penetration in the Italian market. Sky Italia also launched PVRs and HDTV in 2006.

5.5 US

5.5.1 Basic country data (2005 figures)

Size (Sq Km)	**9,158,960**
Population (m)	**295.7**
Households (m)	**111.5**
GDP (£bn)	**6,850**
GDP per capita (£)	**23,071**

5.5.2 Political structure

The United States is a federal republic. The Congress consists of two chambers - the House of Representatives (lower house) and the Senate (upper house) – and members of both are directly elected on a first-past-the-post basis. The hundred members of the Senate are elected for a six-year term, with one-third of its seats up for election every two years. The Senate has the power to confirm or reject presidential appointments, including the cabinet, and to ratify treaties.

The House of Representatives' 435 members are elected for a two-year term. This House has the sole right to initiate revenue bills, although they may be amended or rejected by the Senate. Mid-term elections were held in November 2006, in which the Democrats gained control of the House of Representatives. At the time of writing, the control of the Senate was not clear.

The Executive President is elected by popular vote via an electoral college of 538 members representing the states, for a maximum of two four-year terms. The administration of the national government is appointed by, and responsible to, the President; its senior officials are subject to the confirmation of the Senate. At the time of writing George W Bush is President; he was re-elected for a second term in November 2004.

5.5.3 Communications legislation and regulatory environment

The communications market is regulated by the Federal Communications Commission (FCC), an independent US government agency, reporting directly to Congress. The FCC was established by the Communications Act of 1934 and is charged with regulating interstate and international telecoms and information services.

The FCC only operates on a federal level. There are Public Utility Commissions (PUCs) in each state, and these regulate all intrastate telecoms services, and implement FCC regulations on a state level. PUCs also regulate other utility services such as water and electricity. Below the PUCs there are local governments, and it is these that are responsible for implementing cable policies. Spectrum is regulated at a federal level only.

Within the FCC there is a Consumer and Governmental Affairs Bureau, which is responsible for consumer education and policy, and for responding to complaints and enquiries. The Department of Justice (DOJ) and the Federal Trade Commission (FTC) handle complaints of anti-competitive or deceptive behaviour, and oversee merger regulation.

Other agencies involved in the regulation of the communications sector include the National Telecommunications and Information Administration which allocates radio frequency

spectrum, private companies which facilitate the distribution of spectrum, and the federal and state courts which review regulatory decisions.

US law limits the number of broadcasting stations that a single entity can own in a given area. The DOJ and FTC also ensure that companies owning several stations are not in breach of antitrust laws. There are restrictions on the cross-ownership of multiple broadcasting outlets. Must-carry obligations apply to operators of cable television systems, which are required to carry local commercial television stations.

5.5.4 Telecoms

Figure 5.16: Market data

	2002	2003	2004	2005
Revenues (£m)				
Fixed-line	74,145	68,604	62,927	58,550
Mobile	42,134	46,990	52,599	60,533
Internet	32,763	35,362	36,662	38,577
Total	149,042	150,957	152,188	157,660
Take-up (m)				
Fixed-line connections	189.4	183.0	176.5	168.5
Mobile subscriptions	138.8	155.3	175.5	197
Broadband connections	18.3	26.4	36	47
Penetration (%)				
Fixed-line (individuals)	66%	63%	60%	57%
Mobile (individuals)	48%	54%	60%	67%
Broadband (households)	16%	23%	31%	40%

Figure 5.17: Major operators (Q4 2005)

Fixed-line	AT&T Verizon Bell South	49.4m network access lines in service 30.0 households 20.0m lines
Mobile	Cingular Verizon Sprint Nextel	54.1m subscriptions 51.3m subscriptions 39.7m subscriptions
Broadband	Comcast SBC Communications Verizon	8.5m connections 6.9m connections 5.0m connections

5.5.1 Broadcasting

Figure 5.18: Market data

	2002	2003	2004	2005
TV revenues (£m)				
Subscription	24,761	26,128	27,975	28,522
Public funding	274	274	274	274
Advertising	31,053	32,695	36,525	39,535
Total	56,087	59,097	64,774	68,331
Radio revenues (£m)				
Subscription	13	71	217	568
Public funding	0	0	0	0
Advertising	10,382	10,505	10,770	10,972
Total	10,396	10,576	10,986	11,540
TV take-up (m)				
TV homes (m)	106.7	108.2	109.6	110.2
Multichannel homes (m)	94.1	96.5	98.9	101.2
Digital TV homes (m)	39.1	44.6	50.4	59.1
Penetration in TV homes (%)				
Multichannel homes (m)	88%	89%	90%	91%
Digital TV homes (m)	37%	41%	46%	53%

Figure 5.19: Major channels'/stations' audience share (Q4 2005)

TV	CBS NBC ABC	8.7% 8.1% 8.0%
Radio	Clear Channel Communications Viacom Cox Radio	13.5% 10.8% 4.0%

5.5.5 Recent market activity

Convergence is in evidence across the US's communications market. For example, in June 2006 AT&T, the country's largest telephony service provider, started the commercial launch of a digital TV and video on-demand service in San Antonio. In September 2006, Comcast, the largest cable provider, announced that it had become the first broadband provider to cross the 10 million high-speed internet customer threshold. In June 2006, Netflix, the largest DVD delivery service, announced that it planned to enable digital downloads of DVDs.

MVNOs continued to enter the mobile market in 2006, and several targeted particular audiences. For example, Helio targets young people and Disney Mobile targets families. Further mobile telecoms market entries may follow a joint-venture partnership announced in 2005 between Sprint Nextel and a consortium of cable companies including Comcast Corp, Time Warner Cable, Cox Communications, and Advance/Newhouse Communications. Under the agreement co-branded wireless services will be launched which will allow the cable operators to provide quadruple play services. However at the time of writing phones had not yet been launched under the partnership. There have also been some MVNO exits from the mobile telecoms market. For example ESPN announced that it would no longer provide wireless services after the end of 2006.

5.6 Japan

5.6.1 Basic country data (2005 figures)

Size (Sq Km)	**374,744**
Population (m)	**127.4**
Households (m)	**47.2**
GDP (£bn)	**2,510**
GDP per capita (£)	**19,651**

5.6.2 Political structure

Japan is a representative democracy. The national legislature is the National Diet (Kokkai), which consists of two chambers. Members of both the House of Representatives (lower house) and the House of Councillors (upper house) are elected by proportional representation.

The Prime Minister is the head of the Government of Japan, and is appointed by the Emperor of Japan after being designated by the Diet from among its members. The Prime Minister must have the confidence of the House of Representatives to remain in office.

In October 2006, the government consisted of a coalition of two parties: the Liberal Democratic Party and New Komeito.

5.6.3 Communications legislation and regulatory environment

The telecoms and broadcasting markets are regulated by various divisions within the Ministry of Internal Affairs and Communications (MIC). The Ministry of Finance and the Ministry of Economy, Trade and Industry also have some jurisdiction over telecoms operators.

The former state-owned incumbent telecoms operator, NTT, was privatised in 1985, and is the current holding company of several telecoms companies that were formerly part of its business. Post privatisation, the Japanese government has enacted an NTT Law, which states that at least one-third of the total equity of NTT shall be owned by the Japanese government, and that foreign ownership in NTT may not exceed 33.3%.

In the broadcasting sector, there are foreign ownership restrictions on terrestrial and satellite platform operators, although there are no such restrictions on cable television broadcasters. Cross-ownership of media companies is limited with the intention of preventing concentration of media control and securing diversity of speech and expression.

5.6.4 Telecoms

Figure 5.20: Market data

	2002	2003	2004	2005
Revenues (£m)				
Fixed-line	34,952	34,884	34,063	32,968
Mobile	38,372	39,740	38,988	38,782
Internet	6,156	6,908	7,661	8,276
Total	79,480	81,532	80,711	80,027
Take-up (m)				
Fixed-line connections	61.3	60.8	59.6	58.7
Mobile subscriptions	75.7	81.5	87	92.2
Broadband connections	9.4	14.9	20.2	24.6
Penetration (%)				
Fixed-line (individuals)	48%	48%	47%	46%
Mobile (individuals)	60%	64%	68%	72%
Broadband (households)	18%	29%	40%	48%

Figure 5.21: Major operators (Q4 2005)

Fixed-line	NTT Japan Telecom KDDI	46.9m lines* 10.0m lines** 1.8m lines (metal plus service)*
Mobile	NTT DoCoMo KDDI Vodafone KK	48.8m subscriptions 23.1m subscriptions 14.6m subscriptions
Broadband	Yahoo BB NTT East NTT West	4.7m connections 3.0m connections 2.7m connections

* March 2006
** September 2005 report

5.6.5 Broadcasting

Figure 5.22: Market data

	2002	2003	2004	2005
TV revenues (£m)				
Subscription	2,941	3,420	3,762	3,899
Public funding	3,352	3,488	3,488	3,557
Advertising	9,849	10,123	10,191	10,602
Total	16,142	17,031	17,442	18,057
Radio revenues (£m)				
Subscription	0	0	0	0
Public funding	966	982	998	1,014
Advertising	917	903	896	887
Total	1,884	1,885	1,894	1,900
TV take-up (m)				
TV homes (m)	47.5	47.9	48.0	48.2
Multichannel homes (m)	33.1	35.6	38.6	40.2
Digital TV homes (m)	8.4	13.0	16.2	19.5
Penetration in TV homes (%)				
Multichannel homes	70%	74%	80%	83%
Digital TV homes	18%	27%	34%	40%

Figure 5.23: Major channels' audience share (Q4 2005)

TV	Fuji TV	19.5%
	NTV	18.4%
	TV Asahi	16.3%

5.6.6 Recent market activity

Fixed-line penetration has steadily declined since 2001 as mobile, and more recently VoIP, have increased in popularity. Recent price cuts have fuelled DSL subscription growth and made it one of the most competitive components of the telecoms sector. Although DSL remains the dominant broadband technology, the fibre to the home (FTTH) subscriber base has grown significantly since the third quarter of 2004 to reach 4.64m subscribers by the end of 2005. This is due to increasing demand for multimedia and entertainment services.

There is fierce competition in the mobile market, with continuing price competition and new handset designs. Mobile number portability (MNP) was introduced in October 2006, and is likely to stimulate switching.

Digital mobile TV was launched in Japan at the beginning of April. The service uses ISDB-T, a home-grown Japanese technology. In September 2006, the country's biggest telecoms operator, NTT DoCoMo, completed a deal with Disney and Japanese broadcaster NTV to offer their content as 3G video-clip downloads.

Sky Perfect Communications, Japan's biggest pay TV operator, made its service available to third-party cable and IPTV companies in mid 2005, and in June 2006 announced plans to roll out its own IPTV service nationwide. This may be in response to a decrease in its subscriber growth.

In March 2006, J-Com, Japan's largest cable TV provider, announced the launch of its High Definition Recorder (HDR) Service, which can record high-definition programming and record two programmes simultaneously.

5.7 China

5.7.1 Basic country data (2005 figures)

Size (Sq Km)	**9,326,410**
Population (m)	**1,306.3**
Households (m)	**357.2**
GDP (£bn)	**1,224**
GDP per capita (£)	**936**

5.7.2 Political structure

The People's Republic of China is governed by the Chinese Communist Party (CCP) under one party rule. The standing committee of the CCP sets policy and controls administrative, legal and executive appointments. In October 2006 Hu Jintao was the General Secretary.

There is one legislative chamber – the National People's Congress (NPC), whose delegates are selected by provinces, municipalities, autonomous regions and the armed forces. The NPC approves the President and members of the State Council, as well as the members of the standing committee of the NPC, which meets when the NPC is not in session.

5.7.3 Communications legislation and regulatory environment

The State Council is the government body in charge of all legislative issues in China, including those regarding communications. Within the State Council the Ministry of Industry Information (MII) is the governing authority for the information and communications industries, regulating telecoms, electronics, internet and related technologies and services.

The MII has committed to the WTO Basic Telecommunications Agreement, which includes preventing anti-competitive cross-subsidisation, distributing important service provision information to operators and relaxing foreign ownership restrictions.

The State Administration for Radio, Film and Television (SARFT) is responsible for broadcasting regulation. It is a separate organ within the State Council but accountable to and supervised by the MII, which has regulatory and management responsibility for cable television network construction. SARFT directly controls state-owned enterprises at the national level, such as China Central Television, China National Radio, and other film and television studios and not-for-profit organisations.

The broadcasting sector in China is state-owned and regulated by the Department of Publicity (DOP) and SARFT. The DOP formulates the high-level policies that govern the sector, together with other CCP departments and the State Council. SARFT translates these policies into detailed regulations, and ensures they are adhered to.

SARFT is also required to ensure that all television programmes in China meet certain content requirements. Television programmes may not contain content that promotes certain forms of anti-social behaviour or that is detrimental to national unity, sovereignty or security.

The broadcasting sector is closed to foreign ownership though commercial investment in production is permitted.

5.7.4 Telecoms

Figure 5.24: Market data

	2002	2003	2004	2005
Revenues (£m)				
Fixed-line	12,927	13,269	14,159	14,706
Mobile	11,970	17,100	19,289	21,819
Internet	1,847	2,462	2,736	3,215
Total	26,744	32,832	36,183	39,740
Take-up (m)				
Fixed-line connections	214.2	262.7	315.3	375.0
Mobile subscriptions	207.5	268.6	317.6	365.2
Broadband connections	2.8	11.8	26.2	42.0
Penetration (%)				
Fixed-line (individuals)	17%	20%	24%	29%
Mobile (individuals)	16%	21%	25%	28%
Broadband (households)	1%	3%	7%	12%

Figure 5.25: Major operators (Q4 2005)

Fixed-line	China Telecom* China Netcom China Tietong	152.1m subscriber base 88.0m subscriber base 11.9m subscriber base
Mobile	China Mobile China Unicom Little Smart	246.6m subscriptions 127.8m subscriptions 85.3m subscriptions
Broadband**	China Telecom China Netcom China Tietong	16.1m connections 8.6m connections 1.0m connections (2004 figure)

* Adjusted for Little Smart figure

**ISP figures not available. These are network operator figures.

5.7.5 Television

Figure 5.26: Market data

	2002	2003	2004	2005
TV revenues (£m)				
Subscription	1,436	1,710	1,915	2,052
Public funding	0	0	0	0
Advertising	1,573	1,847	2,257	2,462
Total	3,010	3,557	4,172	4,514
Radio revenues (£m)				
Subscription	0	0	0	0
Public funding	0	0	0	0
Advertising	103	120	150	172
Total	103	120	150	172
TV take-up (m)				
TV homes (m)	320.0	330.1	338.0	341.0
Multichannel homes (m)	95.1	110.1	120.1	123.7
Digital TV homes (m)	0.3	0.4	0.6	3.2
Penetration in TV homes (%)				
Multichannel homes (m)	30%	33%	35%	34%
Digital TV homes (m)	0%	0%	0%	1%

Figure 5.27: Major channels' audience share (Q4 2005)

TV	CCTV 1 CCTV 8 Hunan Sat	10.3% 4.7% 4.5%

5.7.6 Recent market activity

Growth has slowed recently in the fixed telecoms market, which continues to lag behind the mobile market. However, the mobile market has itself slowed after a growth spurt in the 1990s. The market is expected to develop further once 3G licences are awarded.

In 2005, broadband overtook dial-up as the most popular form of internet access. The rapid growth of broadband has presented fixed operators with the opportunity to provide IPTV, VoIP and other value-added services. IPTV trials have been conducted in 43 cities across China by China Telecom and Netcom.

In September 2006, the Standardisation Administration of China announced that it planned to adopt a new digital TV technology standard in August 2007 and to launch HDTV via DTT in 2008. The technology specification is expected to reduce the barriers to entry into the TV market for consumer electronics companies.

Appendix A: Price benchmarking

A.1 Introduction

There is a constant debate in the communications industry around how to capture the difference in prices between countries. We have constructed a new methodology that we believe better reflects the prices consumers actually pay, and which also takes into account connection costs and equipment costs.

The prevalent current approach is to examine services on a platform-by-platform basis (e.g. fixed-line, broadband, mobile, pay TV). For each of these services, a 'basket' of usage is constructed, or sometimes a number of baskets, for example 'high user' and 'low user'. These baskets contain usage profiles (e.g. for fixed-line: line rental, number of local / national / international / to mobile minutes of use per month, etc.). The baskets are then matched against tariffs for each country to arrive at a notional monthly price, and the prices are compared between countries.

The aim of our new study is to examine a new methodology for benchmarking the prices of communications services. There are three main reasons for considering a new approach:

- It is increasingly difficult and inaccurate to consider prices of communications services on a strict vertical market basis (i.e. platform-by-platform basis). The proliferation of technology and marketing convergence has led to "bundled" pricing of services across multiple platforms, making it difficult (if not impossible) to separate out individual service prices.

- Most current benchmarking models do not account for a 'whole cost of ownership' approach. This means that elements such as equipment costs and connection fees are rarely captured. However, these costs are often significant, and are clearly crucial enablers of communications services.

- There is a particular issue in mobile telecoms price benchmarking analysis which has hitherto been widely ignored: in the US (and in a small number of other countries) mobile users pay for calls that they receive as well as for calls that they make – a system known as 'called party pays' or 'receiving party pays'. This issue has up to now made mobile price comparisons between the US and other countries both difficult and somewhat meaningless.

This price benchmarking study is intended to more accurately analyse and reflect the way residential customers buy services, and to reflect the prices they pay in the real world. Each of the issues noted above will be addressed in our methodology. We will then apply the methodology to a limited price benchmarking analysis of five countries: the UK, France, Germany, Italy and US.

We believe that the approach and results that are the outputs from this study should serve as a credible 'beta version'. Our intention is to further refine the methodology, and to increase the number of countries included in the analysis. In order to do both of these things, we invite other interested parties to work with us to take the project to its next level of evolution.

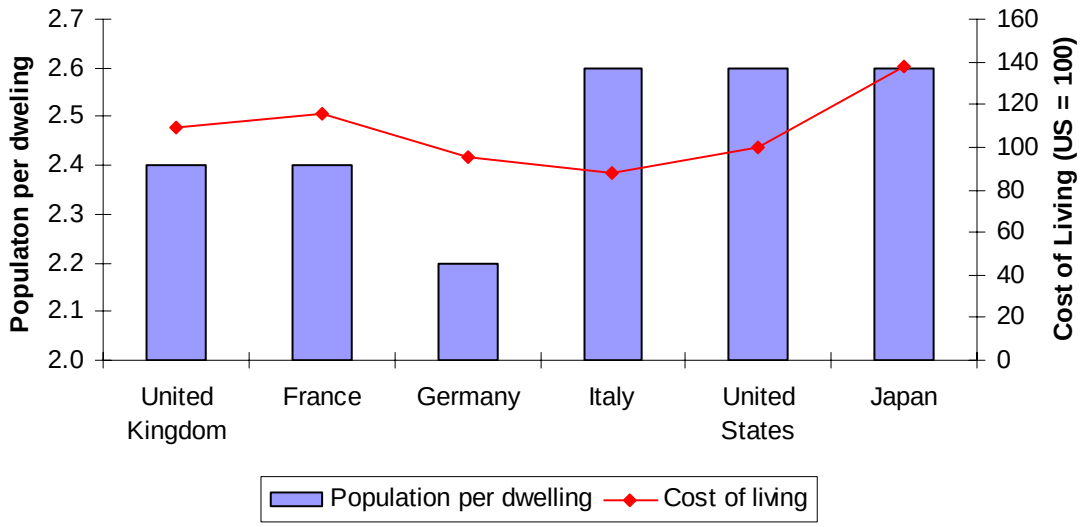
A.2 Methodology

In conducting this benchmarking study, we have adopted a platform-neutral approach by considering the total communications needs of each representative group, rather than by analysing their usage on a platform-by-platform basis (e.g. fixed-line, mobile, broadband etc.). We have also chosen to analyse communications usage on a per-household basis, rather than on an individual basis, since many communications services (such as broadband and pay TV) are used by households rather than by individuals. To this end, we have divided consumers into four separate household categories that are broadly representative of the countries' main consuming groups.

Geographic focus

The initial study concentrates on the following five countries – the United Kingdom, France, Germany, Italy and the United States. These countries demonstrate broadly similar socio-demographic, economic and communications usage characteristics; some broad parameters such as population per dwelling and cost of living suggest that an economically fair comparison can be made.

Figure 6.1: Demographic characteristics of core countries



Source: Economist World In Figures 2005

UK market as template

We have used detailed UK market data to provide the underlying assumptions for the household average usage patterns, and have then extrapolated other usage patterns from this average. Data on the separate communications markets support the thesis that the UK is a meaningful base point for these assumptions.

Demographics classifications

For the purposes of this study, we have made reference to the following social grade definitions, demographics classifications and geodemographic classes:

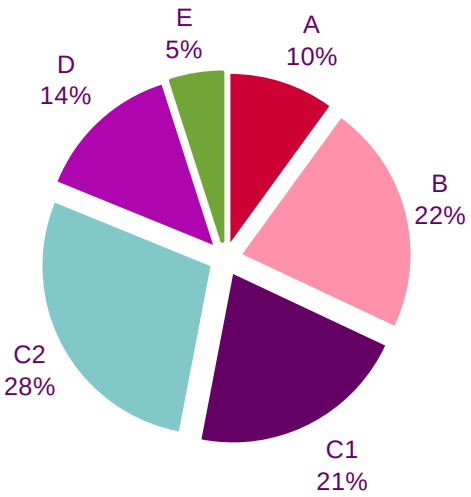
Figure 6.2: Social grade classifications

Social Grade	Social Status	Occupation
A	Upper middle class	Higher managerial, administrative or professional
B	Middle class	Intermediate managerial, administrative or professional
C1	Lower middle class	Supervisory or clerical, junior managerial, administrative or professional
C2	Skilled working class	Skilled manual workers
D	Working class	Unskilled manual workers
E	Those at lowest level of subsistence	State pensioners or widows (no other earner), casual or lowest grade workers

Source: ONS

According to ONS data, the 2004 UK split of population by social grade was as follows:

Figure 6.3: UK population by social grade



Source: ONS

Household types

Having considered the UK household composition patterns and cross-checked against other countries for consistency, we have constructed an initial four household types for analysis, with the following definitions:

Household 1 - Two Adults, No Children, Social Grade B
Household 2 - Two Adults, Two Children, Social Grade C2
Household 3 - One Adult, One Child, Social Grade D
Household 4 - Two Adults (retired), No Children, Social Grade E

Data composition

We have gathered detailed data on the baskets of communications services purchased for each of the household types. These data serve to reflect the typical communications use of each of our four representative households, and they are broken down into the following categories:

Voice calls within the home:
Services
- Voice calls in home to national destinations (minutes)
- Voice calls in home to local destinations (minutes)
- Voice calls in home to international destinations (minutes)
- Voice calls in home to mobile destinations (minutes)

Mobility services:
Equipment/installation
- Type of premium contract handset
- Installation/connection charges for premium mobile

Services
- Line rental contract for premium mobile
- Voice calls from premium mobile to national fixed/mobile (minutes)
- Voice calls to premium mobile from national fixed/mobile (minutes)
- Voice calls from premium mobile to international fixed/mobile (minutes)
- Inbound/outbound roaming calls to/from premium mobile to/from neighbouring country (minutes)
- SMS messages from premium mobile
- MMS messages from premium mobile

Equipment/installation
- Type of standard contract handset
- Connection charges for standard mobile

Services
- Line rental contract for standard mobile
- Voice calls from standard mobile to national fixed/mobile (minutes)
- Voice calls to standard mobile from national fixed/mobile (minutes)
- Voice calls from standard mobile to international fixed/mobile (minutes)
- Inbound/outbound roaming calls to/from standard mobile to/from neighbouring country (minutes)
- SMS messages from standard mobile
- MMS messages from standard mobile

Equipment
- Standard prepay 1 handset

Services
- Voice calls from prepay mobile 1 (minutes)
- Voice calls to prepay mobile 1 (minutes)
- SMS messages from prepay mobile 1
- MMS messages from prepay mobile 1

Equipment
- Standard prepay 2 handset

Services
- Voice calls from prepay mobile 2 (minutes)
- Voice calls to prepay mobile 2 (minutes)
- SMS messages from prepay mobile 2
- MMS messages from prepay mobile 2

TV services:
Equipment/installation
- Standard TV set
- Premium TV set
- Free-to-air DTV decoder
- Type of standard set top box
- Type of premium set top box
- Installation/connection charges for set top box

Services
- Pay TV (Standard Package)
- Pay TV (Premium Package)
- TV licence fee

Internet services:
Equipment/installation
- Number of basic PCs
- Number of premium PCs
- Installation/connection charges for broadband

Services
- Dial-up internet
- Broadband (Standard)
- Broadband (Premium)

General assumptions underpinning basket composition

We have examined general UK, European and US communications usage patterns in our construction of the underlying assumptions from which each of the household usage baskets is generated. (We have not analysed Japan and China, largely owing to the difficulty of obtaining English language tariff information in the available timeframe). Most of our data have come from the UK, but we have used high-level knowledge of usage in other countries to modify our assumptions where appropriate. For instance, pay TV usage is higher in the UK than most of the other countries in our analysis, so we have adjusted our UK data downwards appropriately, better to reflect usage across all countries.

Calls within home:

- Total calls based on UK average call volumes/line of 303 minutes/month (source: Ofcom CMR 2006)

- Split of calls by national/local/international/to mobile based on average UK split for 2005 of 25.3%, 61.1%, 3.3% and 10.3% respectively (source: Ofcom CMR 2006)

Mobility services:

- Number of subscriptions per household based on UK average of approx 2.7 subs/household (source: Ofcom CMR 2006)

- Mobile call volumes based on UK average call volumes from Q4 2005 of 103 outgoing minutes/month and 79 incoming minutes/month (source: Ofcom Q4 2005 telecoms data tables & Ofcom CMR 2006)

- Mobile outgoing voice calls to fixed/other national mobile based on average call splits for Q4 2005 of 90% of all outgoing minutes (source: Ofcom CMR 2006)

- Mobile outgoing voice calls to international based on average call splits for Q4 2005 of 1.4% of all outgoing minutes (source: Ofcom CMR 2006)

- Mobile roaming voice calls based on average roaming volumes/sub for Q4 2005 of 1.9 minutes (source: Ofcom telecoms data tables, Q4 2005)

- Note: in order to more accurately account for mobile roaming, we have used a blend of both CMR 2006 data and Ofcom telecoms data tables.

TV services:

- Number of premium/basic TVs per household based on UK average of approx 2.7 TVs/household (source: Ofcom CMR 2006)

- Pay TV subscriptions/household based on UK average of 43% taking pay satellite or pay cable on main set in 2005 (source: Ofcom CMR 2005), reduced to 35% on account of lower take-up in other countries

- Free-to-air DTV services/household based on UK average of 18% taking DTV on main set in 2005 (source: Ofcom CMR 2006)

Internet services:

- Number of households with PC based on UK 2005 average of 65% (source: Ofcom CMR 2006)

- Internet take-up levels based on UK 2005 average of 60% (source: Ofcom CMR 2005)

- Broadband as % of internet connections based on Q1 2006 UK average of 69% (source: Ofcom CMR 2006)

Basket composition for household types

Having formed our underpinning assumptions, we have adjusted usage patterns for each household type, such that all four households, taken together, approximate to the usage average. It is worth noting that the 'super-user' Household 1 would be underweighted in the average of the four households, since there is a smaller proportion of these types of households in each of our target countries.

Household 1 - Two adults, no children, social grade B

Household 1 consists of a two young professional working adults with an above-average disposable income to spend on communications services. They are sophisticated users of technology, likely to upgrade their equipment more frequently than the typical user.

Services and usage profile

- Below average call minutes from the home (2005 UK monthly average 300 mins/month), reflecting
- Significantly above average call minutes from mobile to national, on-network, off-network and international
- Significantly above average mobile roaming call minutes
- Above average MMS and SMS messaging
- Subscribe to premium pay TV package
- Subscribe to premium internet access package
- TV licence

Equipment requirements

- One premium mobile handset on contract
- One standard mobile handset on contract
- One standard set top box
- One premium set top box
- One standard TV set
- One premium TV set
- One standard PC
- One premium PC

Household 2 - Two adults, two children, social grade C2

Household 2 consists of a family of four: two middle-aged parents and two teenage children with a slightly below-average disposable income to spend on communications services. They are technology savvy, but do not require top end equipment or frequent equipment upgrades.

Services and usage profile

- Average call minutes from the home
- One adult on a standard mobile contract with below average call minutes from mobile to national, on-network, off-network and international
- One adult on a standard mobile contract with below average mobile roaming call minutes
- One adult on a standard mobile contract with below average MMS and SMS messaging

- Two children with prepay mobiles with below average call minutes and above average messaging
- Subscribe to standard pay TV package
- Subscribe to standard internet access package
- TV licence

Equipment Requirements

- One standard mobile handset on contract
- Two standard prepay mobile handsets
- One standard set top box
- Two standard TV sets
- One premium TV set
- One free to air DTV decoder
- One standard PC
- One premium PC

Household 3 - One adult, one child, social grade D

Household 3 is a typical single parent working class family with a young child. The family has significantly below average disposable income to spend on communications services. The parent is technology savvy at a base level but cannot afford premium subscription packages or frequent equipment upgrades.

Services and usage profile

- Below average call minutes from the home;
- One adult with a standard prepay mobile with below average call minutes from mobile to national, on-network, off-network and international
- One adult with a standard prepay mobile with no mobile roaming call minutes
- One adult with a standard prepay mobile with below average SMS and no MMS messaging
- Subscribe to dial-up internet access
- TV licence

Equipment requirements

- One standard prepay mobile handset
- Two standard TVs

- One free to air DTV decoder
- One standard PC

Household 4 - Two adults (retired), no children, social grade E

Household 4 is a retired couple supported by the state with no children. The couple has significantly below average disposable income to spend on communications services. The adults are not technology savvy and do not subscribe to a pay TV package.

Services and usage profile

- Significantly below average call minutes from the home
- TV licence

Equipment requirements

- One standard TV set
- One free to air DTV decoder

Figure 5.31 below shows the usage profiles of the above services and equipment/connection fees for the four household types that we have provisionally selected.

Figure 6.4: Price benchmarking household basket compositions

Per calendar month	Household 1 - Two Adults, No Children, Social Grade B	Household 2 - Two Adults, Two Children, Social Grade C2	Household 3 - One Adult, One Child, Social Grade D	Household 4 - Two Adults (retired), No Children, Social Grade E
Voice calls in home to national (minutes)[a]	80	125	50	40
Voice calls in home to local (minutes)	185	305	125	90
Voice calls in home to international (minutes)	10	20	10	5
Voice calls in home to mobile (minutes)	30	50	20	15
Premium Contract Handset	1	0	0	0
Line Rental Contract - Premium Mobile	1	0	0	0
Voice Calls from Premium Mobile to national/mobile (minutes)[b]	360	0	0	0
Voice Calls to Premium Mobile from national/mobile (minutes)[b]	150	0	0	0
Voice calls from Premium Mobile to international (minutes)	10	0	0	0
Inbound/outbound roaming calls to/from premium mobile to/from neighbouring country (minutes)	10	0	0	0
SMS Messages - Premium Mobile[c]	100	0	0	0
MMS Messages - Premium Mobile	5	0	0	0
Standard Contract Handset	1	1	0	0
Line Rental Contract - Standard Mobile	1	1	0	0
Voice Calls from Standard Mobile to national/mobile (minutes)[b]	180	180	0	0
Voice Calls to Standard Mobile from national/mobile (minutes)[b]	70	70	0	0
Voice calls from Standard Mobile to international (minutes)	5	5	0	0
Inbound/outbound roaming calls to/from standard mobile to/from neighbouring country (minutes)	5	5	0	0
SMS Messages - Standard Mobile[c]	50	50	0	0
MMS Messages - Standard Mobile	0	0	0	0
Standard Prepay Handset 1	0	1	1	0
Voice Calls from Prepay Mobile 1 (minutes)[b]	0	40	65	0
Voice Calls to Prepay Mobile 1 (minutes)[b]	0	15	0	0
SMS Messages - Prepay Mobile 1[c]	0	100	80	0
MMS Messages - Prepay Mobile 1	0	2	0	0
Standard Prepay Handset 2	0	1	0	0
Voice Calls from Prepay Mobile 2 (minutes)[b]	0	20	0	0
Voice Calls to Prepay Mobile 2 (minutes)[b]	0	10	0	0
SMS Messages - Prepay Mobile 2[c]	0	50	0	0
MMS Messages - Prepay Mobile 2	0	0	0	0
Standard TV set	1	2	2	1
Premium TV set	1	1	0	0
Free to air DTV decoder	0	1	1	1
Basic Set Top Box	1	1	0	0
Premium Set Top Box	1	0	0	0
Pay TV (Standard Package)	0	1	0	0
Pay TV (Premium Package)	1	0	0	0
TV Licence	1	1	1	1
No of basic PCs	1	1	1	0
No of premium PCs	1	1	0	0
Dial-Up Internet (minutes)	0	0	150	0
Broadband (Standard)	0	1	0	0
Broadband (Premium)	1	0	0	0

Source: Ofcom

As part of our basket compositions, we have included connection fees and equipment costs. We believe that these costs should be included alongside ongoing monthly service costs in any benchmarking analysis, since they form a significant part of the 'real cost of ownership' of communications services. Equipment costs are particularly significant in the mobile market: some countries' operators tend to partially or wholly subsidise retail handset prices in order to attract customers; this subsidy then tends to be recouped through higher service charges through the life of a mobile contract. By contrast, other countries' mobile operators sell handsets at or near cost, and therefore have no need to recoup through service pricing. Therefore, it can be misleading merely to compare mobile service prices – a more accurate and relevant approach is to include the price of the handset, amortised over the length of the contract.

The other significant equipment issues involve PCs and television sets. We believe that any analysis of internet connectivity should include some allowance for PC costs, since they are an essential tool for accessing the internet. Our initial approach to PC costs has been to allocate 30% of the retail price to internet usage (we have allowed for the fact the PCs are also used for non-internet applications such as word processing, gaming, data storage etc.). This proportion of the price is then amortised over a number of years to reflect the average length of ownership. The same approach is taken with TVs, although in this case the full retail price is amortised.

Figure 5.32 shows the calculations used for the monthly cost of ownership. Essentially, all mobile-related connection fees and equipment prices have been amortised over two years (the average length of contract/handset ownership), other connection/installation fees have been amortised over three years, and other equipment prices have been amortised over five years.

Figure 6.5: Price benchmarking equipment/connection

£ per calendar month unless otherwise stated	Notes
Premium Contract Handset	Top of the range handset, amortised over two years, pro rated monthly
Standard Contract Handset	Standard handset, amortised over two years, pro rated monthly
Standard Prepay Handset	Standard handset cost amortised over two years, pro rated monthly
Basic Set Top Box	Basic set top box amortised over three years, pro rated monthly
Premium Set Top Box	Premium set top box amortised over three years, pro rated monthly
PC modem	Assumes standard modem, amortised over three years, pro rated monthly
Basic PC	Assumes basic PC cost 30% allocated to internet usage (rather than offline functionality like word processing etc), amortised over 5 years, pro rated monthly
Premium PC	Assumes premium PC cost 30% allocated to internet usage (rather than offline functionality like word processing etc), amortised over five years, pro rated monthly
Standard TV set	Assumes standard TV set cost amortised over five years, pro rated monthly
Premium TV set	Assumes premium TV set cost amortised over five years, pro rated monthly
Free to air DTV decoder	Assumes DTV decoder cost amortised over 2 years, pro rated monthly

Source: Ofcom

A.3 Underlying tariffs for each country, and results output

We collected a variety of tariffs for each of the countries in the analysis, correct as of October 2006. For each of these countries, we gathered tariff information across all communications services – including bundled tariffs where they were available and appropriate. We generally collected tariffs for two or three major operators in each communications sector (or cross-sector where bundles were involved). In this way, we intended to capture robust tariffs that were available and being used by significant proportions of the population in each country. For this exercise, we chose not to do an exhaustive search of all possible tariffs, both for the reason outlined above, but also because we felt that the tariffs offered by the main operators (particularly those offered by the larger alternative operators) would reflect price competition lower down the market share scale. We therefore feel that our results are broadly reflective of the state of prices in each market. Regarding calls to international destinations, we calculated a blended average price within each tariff for voice calls to the three nearest international destinations relevant to each country (e.g. for the UK, we used France, Netherlands and Belgium as our international call destinations).

The tariffs collected for each country are available for analysis: please contact john.lewis@ofcom.org.uk if you would like to view these underlying data.

A.4 Next steps/issues

This new benchmarking methodology and output is intended to be a 'beta' version that is subject to evolution and improvement. We would like to work closely with other regulators, international bodies, industry and user groups to discuss, debate, refine and update both the methodology and the output. Our progress to date has thrown up a number of important issues and questions, including the following:

- Which countries should we include? We deliberately limited the countries under analysis for this initial report, but would ultimately like to include at least all the OECD nations in the work.

- Are our household types reflective of all the countries under analysis? This is particularly relevant as the number of countries under analysis expands further.

- Are our basket compositions for each household type accurate and reflective of the usage patterns of communications services across our universe of countries?

- Should we include other communications services/products? Examples might include radio (both radio sets and services), gaming, cinema, newspapers.

- Have we treated the amortisation of connection fees and equipment costs in an appropriate way, in terms of proportionate allocation (in the case of PCs) and in terms of the amortisation periods?

- How do we account for special offers or introductory offers? Currently, we have ignored these short-term offers (e.g. first three months at a reduced/free rate) and have only included the post-offer price; however, we may choose to account for these offers by spreading them over a contract period.

- Do we include discounted rates for elderly/low-income consumers where applicable and appropriate? These subsidies might for instance be applied to the Household 4 basket.

- What is our threshold for inclusion of tariffs in terms of their national availability in any given country? For example, in the UK, only around 47% of homes can receive cable, and we have included cable tariffs in our UK analysis. Should any tariff for inclusion be available to all homes in a given country, or to over 50% or to over 20% etc…?

- Have we included a suitably exhaustive set of tariffs for each country in the analysis? We believe that we may have missed a few tariffs that might alter the results marginally, and would want to dedicate more time and resource to ensuring that all tariffs and bundles are captured. However, we are confident that those tariffs that we have listed are both accurate and representative.

- Should we PPP-adjust the results for comparison purposes? As the number of countries expands, we would propose to include both nominal and PPP-adjusted results.

- We have included all sales taxes and other taxes – is this the optimum approach? Many countries have differing personal taxation policies that alter the balance between income tax, sales tax and other personal taxes – should we be making any adjustments to reflect these differences?

We look forward to working with all interested parties to take this project forward to a point where we can produce regular, accurate international price benchmarking for communications services and products.

Appendix B: International online survey methodology

This research was conducted in October 2006 by Synovate for Ofcom. The survey was conducted using CAWI (Computer Assisted Web Interviewing) across seven countries: the UK, France, Germany, the US, Italy, Japan and China. Sample sizes were around 400 adults in each country, designed to reflect national profiles of gender and age, using quota sampling. Adults interviewed were aged 18-65, except in Japan and China where respondents were 18-55.

All respondents were broadband users at home and therefore this data is not representative of each country's population, and does not provide data on market penetration. Rather, it provides an illustration of comparative levels of usage across markets among broadband users. Given that the samples are all broadband users at home, countries with low broadband penetration will present inflated usage figures overall, as these adults are likely to be high end users and early adopters – for example, China.

The table below shows sample size and spread for each country.

	Base	Gender %		Age %		
Country	**Respondents**	**Male**	**Female**	**18-24**	**25-44**	**45-64**
UK	**404**	48	52	15	43	42
France	**389**	49	51	15	43	42
Germany	**403**	50	50	13	46	41
US	**405**	47	53	16	46	38
Italy	**385**	52	48	13	51	37
Japan	**398**	47	53	18	52	30
China	**397**	50	50	15	61	24

Note: For Japan and China adults interviewed were aged 18-55

Appendix C: Basic data used in the report

C.1 GDP figures

Source: IMF

Basis: Annual GDP figures

C.2 Financial years

Calendar year for all countries except Japan

C.3 Exchange rates

Source: IMF

Basis: Average during 2005

Country	Local currency	Local/GBP
UK	GBP	1.0
Euro area	EUR	1.5
USA	USD	1.8
Japan	JPY	200.4
China	CNY	14.9
Sweden	SEK	13.6
Poland	PLN	6.7

C.4 Population figures

Source: US Census bureau

Basis: Mid-year figures

C.5 Households

Source: IMF

Basis: Mid-year figures

Note: for households, Multiple Dwelling Units (MDUs) are not explicitly considered. One subscriber or one telco line equates to one person or household, or one SIM card to one person in case of mobiles.

Glossary of terms and definitions

2G Second generation of mobile telephony systems using digital encoding. 2G networks support voice, low speed data communications, and short messaging services.

2.5G In mobile telephony, 2.5G protocols extend 2G systems to provide additional features such as packet-switched connections (GPRS) and enhanced data rate.

3G Third generation of mobile systems. Provide high-speed data transmission and supporting multimedia applications such as full-motion video, video-conferencing and Internet access.

Access network Electronic Communications Network which connects end-users to a service provider; running from the end-user's premise to a Local Access Node and supporting the provision of access based services. It is sometimes referred to as the local loop or last mile.

ADSL Asymmetric Digital Subscriber Line. A digital technology that allows the use of a copper line to send high bandwidths in downlink direction and a lesser bandwidth in the uplink.

AM Amplitude Modulation. Type of modulation produced by varying the strength of a radio signal. This type of modulation is used by broadcasters in three frequency bands: medium frequency (MF, also known as medium wave: MW); low frequency (LF, also known as long wave: LW), and high frequency (HF, also known as short wave: SW). The term AM is often used to refer to the medium frequency band (see MF below).

ATT Analogue Terrestrial Television. The television broadcast standard that all television industries launched with. Most countries in this study are planning to phase out ATT in the next ten years.

Bit-rates The rate at which digital information is carried within a specified communication channel.

Bitstream A service providing transmission capacity between an end-user's premise and the point of interconnection made available by the incumbent to a competitive provider of electronic communications services.

Bluetooth Wireless standard for short-range radio communications between a variety of devices such as PCs, headsets, printers, mobile phones, and PDAs.

Broadband A service or connection generally defined as being "always on" and providing a bandwidth greater than 128kbit/s.

BSC Broadcasting Standards Commission, whose functions transferred to Ofcom on 29th December 2003.

CAGR Compound Annual Growth Rate. The average annual growth rate over a specified period of time. It is used to indicate the investment yield at the end of a specified period of time. The mathematical formula used to calculate CAGR = (present value/base value) $^{(1/\#of\ years)}$ – 1

Called Party Pays A system of charging for telecommunications services whereby the party that receives the call (the 'called party') pays for both the origination and termination of the call.

CDMA Code Division Multiple Access. The basis for the primary 2G technology; and the later evolution of mobile technology in the US and related markets. A technology that allows a band of spectrum to be shared by multiple concurrent users. Rather than subdividing the spectrum (FDMA) or determining usage on a round robin basis (TDMA), unique codes are used to differentiate subscribers so they can simultaneously use the same spectrum.

Coders The devices which convert a signal from one form into another, digital form. The input may be an analogue signal or it may be a digital signal coded in a form other than that desired for the particular purpose of communication required. In digital radio, the term generally refers to the devices which produce a digital sound programme service in a form suitable for acceptance by a multiplexer. The multiplexer combines it with the other services for transmission as a single, combined complex signal (see also Multiplex). A particular feature of digital radio coders is that they seek to avoid sending information that is not needed to recreate the sound in the receiver, thereby requiring less capacity (bit-rate) in the multiplex transmission. However, the more information is taken away from the signal, the greater the probability of imperfect reproduction of sound by the receiver.

Co-regulation The sharing of regulation between a statutory body (e.g. Ofcom) and its licensees.

Core network Backbone network connecting the major nodes in the network, and linked to the access network (last mile) via the backhaul links (middle mile).

CPS Carrier Pre-selection. The facility offered to customers which allows them to opt for certain defined classes of call to be carried by an operator that has been selected in advance and has a contract with the customer. CPS does not require the customer to dial a routing prefix or use a dialler box.

DAB Digital Audio Broadcasting. A set of internationally accepted standards for the technology by which terrestrial Digital Radio multiplex services are broadcast in the UK.

Data packet In networking, the smallest unit of information transmitted as a discrete entity from one node on the network to another.

Digital switchover The process of switching over the current analogue television broadcasting system to digital, as well as ensuring that people have adapted or upgraded their televisions and recording equipment to receive digital TV.

DMB Digital Mobile Broadcasting. A variant of the DAB digital radio standard for mobile TV services, and an alternative to DVB-H (see DVB, below).

Downlink speed. Also downlink or download. Rate of data transmission from a network operator’s access node to a customer, typically measured in Megabits per second.

DSL Digital Subscriber Line. A family of technologies generally referred to as DSL, or xDSL, capable of transforming ordinary phone lines (also known as 'twisted copper pairs') into high-speed digital lines, and of supporting advanced services such as fast Internet access and video-on-demand. ADSL, HDSL (High data rate Digital Subscriber Line) and VDSL (Very high data rate Digital Subscriber Line) are all variants of xDSL).

DTT Digital Terrestrial Television, currently most commonly delivered through the Freeview service.

DVB Digital Video Broadcasting. A set of internationally accepted open standards for digital broadcasting, including standards for distribution by satellite, cable, radio and handheld devices (the latter known as DVB-H).

DVD Digital Versatile Disc. A high capacity CD-size disc for carrying audio-visual content. Initially available read-only, but recordable formats are now available.

EBITDA Earnings Before Interest, Tax, Depreciation and Amortisation.

EPG Electronic Programme Guide. A programme schedule, typically broadcast alongside digital television or radio services, to provide information on the content and scheduling of current and future programmes.

EBU European Broadcasting Union. A professional association of public service broadcasters, representing their interests to the European institutions. It negotiates broadcasting rights for major sports events, operates the Eurovision and Euroradio networks, organises programme exchanges and coordinates co-productions.

Ex ante regulation Regulation to address behaviour before it happens.

Fairness Doctrine FCC regulation that applied to broadcasters in the US between 1949 and 1987 aimed at promoting controversial speech in news and informational programming and to ensure impartiality.

Fibre-to-the-cabinet Access network consisting of optical fibre extending from the access node to the street cabinet. The street cabinet is usually located only a few hundred metres from the subscriber premises. The remaining segment of the access network from the cabinet to the customer is usually a copper pair but could use another technology, such as wireless.

FM Frequency Modulation. Type of modulation produced by varying the frequency of a radio carrier in response to the signal to be transmitted. This is the type of modulation used by broadcasters in part of the VHF (Very High Frequency) band, known as VHF Band 2.

Format The type of programme service broadcast by radio stations. Also, the part of a radio station's licence which describes the programme service.

FTA Free-to-air. Broadcast content that people can watch or listen to without having to pay a subscription.

GDP Gross Domestic Product.

GPRS General Packet Radio Service. A packet data service provided over 2.5G mobile networks.

GSM Global Standard for Mobile Telephony. The most commonly used 2G mobile standard worldwide.

HD Radio Hybrid Digital Radio. A radio standard developed in the US for terrestrial broadcasters, offering high-quality audio.

HDTV High Definition Television. A technology that provides viewers with better quality, high-resolution pictures.

HSDPA High Speed Downlink Packet Access. An evolution of 3G mobile technology, often called 3.5G, which offers higher downlink speed.

Interconnection The linking of one Public Electronic Communications Network to another for the purpose of enabling the persons using one of them to be able (a) to communicate with users of the other one; (b) to make use of services provided by means of the other one (whether by the provider of that network or by another person).

International roaming A service offered by mobile operators that allows customers to use their phone abroad. The home operator has agreements with foreign operators that allows customers to make and receive calls, send and pick up text messages, and use some of the other mobile services (such as access to voicemail or topping-up credit on pre-pay phones). The exact services available and the charges for their use vary between operators.

Internet A global network of networks, using a common set of standards (e.g. the Internet Protocol), accessed by users, typically with a computer via a service provider.

IP Internet Protocol. The packet data protocol used for the routing and carriage of messages across the Internet and similar networks.

IPTV Internet Protocol Television. The term used for television and/or video signals that are delivered to subscribers or viewers using Internet Protocol (IP), the technology that is also used to access the Internet. Typically used in the context of streamed linear and on demand content, but also sometimes for downloaded video clips.

ISDN Integrated Services Digital Networks. A standard developed to cover a range of voice, data, and image services intended to provide end-to-end, simultaneous handling of voice and data on a single link.

ISP Internet Service Provider. A company that provides access to the Internet.

L-Band A range of frequencies within which an allocation has been made in much of the world for broadcasting (1452 to 1492 MHz), generally by satellite, but in Europe for terrestrial digital sound broadcasting in the range 1452 to 1480 MHz. Some DAB digital radio receivers can tune to this range.

LAN Local area network. A network allowing the interconnection and intercommunication of a group of computers on a single site, primarily for the sharing of resources and exchange of information (e.g. email).

Leased Line A transmission facility which is leased by an end user from a public carrier, and which is dedicated to that user's traffic.

LLU Local Loop Unbundling. A process by which an incumbent operator’s exchange lines are physically disconnected from their network and connected to a competing operator’s networks. This enables operators other than the incumbent to use the local loop to provide services to customers.

Local Loop The access network connection between the customer's premises and the local PSTN exchange, usually a loop comprised of two copper wires.

MCA Measured Coverage Area. The area in which signal levels meet or exceed Ofcom's stated criteria for defining coverage.

MF Medium Frequency. The part of the spectrum between 300 kHz and 3000 kHz. The broadcast part of this band (531 kHz to 1602 kHz) is often known as the medium wave (MW) or AM band (see AM above).

MMS Multimedia Messaging Service. The next generation of mobile messaging services, adding photos, pictures and audio to text messages.

MPEG Moving Picture Experts Group. A set of international standards for compression and transmission of digital audio-visual content. Most digital television services in the UK use MPEG2, but MPEG4 offers greater efficiency and is likely to be used for new services including TV over DSL and High Definition TV.

Multichannel In the UK, this refers to the provision or receipt of television services other than the main five channels (BBC ONE & TWO, ITV1, Channel 4/S4C, Five) plus local analogue services. 'Multichannel homes' comprise all those with digital terrestrial TV, satellite TV, digital cable or analogue cable, or TV over broadband. Also used as a noun to refer to a channel only available on digital platforms (or analogue cable).

Multiplex A device that sends multiple signals or streams of information on a carrier at the same time in the form of a single, complex signal. The separate signals are then recovered at the receiving end.

MVNO An organisation which provides mobile telephony services to its customers, but does not have allocation of spectrum or its own wireless network.

MW See MF and AM above.

Narrowband A service or connection providing data speeds up to 128kbps, such as via an analogue telephone line, or via ISD.

NGN Next Generation Network. A new type of network being considered or built by many telecoms operators to replace their existing infrastructure. Typically, they are packet-based, able to make use of many transport technologies and have service-related functions independent from underlying transport-related technologies. It is expected that the many separate networks run by most operators will be replaced by a single NGN.

OECD Organisation for Economic Cooperation and Development.

PAYG Pay-as-you-go.

Pay-per-view A service offering single viewings of a specific film, programme or event, provided to consumers for a one-off fee.

PDA Personal Digital Assistant .

Peaktime The period during which:

- a radio station broadcasts its breakfast show and, on weekdays only, also its afternoon drive-time show;
- a television station broadcasts its early- and mid-evening schedule, typically used by Ofcom to refer to the period between 18:00 and 22:30 each day (including weekends).

Podcasting A way for digital audio files to be published on the Internet, which can then be downloaded onto computers and be transferred to portable digital audio players.

PPC Partial Private Circuit.

PSB Public Service Broadcasting, or Public Service Broadcaster. The Communications Act in the UK defines the PSBs to include the BBC, ITV1, Channel 4, Five and S4C.

PSTN Public Switched Telephony Network.

PVT Public Value Test. One of the two components that together form the Public Value Assessment (PVA) for any new BBC service. The second component is the Market Impact Assessment (MIA) undertaken by Ofcom.

PVR Personal Video Recorder (also known as Digital Video Recorder).

RAB Radio Advertising Bureau.

Regulatory holiday A commitment by a regulator not to impose regulatory measures on a given product or service for a specified period of time.

RSL Restricted Service Licence. A radio licence serving a single site (e.g. a hospital or university campus) or serving a wider area on a temporary basis (e.g. for festivals and events).

Scrolling text facilities The feature of digital radios which enables broadcaster-compiled text to be displayed. Limitations on physical space on the display leads to the messages being scrolled across the display so that they can be read.

SDSL Symmetric Digital Subscriber Line. Unlike ADSL, it offers the same fast data rate speeds in both directions.

Service provider A provider of electronic communications services to third parties whether over its own network or otherwise.

Share (Radio) Amount of listening hours to a particular radio station as a percentage of all radio listening within that station's Total Survey Area.

Share (TV) Proportion of total TV viewing to a particular channel over a specified time period.

Shock-Jock A style of talk radio presentation pioneered in the US, where the host expresses controversial views and opinions.

Simulcasting The broadcasting of a television or radio programme service on more than one transmission technology (e.g. FM and MW, DAB and FM, analogue and digital terrestrial television, digital terrestrial and satellite).

SME Small or Medium sized Enterprise.

SMS Short Messaging Service.

Sub-loop unbundling A variant of LLU where a competitive operator takes control of only a portion of a customer's local loop, allowing them to install their equipment closer to the

customer and potentially offer higher speed services. In Sub-loop unbundling, the point of handover is commonly the Primary Connection Point (PCP) or street cabinet.

Telecommunications, or 'Telecoms' Conveyance over distance of speech, music and other sounds, visual images or signals by electric, magnetic or electro-magnetic means.

Timeshifting The broadcasting of a television service on more than one channel with a specified delay (typically an hour), to provide more than one opportunity for viewers to watch the service. Alternatively, the recording of programmes by viewers (using PVRs, recordable DVDs or VCRs) to watch at another time.

Transmitter A device which amplifies an electrical signal at a frequency to be converted, by means of an aerial, into an electromagnetic wave (or radio wave). The term is commonly used to include other, attached devices, which impose a more simple signal onto the frequency, which is then sent as a radio wave. The term is sometimes also used to include the cable and aerial system referred to above, and indeed the whole electrical, electronic and physical system at the site of the transmitter.

TSA Total Survey Area. The coverage area within which a radio station's audience is measured by RAJAR.

TV over DSL/TV over Broadband A subset of IPTV. A technology that allows viewers to access TV content – either in a linear programme schedule, or on-demand – using Internet Protocol via broadband services, either on a PC or (via a set-top box) on a TV set.

TVWF Television Without Frontiers. A range of provisions designed to achieve coordination of the legal, regulatory and administrative frameworks of European Union member states with respect to television broadcasting, adopted by the European Council in 1989 and amended in 1997.

UMTS Universal Mobile Telecommunications System. The 3G mobile technologies most commonly used in the UK and Europe.

VHF Very High Frequency. The part of the spectrum between 30 MHz and 300 MHz. FM radio is broadcast on part of this band (87.6 MHz to 107.9 MHz) and DAB digital radio is broadcast on another (Band III: 217.5 MHz to 230 MHz in the UK, and over a wider range, but shared with TV services, elsewhere in Europe).

VCR Video Cassette Recorder.

VDSL Very high bit rate DSL. This is currently the fastest version of DSL and can transmit very high data rates on short reaches of the local loop.

VoB Voice over Broadband. A technology that allows calls to be sent over the Internet,using broadband services.

VoD Video on Demand. A service or technology that enables TV viewers to watch programmes or films whenever they choose, not restricted by a linear schedule. Near Video on Demand (NVoD) is a service based on a linear schedule that is regularly repeated on multiple channels, usually at 15-minute intervals, so that viewers are never more than 15 minutes away from the start of the next transmission.

VoIP Voice over Internet Protocol. A technology that allows calls to be sent over the Internet, using either the public Internet or private IP networks.

WAN Wide area network. A network allowing the interconnection and intercommunication of a group of computers over a long distance.

WAP Wireless Application Protocol.

Wireless LAN or **WiFi** (Wireless Fidelity) Short range wireless technologies using any type of 802.11 standard such as 802.11b or 802.11a. These technologies allow an over-the-air connection between a wireless client and a base station, or between two wireless clients.

WiMAX A wireless MAN (metropolitan area network) technology, based on the 802.16 standard. Available for both fixed and mobile applications.

WLR Wholesale Line Rental. A regulatory instrument requiring the operator of local access lines to make this service available to competing providers at a wholesale price.

The definitions in this glossary are for general guidance purposes only and do not represent legal definitions.

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