

Appendix B: Price benchmarking

1. Introduction and objectives

For the 2008 International Communications Market Report we refined the price benchmarking methodology used in previous reports with the aim of finding the best possible approach to identifying and comparing the pricing of communications services between countries.

Ofcom used a new partner for this year's analysis, commissioning telecoms pricing consultancy Teligen to build a bespoke model and populate it with specifically-sourced tariff data for fixed-line voice, mobile phone and fixed and mobile broadband services in the UK, France, Italy, Germany, Spain and the USA.

This year's analysis builds on those published previously, but marks a step-change in terms of the range of tariffs considered (4,847 in total across the six countries), and the incorporation of additional complexities both in terms of the baskets (for example, a range of call lengths are included in the fixed and mobile baskets) and the tariffs (for example, including promotional offers subject to certain criteria).

The key objectives were as follows:

- to identify and compare the pricing that is available for consumers buying fixed-line voice services, pre-pay and post-pay mobile services, broadband internet and TV services;
- to identify and compare the pricing that is available by purchasing communications services within 'bundled' tariffs (for example, 'triple-play' services which typically offer a single bill for the delivery of fixed-line voice, broadband and television services);
- to compare pricing across a wide range of service usage scenarios, from the requirements of those with basic needs to those of consumers with more sophisticated consumption;
- to incorporate the cost of hardware such as set-top boxes or mobile handsets in order to reflect the real prices that consumers pay, and to compare like-with-like by allowing for equipment subsidies when they are included within propositions from service providers; and
- to represent average or typical use as accurately as possible across the five countries in order to avoid biases associated with comparing pricing based on usage characteristics that are more typical of one country than another.

2. Basic methodology

Further detail is provided below, but the basic principles are as follows.

- We constructed five 'typical' household types, which collectively may be seen as representative of the average population across our countries, and defined

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a basket of communications services (fixed-line voice, mobile, broadband, TV) appropriate for each household type.

- A wide range of components were included within the baskets to ensure as accurate as possible a representation of the real costs consumers pay. For example:
 - Fixed voice minutes were distributed by whether they were to fixed or mobile lines, by call distance (local, regional, national and international, including a range of international destinations), and time of day (day, evening, weekend).
 - In addition, mobile calls (and messaging) were split between on-net and off-net and voicemail was included.
 - Call set-up and per-minute charging was incorporated, and a range of call lengths were used (distributed around a defined mean based on averages across 30 OECD countries).
 - Incoming calls were included in recognition of the different pricing mechanism in the USA.
 - The broadband component was defined both by minimum headline speed and by minimum data and time online requirements (in recognition that in some markets some broadband service providers charge by time spent online in addition to or in place of data-based charging).
 - The television element included the licence fee (where applicable), a digital receiver and, for some baskets, a digital video recorder (DVR). Because of difficulties in comparing programming bundles, two tiers of pay-TV were considered: the most basic service available above the channels available on free-to-air TV; and a premium service defined by first-run movies from the major Hollywood studios and the best package of top-tier football matches
- The average monthly use across all of the baskets was adjusted to ensure that it was closely aligned with average use across the households (for example, the average number of outbound minutes per fixed line across the six countries in 2007 was 298 minutes, our average number of fixed minutes across our five households is 300 minutes).
- Mobile phones, broadband routers, digital set top boxes and DVRs are included within the baskets (and amortised over an appropriate period in order to attribute a monthly cost). This is necessary because they are often inseparable from the service price as operators frequently include subsidised or 'free' equipment (for example a mobile phone or a wireless router) within the monthly subscription. For similar reasons, connection and/or installation costs are included.
- In July 2008, detailed data of every tariff and every tariff combination from the largest three operators in each country by retail market share were collected (or for more than three operators if required to ensure that a minimum of 80 per cent of the overall market was represented in terms of share of retail connections). Multi-play tariffs (i.e. those which incorporate more than one service) were also collected. Only tariffs available on the web site of the operators were included.
- Across the six countries, the tariff data included consisted of:
 - fixed voice: 742 tariff options;

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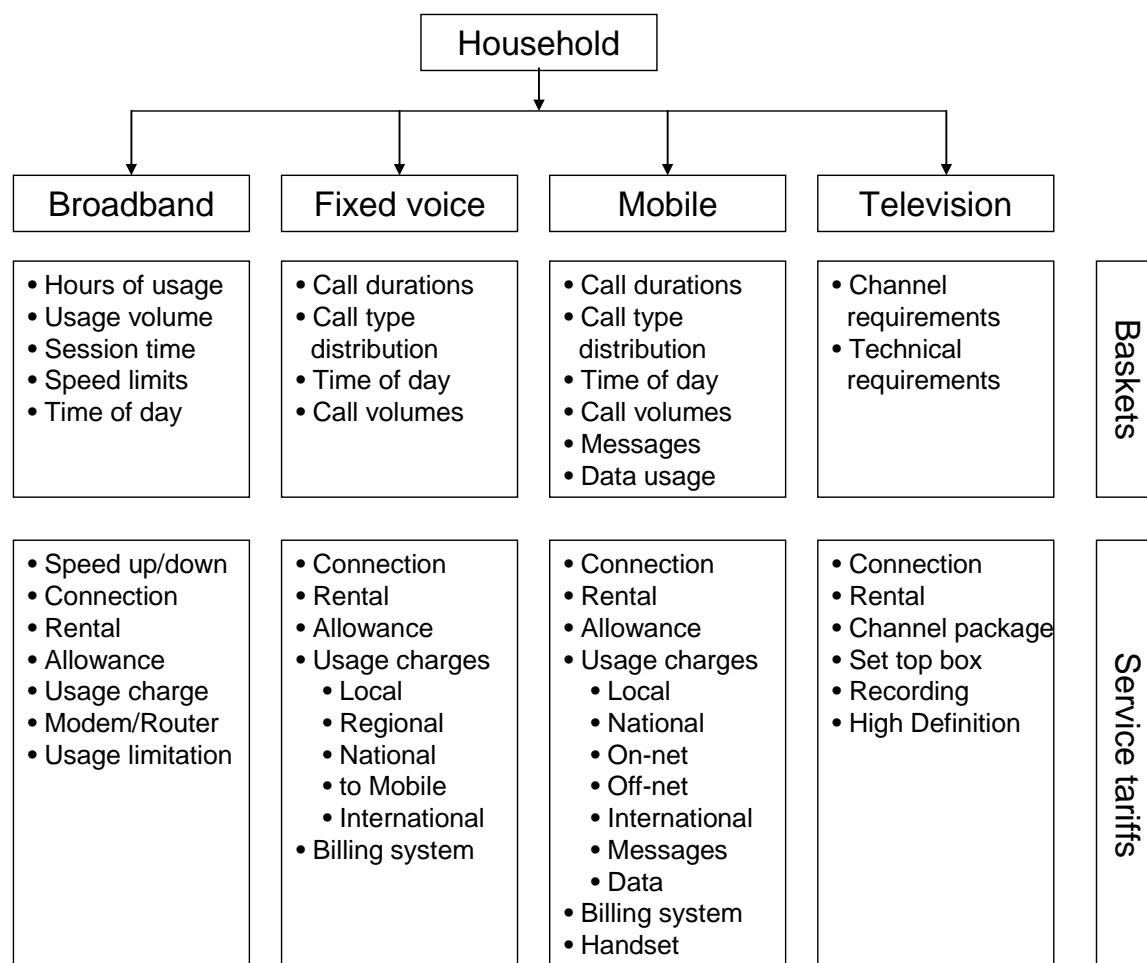
- mobile: 2481 tariff options;
 - broadband: 324 tariff options;
 - pay-television: 502 tariff options;
 - Multi-play: 800 tariff options.
- Our model identifies the tariffs that offer the lowest price for meeting the requirements of each of the household baskets.
 - All sales taxes and surcharges have also been included, in order to reflect the prices that consumers actually pay (although we do not account for differences in other areas of personal taxation policy within each country).
 - All prices are converted back to UK currency using a Purchasing Power Parity (PPP) adjustment based on OECD comparative price levels and an exchange rate in July 2008.
 - In order to provide both an illustration of representative prices for the individual services in each country, and an illustration of the best value that consumers could get for their full 'basket' of services, we have provided two types of analysis for each basket:
 - i) the first, which we call "average single service" pricing, illustrates the price of each individual service as defined by the average of the lowest price tariff from each of the three largest operators for each service in each country, weighted by the market share of the service provider in order to ensure fair representation; and
 - ii) the second, which we call "best offer" pricing, identifies the lowest price a consumer could pay for this basket of services, including, where appropriate, by purchasing 'bundled' services.

Because of changes in the methodology, findings for 2008 are not directly comparable with those for 2006 and 2007. However, it is our intention to repeat the analysis in future years using a consistent methodology which will enable year-on-year comparison.

3. Principles of the model

The model developed for Ofcom by Teligen uses individual consumption baskets for each of the services in the pricing analysis, combined in a structure that allows definition of household baskets of any combination of services.

Figure B1 Components of the pricing comparison model



Source: Teligen

Each household definition may include any of the four services, with any combination of basket parameters, describing the use of each service within the household. For the mobile service the system allows definitions of multiple users, for each member of the household.

The tariff information contains all charges and elements that will typically be part of a service offering. Some costs have been excluded as beyond the scope of the current analysis:

- PC/laptop(s) for use with the broadband service
- Television set(s)
- Recording equipment beyond those built into digital decoders
- Fixed telephone handset

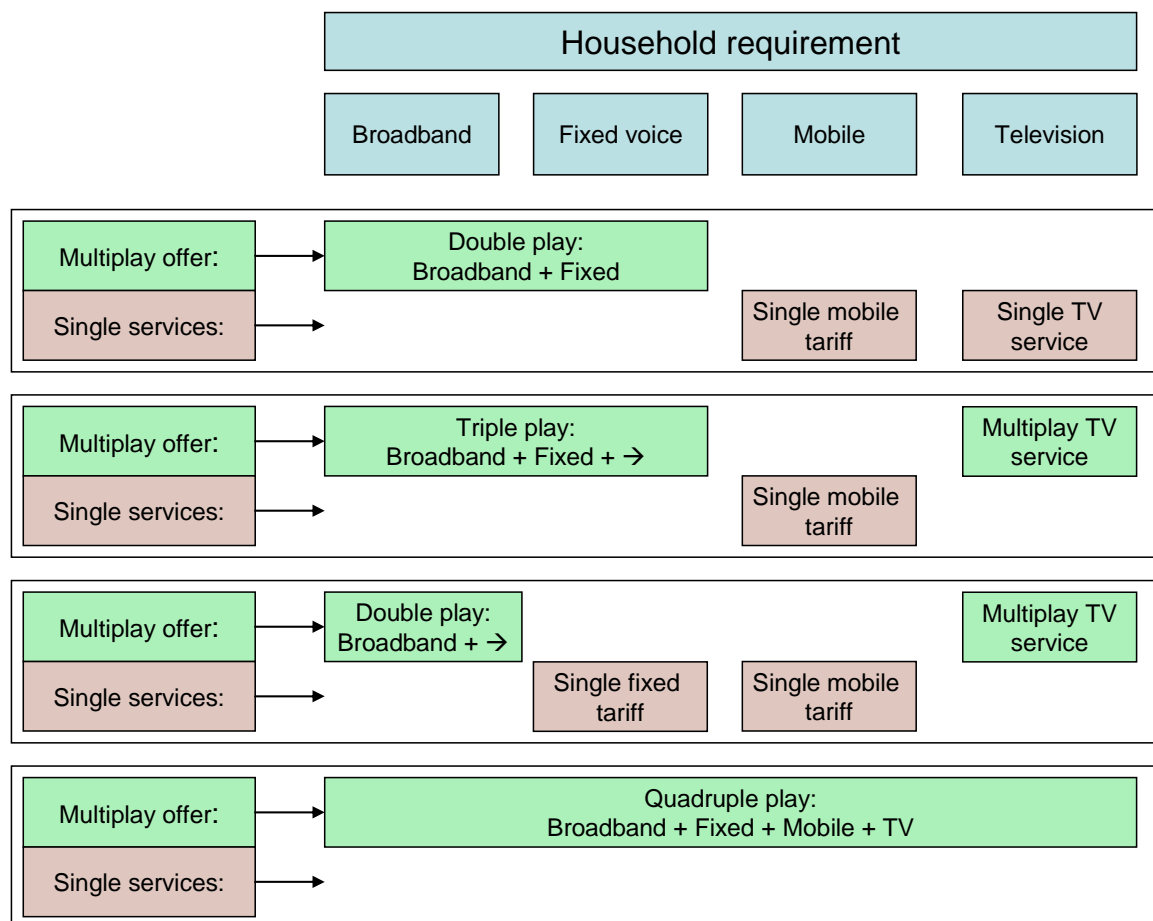
However mobile handsets, routers and set-top boxes / TV receivers are included as they are an integral part of the service offerings, and are often subsidised by operators who recoup the value of the hardware through the course of a contract

Multi-play service offerings

An important part of the analysis is the inclusion of ‘multi-play’ service offers available in each of the study countries, whereby more than one service is purchased from a single service provider, often at a substantial discount from purchasing the services separately.

As the household definition determines which services are required by the household, and as this may or may not correspond with the multi-play offerings available, it is necessary to combine the multi-play offerings with the available single service tariffs in each market. Where the multi-play offer does not cover the household requirement for a particular service, a suitable single service tariff is used to fill the gap. In such cases the best possible tariff (the cheapest single offer that can fulfil the usage requirements) is used.

Figure B2: Examples of combinations of multi-play and single service offers



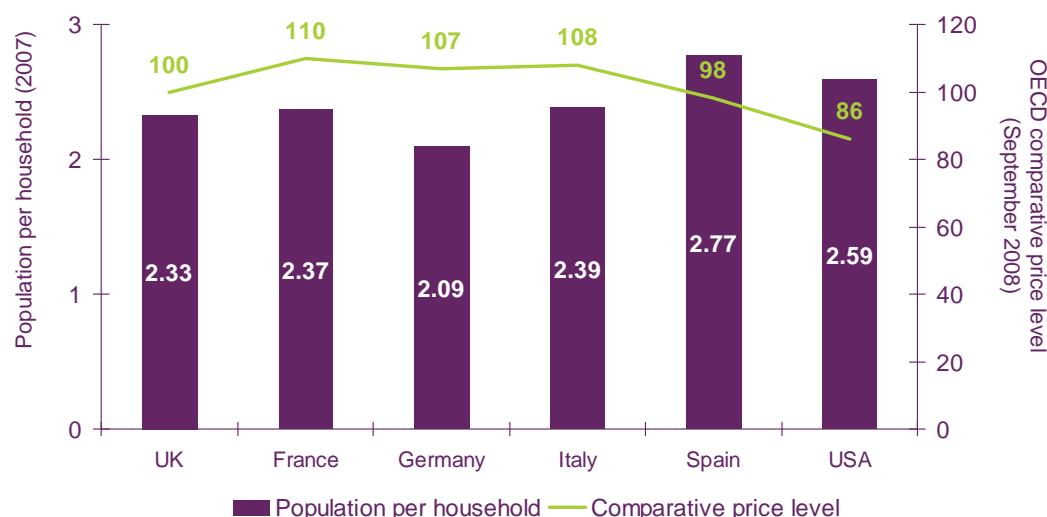
Source: Teligen

4. Geographic scope

Pricing comparisons are made between six countries – the UK, France, Germany, Italy, Spain and the United States. These countries have broadly similar socio-demographic, economic and communications-usage characteristics; high-level parameters such as population per household and comparative price levels (which is a proxy for cost of living) suggest that an economically fair comparison can be made.

Because of the existence of local markets in the USA, we have used tariffs available in the state of Illinois. This was chosen as reasonably representative of the US as a whole in terms of its relative wealth and rural-urban split (it incorporates the city of Chicago as well as large agricultural regions). Nevertheless, US pricing should not be viewed as being representative of the whole country.

Figure B3: Demographic characteristics of core countries



Source: OECD / IMF / US census bureau

5. Tariff data

For practical reasons, it was not possible to incorporate every tariff from all of the operators in every country. Instead, we set a requirement that the analysis included the three largest operators by retail market share for each service and represented at least 80% of the retail market. Therefore in markets where the three largest operators had collective market share of over 80% we limited our analysis to tariffs from these three operators; otherwise we also included the fourth and fifth largest operators to ensure that we represented a minimum of 80% of the market. While this methodology excludes smaller operators, which may offer the lowest prices for some services, we believe that using the prices of the largest operators is appropriate, both because

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they are the best reflection of the general consumer experience and because they are in large part defined by the competitive environment in which they operate.

Research was undertaken in July 2008, and only tariffs detailed on the web sites of the operators were included. Special offers and promotions (for example, reduced line rental for a number of months, or 'free' installation or hardware) were included, but only if they were available to all new customers and were available for the whole month.

In total, the following number of tariff options were included in the analysis

- fixed voice: 742 tariff options
- mobile: 2481 tariff options
- broadband: 324 tariff options
- television: 502 tariff options
- multi-play: 800 tariff options

Figure B4: Operators included within the analysis

	Fixed	Mobile	Broadband	Television
UK	BT Virgin Media TalkTalk	O2 Vodafone T-Mobile Orange	BT Virgin Media TalkTalk / AOL Sky Tiscali	Sky Virgin Media
France	France Telecom Neuf Cegetel Iliad (free)	Orange SFR Bouygues	Orange Iliad (Free) Neuf Cegetel	TNT CanalSat Noos
Germany	Deutsche Telekom Arcor Freenet	T-Mobile Vodafone E-Plus	T-Online United Internet Arcor Alice	Kabel Deutschland Kable BW Unity Media Telecolumbus
Italy	Telecom Italia Tele2 Italia Wind	TIM Vodafone Wind	Telecom Italia FastWeb Wind	Free to Air Sky Italia Fastweb
Spain	Telefonica Ono Uzkatel	Movistar Vodafone Orange	Telefonica Ono Orange	Digital Plus Ono Imogenio
USA	AT&T Verizon Frontier	Verizon Wireless AT&T (Cingular) T-Mobile	Comcast TW Cable AT&T	Comcast Cable Direct TV RCN

Source: Teligen

6. Household types

For this study we make reference to five hypothetical 'typical' households, and have defined their requirements for communications services. These household types are designed to be collectively broadly representative of the overall population of the five countries; however, in order to provide comparison across the full range, from very basic to advanced communications-service users, we have created significant variation in the contents of the baskets of communications services.

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Basket 1: a low-use household with basic needs

Our first basket contains a usage pattern typical of a retired low-income couple in any of our comparator countries. They rely on a fixed-line phone for communications and spend around seven and a half minutes a day making calls, the majority of which are local. They only occasionally make calls to mobiles and do not make any international calls. They watch free-to-air multichannel digital television, which is available in all of our countries (largely via satellite in Germany and via the terrestrial platform in the other countries).

Figure B5 Composition of Basket 1

Fixed-line voice	Mobile	Broadband	Television
Total outbound: 225mins - Local: 61% - Regional: 14% - National: 22% - To mobile: 3% - Daytime: 58% - Evening: 25% - Weekends: 17%	No connection	No connection	Free-to-air digital television --- 1 digital receiver / set-top box

Source: Ofcom

Basket 2: a broadband household with basic needs

The second basket is representative of a couple of 'late adopters' who are fairly heavy users of the fixed-line phone, have one mobile between them which they use occasionally and have a basic broadband connection.

Figure B6: Composition of Basket 2

Fixed-line voice	Mobile	Broadband	Television
Total outbound: 430mins - Local: 65% - Regional: 18% - National: 11% - International: 3% - To mobile: 3% - Daytime: 58% - Evening: 25% - Weekends: 17%	One basic handset Voice: Total outbound: 60mins To national fixed: 24% To on-net mobile: 38% To off-net mobile: 38% Total inbound: 60mins Daytime: 58% Evening: 25% Weekend: 17%	Basic fixed-line connection Minimum speed: 1Mbit/s Minimum usage: 0.5GB Minimum hours: 10	Free-to-air digital television --- 1 digital receiver / set-top box

Source: Ofcom

Basket 3: a mobile 'power user'

The third basket represents a single-person household typical of a young professional or student. This person has eschewed fixed-line telecoms and is instead a heavy user of both a mobile phone and of mobile broadband (using a mobile 'dongle' to connect to the internet on a laptop computer).

Figure B7 Composition of Basket 3

Fixed-line voice	Mobile	Broadband	Television
No connection	One high-end handset Voice: Total outbound: 550mins To national fixed: 13% To on-net mobile: 37% To off-net mobile: 37% To international: 6% To voicemail: 7% Total inbound: 550mins Daytime: 60% Evening: 19% Weekend: 21% Messaging and data: SMS: 150 MMS: 10 Internet: 100MB / 300mins	Mobile broadband connection Minimum speed: 1Mbit/s Minimum usage: 3GB Minimum hours: 15	Entry-level pay-TV subscription (including channels which are not available via free digital television) --- 1 digital receiver / set-top box

Source: Ofcom

Basket 4: a family household with multiple needs

Basket 4 represents a family of two parents and two children, all with their own mobile handset but with different mobile needs, with the adults using more voice and the children more messaging. However, they are cost conscious and favour using the fixed-line phone whenever possible, which gets fairly heavy use. The family are also heavy users of the internet, requiring a minimum headline connection speed of 4Mbit/s, and subscribe to entry-level pay-TV services.

Figure B8 Composition of Basket 4

Fixed-line voice	Mobile	Broadband	Television
Total outbound: 600mins - Local: 68% - Regional: 9% - National: 14% - International: 7% - To mobile: 2% - Daytime: 59% - Evening: 25% - Weekends: 16%	One high-end handset One mid-range handset Two basic handsets Mobile connection 1 Voice: Total outbound: 300mins To national fixed: 17% To on-net mobile: 33% To off-net mobile: 33% To international: 10% Voicemail: 7% Total inbound: 300 mins Messaging and data: SMS: 30 Internet: 30MB / 100mins Mobile connection 2 Voice: Total outbound: 180mins To national fixed: 20% To on-net mobile: 34% To off-net mobile: 34% Voicemail: 12% Total inbound: 180mins Messaging and data: SMS: 160 MMS: 4 Mobile connection 3 Voice: Total outbound: 60mins To national fixed: 30% To on-net mobile: 30% To off-net mobile: 30% Voicemail: 10% Total inbound: 60mins Messaging and data: SMS: 70 MMS: 2 Mobile connection 4 Voice: Total outbound: 60mins To national fixed: 30% To on-net mobile: 30% To off-net mobile: 30% Voicemail: 10% Total inbound: 60mins Messaging and data: SMS: 65 MMS: 2	Fixed-line broadband connection Minimum speed: 4Mbit/s Minimum usage: 5GB Minimum hours: 50	Entry-level pay-TV subscription (including channels which are not available via free digital television) --- 1 digital receiver / set-top box

Source: Ofcom

Basket 5: an affluent two-person household with high use of mobile, internet and premium TV

Our final basket is typical of a young couple of high-end users who have low price sensitivity. They both have mobile connections and are fairly high users of voice and (to a lesser extent) SMS. They also have a fixed line, but this has relatively low use. They have a fast broadband connection and are heavy users, and have a premium

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television package for watching sport and the latest movies, and also a digital video recorder (DVR).

Figure B9: Composition of Basket 5

Fixed-line voice	Mobile	Broadband	Television
Total outbound: 250mins - Local:60% - Regional:7% - National: 13% - International: 8% - To mobile: 12% - Daytime: 59% - Evening: 25% - Weekends: 16%	One high-end handset One mid-range handset Mobile connection 1 Voice: Total outbound: 400mins To national fixed: 20% To on-net mobile: 29% To off-net mobile: 29% To international: 14% Voicemail: 8% Total inbound: 400mins Messaging and data: SMS: 80 Internet: 30MB / 100mins Mobile connection 2 Voice: Total outbound: 200mins To national fixed: 30% To on-net mobile: 30% To off-net mobile: 30% Voicemail: 10% Total inbound: 200mins Messaging and data: SMS: 20	Fixed-line broadband connection Minimum speed: 8Mbit/s Minimum usage: 5GB Minimum hours: 50	Premium pay-TV subscription, including: - Best package of live top-flight football / NFL - Film package including first-run major studio movies - PVR service --- 1 digital receiver 1 DVR

Source: Ofcom

7. The relationship between basket composition and usage by country

There is significant variation in the take-up and use of communications services across the six comparator countries.

Figure B10: Average take-up and use of communications services by country

'Typical' household type	UK	France	Germany	Italy	Spain	USA	Average
People per household	2.33	2.37	2.09	2.34	2.77	2.59	2.42
Fixed-only households per 100 households	9	18	20	6	16	N/A	14
Outbound fixed voice minutes per access line per month	366	305	259	278	284	N/A	298
Mobile connections per household	2.82	2.06	2.47	3.61	2.97	2.21	2.69
Mobile-only households	15	16	11	37	25	N/A	21
Outbound mobile minutes per household per month	318	310	145	273	348	762	359
SMS per household per month	188.1	58.3	47.4	190.0	65.1	138.2	114.5
Broadband connections per 100 households	59.9	58.0	49.8	39.9	49.6	61.3	63.7
Pay-TV subscriptions per 100 households	46.8	51.1	65.8	20.1	24.6	83.3	48.6

Source: IDATE / European Commission

NOTE: As combined outbound and inbound call and SMS volumes are the only data available, this total has been halved as a proxy to represent outbound calls / SMS only

Notes: All data is for 2007; further details are available in the Telecoms and Television sections; data for some countries was not available when the baskets were defined. Where estimates have been used the data are in italics.

In order to address mitigate against potential biases associated with our baskets being more closely aligned with the usage profiles of some countries than others, we have adjusted the overall average use across the five baskets to ensure that it closely matches the average use across the six countries. Nevertheless, the variations in the average use should be considered when looking at the output from the individual baskets.

Figure B11: Alignment of average use across comparator households with average use across comparator countries

	HH 1	HH 2	HH 3	HH 4	HH 5	Average per HH	Average across countries
Number of people	2	2	1	4	2	2.2	2.42
Fixed-only households	1	0	0	0	0	0.2	0.14
Mobile-only households	0	0	1	0	0	0.2	0.21
Outbound fixed minutes	225	430	0	600	250	301	298
Outbound mobile minutes	0	60	550	600	600	362	359
Outbound SMS HH	0	0	150	325	100	115	115
Fixed broadband subscriptions	0	1	0	1	1	0.6	0.53
Mobile broadband subscriptions	0	0	1	0	0	0.2	N/A
Pay-TV subscriptions	0	0	1	1	1	0.6	0.49

Source: Ofcom

8. Fixed-line voice services

Fixed voice tariff information

The fixed voice service is assumed as a home based fixed telephony service. A household is assumed to have not more than one fixed line service.

Single fixed voice services are normally offered on a dedicated analogue line (PSTN services). In the context of multi-play the fixed voice service is often delivered as an IP telephony service over a broadband connection. From a user point of view these services are exchangeable, but from a technical point of view they are very different. As connection and line rental charges are covered by the broadband service the multi-play fixed voice services will often have zero or very small fixed charges over and above the broadband charges.

Typically Fixed Voice tariffs incorporate some or all of the following types of charging:

- Connection charge and takeover charge
- Monthly rental charge, plus the monthly charge for any additional options taken
- Allowances in terms of minutes included per month, or a value deducted from usage each month. These allowances are mapped onto the different types of calls and times of day.
- Billing system information
- Call charges for day, evening and weekend
 - Local calls
 - Regional calls
 - National calls
 - Calls to mobiles (for each network, weighted)
 - International calls to ten destinations

The billing system information is used to determine the price elements included in a typical call. Seven types of billing are possible.

Figure B12: Types of billing for fixed voice calls

Calc types:
1 Per sec.
2 Per unit
3 Per minute
4 Per sec. w/allowance
5 Per sec. w/initial minute
6 Per sec. capped
7 Per minute capped

Source: Teligen

Each tariff is handled individually, and will have the most appropriate call cost calculation system applied.

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Fixed voice Basket

The fixed voice basket defines the usage per month for the household, and calculates the monthly cost of using the fixed voice service. The basket elements are listed below, with values for each of the five households.

Figure B13: Components of the fixed voice baskets

	HH 1	HH 2	HH 3	HH 4	HH 5	
Call durations *			None			
Local	4	4		4	4	minutes
Regional	6	6		6	6	minutes
National	6	6		6	6	minutes
Fixed to Mobile	2	2		2	2	minutes
International	6	6		6	6	minutes
Destination weight			None			
Local	67	70		68	60	%
Regional	10	8		9	7	%
National	16	13		14	13	%
Fixed to Mobile	7	7		7	12	%
International	0	2		2	8	%
Time of day weight			None			
Day	58.3	58.3		59.2	55.5	%
Evening	24.5	24.5		24.9	25.0	%
Weekend	17.2	17.2		15.9	19.5	%
Depreciation	5	5	5	5	5	years

Source: Teligen

Note: * All fixed call types are calculated with five different durations, below and above the number of minutes indicated.

International calls are weighted according to the table below, considering each originating country and each destination country.

Figure B14:: Fixed voice international call destinations for comparator countries

	Canada	France	Germany	Italy	Japan	Russia	South Africa	Spain	UK	USA
Canada		2.2%	2.1%	1.7%	1.0%		0.3%		6.5%	86.2%
France	2.8%		25.2%	19.0%	1.4%			13.7%	24.7%	13.2%
Germany	2.7%	21.6%		20.0%	1.7%	2.3%	0.8%	8.6%	20.4%	22.0%
Italy	3.4%	26.5%	30.3%		1.0%			7.0%	15.6%	16.2%
Japan	4.4%	5.0%	6.8%	2.5%		1.6%		1.1%	11.5%	67.1%
Russia	2.2%	8.8%	35.1%	11.8%	2.0%			3.4%	10.6%	26.1%
South Africa	4.4%	5.0%	13.9%	4.4%	1.8%				46.7%	23.7%
Spain	0.8%	27.6%	23.8%	11.2%	0.7%	0.7%	0.2%		24.0%	10.9%
UK	6.2%	18.1%	19.5%	8.7%	2.8%		2.7%	8.0%		34.0%
USA	47.9%	5.6%	12.2%	4.6%	8.7%	1.3%	0.8%	2.2%	16.7%	

Source: Teligen

Note: Vertical axis is "From", and horizontal is "To".

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Basket logic

Once the cost of using each fixed voice package is calculated the cheapest package per provider and per country is identified. These are the packages that are considered in the household cost scenarios.

The packages that are part of a multi-play offering are identified separately from the single packages.

Fixed voice data issues

Fixed voice services are covered with both direct and indirect services. Any line installation and monthly rental charges incurred by those using indirect services are included in the service costs.

Some providers offer a wide range of add-on options for their tariff packages, with possible cost reductions. These have been incorporated in order to identify the lowest prices available for a basket of services.

Tariff packages offering free or reduced price calls to specific destinations or selectable numbers are not considered.

9. Mobile services

Mobile tariff information

The mobile service is assumed as a personal service where a household may have several users with individual usage profiles and requirements.

Typically the Mobile tariffs will use some or all of the following charge categories:

- Connection charge
- Monthly rental charge, plus the monthly charge for any additional options taken
- Allowances in terms of call minutes and/or messages included per month, or a value deducted from usage each month. These allowances are mapped onto the different types of calls and times of day.
- Billing system information
- Call charges for day, evening and weekend
 - Local calls
 - National calls
 - On-net calls to mobiles
 - Off-net calls to mobiles (for each network, weighted)
 - Voicemail calls
 - International calls to ten destinations
 - Data use

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- Messages

The billing system information is used to determine the price elements included in a typical call. Seven types of billing are possible:

Figure B15: Types of billing for mobile voice calls

Calc types:
1 Per sec.
2 Per unit
3 Per minute
4 Per sec. w/allowance
5 Per sec. w/initial minute
6 Per sec. capped
7 Per minute capped

Source: Teligen

Each tariff is handled individually, and will have the most appropriate call calculation system applied.

Mobile basket

The mobile basket defines the usage per month for the user, and calculates the monthly cost of using the mobile service. The basket elements are listed below, with values for some of the typical user types:

Figure B16: Components of the mobile baskets

	HH 1	HH 2	HH 3	HH 4-1*	HH 4-2*	
Call durations **	None					
Local		1.5	1.7	1.8	1.8	minutes
National		1.5	1.7	1.8	1.8	minutes
On-net		1.6	1.9	1.9	1.9	minutes
Off-net		1.4	1.8	1.7	1.7	minutes
Voicemail		0.8	0.8	0.8	0.8	minutes
International		2	2	2	2	minutes
Destination weight	None					
Local		16	8	11	13	%
National		8	5	6	7	%
On-net		38	37	33	34	%
Off-net		38	37	33	34	%
Voicemail		0	7	7	12	%
International		0	6	10	0	%
Time of day weight	None					
Day		48	60	50	50	%
Evening		25	19	24	24	%
Weekend		27	21	26	26	%

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Calls per month		37	396	159	82	calls
Messages	None					
On-net		50	50	50	50	%
Off-net		50	50	50	50	%
Peak		48	60	50	50	%
Off-peak		52	40	50	50	%
Depreciation	3	3	3	3	3	years

Source: Teligen

Notes:

* The implementation of the model only allows for two mobiles per household. Therefore an additional basket (HH4-2) has been included to represent two of the four mobile connections in Household 4

** All mobile call types are calculated with five different durations, below and above the number of minutes indicated.

International calls are weighted according to the table below, considering each originating country and each destination country.

Figure B17: Mobile voice international call destinations for comparator countries

	Canada	France	Germany	Italy	Japan	Russia	South Africa	Spain	UK	USA
Canada		2.2%	2.1%	1.7%	1.0%		0.3%		6.5%	86.2%
France	2.8%		25.2%	19.0%	1.4%			13.7%	24.7%	13.2%
Germany	2.7%	21.6%		20.0%	1.7%	2.3%	0.8%	8.6%	20.4%	22.0%
Italy	3.4%	26.5%	30.3%		1.0%			7.0%	15.6%	16.2%
Japan	4.4%	5.0%	6.8%	2.5%		1.6%		1.1%	11.5%	67.1%
Russia	2.2%	8.8%	35.1%	11.8%	2.0%			3.4%	10.6%	26.1%
South Africa	4.4%	5.0%	13.9%	4.4%	1.8%				46.7%	23.7%
Spain	0.8%	27.6%	23.8%	11.2%	0.7%	0.7%	0.2%		24.0%	10.9%
UK	6.2%	18.1%	19.5%	8.7%	2.8%		2.7%	8.0%		34.0%
USA	47.9%	5.6%	12.2%	4.6%	8.7%	1.3%	0.8%	2.2%	16.7%	

Source: Teligen

Note: Vertical axis is "From", and horizontal is "To".

The Internet traffic is defined as both MegaBytes of download volume and minutes of use, as tariffs may be charging according to any of these two methods.

Handsets are defined in 3 categories:

1. Basic -2G, ideally without camera or MP3 player, if not then up to 2MP camera + MP3 player / FM radio
2. Mid-Range - 2.5G or Basic 3G, above 2MP camera, + MP3 player / FM radio
3. High-End - Nokia N95 where possible (not N95 8GB) otherwise equivalent phone with minimum 5MP camera.

Basket logic

Once the cost of using each mobile package is calculated some checks will take place:

- Does the package offer include a handset, or can a suitable handset be included with the package? If not then the package will not be considered

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- If the basket assumes an amount of data traffic then the package must also be able to offer this. If not the package will not be considered.

Then the cheapest package per provider and per country is identified. These are the packages that will be considered in the household cost scenarios. The packages that are part of a multi-play offering will be identified separately from the single packages.

Mobile service data issues

Although the model allows for pre-pay and post-pay services to be considered separately, in this year's analysis, we have not defined whether the mobile phone component in a basket is pre-pay or post-pay. We believe this enables better international comparison given the very different pre-pay / post-pay splits in different countries (for example, around 90 per cent of Italian mobile connections are pre-pay, while around 90 per cent of US mobile connections are post-pay). However, a consequence of this is that the analysis does not recognise the different characteristics of the services; for example, a pre-pay mobile may be the only option available to consumers with a poor credit rating and also offer advantages to those who vary their usage month-by-month.

Mobile packages for 2G / 2.5G are covered. No data-only packages are included, but tariffs such as *BlackBerry* tariffs (which are data-focused but have a voice component) are.

The effect of free or discounted calls to specific destinations or selectable numbers is not included.

Allowances or free minutes/message/data volumes are included in the tariffs, and are treated as close to the billing system principles as possible. The deduction of minutes and messages will follow the traffic weights defined by the basket profiles.

10. Broadband services

Broadband tariff information

The broadband services covered may be on any platform typical for home use, the most common ones being DSL and cable. Wireless broadband is also included wherever possible, however these services are most often provided by mobile service providers. Tariffs are categorised by headline speed.

Typically broadband tariffs use some or all of the following charge categories:

- Connection charge
- Installation charge, for either self install or engineer install (the cheapest solution is used)
- Purchase price for modem and possibly router
- Any specific connection charges paid to the incumbent operator
- Monthly rental for broadband service
- Possibly, a monthly price for modem and router rental
- Any specific rental charges paid to the incumbent operator

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- Usage time allowance
- Usage time limit
- Usage time charge (per minute or hour beyond allowance)
- Usage data volume allowance
- Usage data volume limit
- Usage data volume charge (per MB or GB beyond allowance)
- Maximum cost per month

Broadband basket

The broadband basket is relatively simple, and basically calculates the monthly cost of using a broadband service in a home environment. The basket parameters are generally given per month. The values below are related to the five defined households.

Figure B18: Components of the broadband baskets

	HH 1	HH 2	HH 3	HH 4	HH 5	
Usage time	None	10	15	50	50	hours
Usage volume	None	0.5	3	5	5	GB
Session duration		20	20	20	20	minutes
Minimum speed		1,000	1,000	4,000	8,000	kb/s
Maximum speed		1,000,000	1,000,000	1,000,000	1,000,000	kb/s
Usage / day		30	30	30	30	%
Usage / evening		40	40	40	40	%
Usage / weekend		30	30	30	30	%
Depreciation		3	3	3	3	years
Type of service		Fixed	Mobile	Fixed	Fixed	

Source: Teligen

The headline speed of each tariff package is checked against the usage volume, and if the speed is too low to accommodate the traffic indicated the tariff is excluded from the analysis.

The speed of each tariff packages is also checked against the speed range give by the basket, and if the speed is outside this range the tariff is excluded from the analysis.

If the tariff package has a penalty with excess usage whereby the speed delivered is 'throttled', the tariff is excluded from the analysis once this penalty takes effect.

The resulting cost is presented as connection/set-up cost, rental and usage.

- The monthly connection/set-up cost is the sum of all one-off charges amortised over three years.
- The rental cost is the sum of all monthly charges

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- The usage cost is calculated from any per-minute or per-MB charges. The session durations and usage volumes of the baskets are used for this calculation, along with any time or volume allowances.

Basket logic

Once the cost of using each package is calculated a number of checks will take place:

- If the package uses a limiting mechanism that will take effect when the allowance is exceeded, the status of this limit has to be checked. If it turns out that the package is not able to accommodate the traffic defined in the basket within this allowance, and that download speed will be limited as a result, the package cannot be considered.
- If the download speed of the package is outside the range defined by the basket, the package will not be considered.
- The basket will define whether a fixed or wireless package shall be used, and this will also be checked.
- The resulting total monthly cost of the remaining packages will be compared, and the cheapest package from each provider and also for each country will be identified.

Broadband data issues

Broadband services of different types are covered: DSL, cable as well as wireless. The bitrates used are the headline 'up to' speeds published by the provider, not considering any speed reductions caused by local circumstances. Only the download speed is considered, even though the upload speed is also covered.

Where available the prices for both self installation and engineer installation are covered. However, in some cases only one of these may be available. The cheapest option is always used.

It is common to have special offers with reduced rental for the first few months. This is included wherever it applies, given the promotional offer valid in July 2008. The monthly rental is then averaged over the depreciation period of three years.

The research shows that some providers will only offer broadband services bundled with other services, as a multi-play package. Hence there will not always be single service offers for all providers listed.

11. Television services

Television tariff information

Television services are probably where there is most diversity and difference between the countries. In this benchmarking study the Television services covered will typically fall into three categories:

- Basic service, with a range of "free-to-air" channels

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- Basic pay TV service, with a basic set of channels beyond the “free-to-air” channels
- Premium service, based on the providers top-of-the-range offering, including top league football/NFL matches and first-run Hollywood movies

Additionally there are two parameters that will be considered:

- Whether or not a digital recording (DVR) facility is included in the set top box.
- Whether or not high-definition (HD) services are included.

The basket definitions below will show how these parameters are defined for each of the households.

Television services will cover the most relevant offerings from each provider based on the two broad definitions above. Typically television tariffs will use some or all of the following charge categories:

- Connection charge
- One-off charges for the set top box (STB) and digital video recorder (DVR)
- Monthly rental for basic television service
- Monthly rental for additional channel packages
- Monthly rental for hardware (STB, DVR)
- License fee

Television basket

The Television basket is relatively simple, and calculates the monthly cost of having the relevant channel package together with the cost of relevant installation and/or equipment amortised over three years. The basket parameters are generally given per month. The values below are related to the five defined households.

Figure B19: Components of the television baskets

	HH 1	HH 2	HH 3	HH 4	HH 5	
Antenna reception	Y	N	N	N	N	Y/N
HD capable	N	N	N	N	N	Y/N
DVR included	N	N	N	Y	Y	Y/N
Football channels	N	N	N	N	Y	Y/N
Movie channels	N	N	N	N	Y	Y/N
Depreciation	3	3	3	3	3	years

Source: Teligen

Basket logic

Once the cost of using each television package is calculated some checks take place:

- Is the number of channels offered in the package equal or above the minimum number of channels defined in the basket?

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- Is HD capability required by the basket and offered by the package?
- Are Hollywood premieres and top level football / NFL required by the basket and offered by the package?

If any of these are answered with a “no” then the package will not be considered.

The cheapest package is identified for each provider and for each country, and these are used in the household cost assessment following.

Television data issues

The television data has been limited to packages offering channels that are within the basket definition, largely resulting in three categories of offers:

- Basic “free-to-air” packages over a digital transmission network
- Basic pay-TV access with no special programming requirements
- Premium pay-TV access, including premium channels showing first-run Hollywood movies and top choice football/NFL matches. This option also requires hardware with a DVR capability.

A vast number of optional offers exist, and it is not feasible to cover them all.

12. Purchasing power parity adjustment

All prices have been converted back to UK currency, using a Purchasing Power Parity (PPP) adjustment based on OECD comparative price levels in July 2008 and the exchange rate in mid-July. Comparative price levels represent the number of specified monetary units necessary to buy the same representative basket of consumer goods and services, relative to any specified country (in this case, the UK), and enable a comparison of relative consumer pricing for any product or service.

Figure B20: Purchasing Power Parity conversion rates

	Currency	Exchange rate July 2008 (£)	Comparative price level (June 2008)	PPP adjusted rate (£)
UK	UK pound (£)	1.00	100	1.00
France	Euro (€)	1.25	106	1.32
Germany	Euro (€)	1.25	102	1.28
Italy	Euro (€)	1.25	103	1.29
Spain	Euro (€)	1.25	94	1.17
USA	US Dollar (US\$)	1.99	79	1.57

Source: Teligen using OECD data

13. Analysis

Having identified the lowest prices for each single service from each of the three largest operators in each country, and the lowest-price ‘bundled’ services appropriate

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to meet the needs of all, or part of, each basket, we performed two types of analysis, which are detailed in the write-up of the findings:

- i) The “average single service” pricing available for each of the components in every basket (fixed-line voice, broadband, post-pay mobile, pre-pay mobile, pay-TV). This was calculated as the average of the lowest price tariffs from three operators for each service in each country, weighted by the market share of the service provider in order to ensure fair representation.
- ii) The “best offer” pricing available for the overall basket. This identifies the lowest price that a consumer could pay for this basket of services, including, where appropriate, by purchasing ‘bundled’ services. This was calculated by identifying the lowest price from any tariff for each component of every basket, together with the lowest-price bundled services suitable for the basket, and identifying the overall lowest price available.

We believe both types of analysis are important for providing an overall understanding of comparative pricing.

Single-service pricing provides a useful comparison of the relative costs of communications services, and, because it is an average weighted by market share, it also provides a good indication of the prices that many consumers are actually paying. However, an important limitation is that single-service offers are sometimes not available from leading suppliers. For example, in the UK, Carphone Warehouse only offers broadband together with its fixed-voice service, while BSkyB only offers broadband together with digital television.

We believe the inclusion of ‘bundles’ within “best offer” pricing is also essential to understand the pricing of communications services, which are increasingly being delivered as multi-service propositions (examples in the UK include the ‘free’ broadband offer with TalkTalk’s voice service, or Sky’s *See, Surf, Talk* ‘triple-play’ offer which provides TV, voice and broadband, or Virgin’s ‘quad-play’ offer which includes TV, voice, broadband and mobile.) However, a limitation is that ‘bundled’ service offerings are typically not available to all consumers, as they are generally geographically constrained to areas where premises are connected either to a cable network or to an unbundled telephone exchange. And although focusing on the ‘best offer’ provides insight to the lowest prices available to some customers, it is not as good a reflection of the prices that consumers are actually paying as the weighted average analysis which is possible when looking at single-service pricing.

14. Limitations

As already noted, this benchmarking methodology and output is intended to build on the approach used in last year’s International Communications Market Report, and we intend to continue to develop and improve it further. We welcome feedback at: marketintelligence@ofcom.org.uk

We highlight the following limitations to the analysis:

- The analysis assumes a wholly rational consumer who has a full understanding of his or her usage requirements and is prepared to shop around and undertake some, often quite complex, calculations to identify the tariff which offers the best value. Clearly, in reality, many consumers

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do not act in this way, but we believe the assumption is necessary in order to provide effective international comparisons. It should be noted, however, that another measure of consumer choice and the competitive environment is the complexity of tariff structures and the ease of selecting an appropriate tariff, or switching to, an appropriate tariff.

- In looking only at tariffs offered by the largest operators in each country, lower prices which might be available from smaller operators seeking to disrupt markets are not included, purely for practical reasons. Nevertheless, we believe that using the prices of the largest operators is appropriate, both because they are the best reflection of the general consumer experience and because their pricing both defines and is defined by the competitive environment in which they operate.
- Although we have been as comprehensive as possible, tariffs are often highly complicated and there are some components that we have been unable to incorporate into our model, for example, the benefits available from fixed line and mobile tariffs which include free or reduced rates to nominated 'friends and family' numbers.
- In order to calculate the weighted average, we have used market share calculations based on operators' retail customers. It should be noted that market share calculations are based on the overall subscriber base, not the subscriber base for the particular tariff (for which data are not always available).
- Pay-TV services constitute a component of three of the baskets we examine. However, it has not been possible to compare like-for-like subscriptions because of differences in the composition of basic and premium channels across the six countries. As a consequence, quantitative comparison of international TV pricing is arguably less meaningful than for telecoms services. This is also an issue in the pricing of 'triple-play' services, where there is a wide variation in the types of TV content.
- For some communications services in some countries there are only two operators with nationwide coverage (or only one for many premium TV offerings) and/or significant market share. In these instances, we have identified the best-value tariff from each of them and calculated a blended average based on their market shares.
- To avoid 'skewing' the average single service pricing analysis, tariffs which are over 100% higher than that offered by the lowest price provider are excluded from the weighted average (the aim here is to exclude tariffs which are clearly not targeted at the usage profile we are analysing).
- Some services are not available nationwide. This is particularly true for services which are available only where local exchanges have been unbundled, and for IPTV, which requires a high-speed broadband connection, but is also true for cable TV and all types of broadband.
- In this year's analysis, we have not defined whether the mobile phone component in a basket is pre-pay or post-pay. We believe this enables better international comparison given the very different pre-pay / post-pay splits in different countries (for example, around 90 per cent of Italian

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mobile connections are pre-pay, while around 90 per cent of US mobile connections are post-pay). However, a consequence of this is that the analysis does not recognise the different characteristics of the services; for example, a pre-pay mobile may be the only option available to consumers with a poor credit rating and also offer advantages to those who vary their usage month-by-month.

- Representative pricing in the US as a whole is difficult due to large regional variations as a result of local incumbent telco operators and cable operators offering localised prices for fixed line services. We only use tariffs available within the state of Illinois, chosen as reasonably representative of the US as a whole in terms of its relative wealth and rural-urban split (it incorporates the city of Chicago as well as large agricultural regions). Nevertheless, US pricing should not be viewed as representative of the whole country.