

Narrowband market review

A paper prepared for BT

28 March 2013

Introduction

1. DotEcon has been asked by BT to consider Ofcom's Narrowband Market Review consultation issued on 5 February 2013¹ (hereafter "Ofcom consultation"), and to offer high-level comments on Ofcom's competition assessment.
2. Ofcom notes that it does not intend to define the relevant markets any differently to how it had at the time of its 2009 narrowband market review, when it defined separate markets simply for business and consumer telephone calls in the United Kingdom area (and found those markets to be effectively competitive).² Although Ofcom has considered, amongst other things, trends in relation to retail market shares of suppliers and the supply of bundled offers,³ it has not sought to modify its definition of the market. Ofcom has also left unchanged its view on competition within the markets.⁴
3. This paper is not a detailed critique of the Ofcom consultation. Rather, it offers some general thoughts.

Bundles and new substitutes

4. In recent years, there have already been significant changes in retail markets with BT losing share, downward pressure on prices and LLU-based entry. Residential customers are increasingly buying narrowband services as part of larger bundles, with narrowband services being relatively unimportant aspects of these bundles. Mobile telephony continues to provide an alternative to fixed, with mobile voice now often in essential bundled with the functionality of smartphone. There are an

¹ See "Review of the fixed narrowband services markets: Consultation on the proposed markets, market power determinations and remedies"; Ofcom, 5 February 2013.

² See paragraphs 1.15 and 3.3 of the Ofcom consultation.

³ See paragraph 3.8 of the Ofcom consultation.

⁴ See paragraph 3.38 of the Ofcom consultation.

increasing number of alternative forms of communication (such as email and social networking). These developments have led to increasing competitive pressure on narrowband services. They also lead to fundamental structural changes in the nature of competition. These developments and their implications are discussed in further detail at [Annex A](#).

5. The development of entirely new modes of communication, such as social media (e.g. Facebook and Twitter) and over-the-top services provide alternatives to communicating through a voice call. Take-up is a diffusion process subject to network effects, but it is plausible that the speed of this diffusion process is price-dependent and would be accelerated by higher prices for voice calls.
6. Ofcom's methods of analysis need to keep up with these changes, otherwise the competitive constraints on BT's narrowband services will be systematically underestimated. In our view, Ofcom has not updated its thinking to keep pace with these developments. Rather, it has maintained its position that fixed-mobile substitution is developing but not to a sufficient extent to warrant a revision to narrowband market definitions. The reason that Ofcom has not identified changes in the nature of competition may be because it has not looked thoroughly enough using appropriate tools.

Fragmentation of the residential customer base

7. In the case of residential customers, the introduction of new bundled services, including broadband and pay TV, has effectively fractured the customer base. Decisions about which bundle of services to take are driven primarily by the character of the value-added components, and not necessarily by the narrowband services included within the bundle. If voice calls are bundled for free across competing bundles, then they can be discounted no further and essentially become a common and undifferentiated presence across all the bundles on offer.
8. Customers' differing requirements, and the overall value for money that these bundles offer, determine their choices, rather than the 'price' of the voice services component within the bundle. For example, some customers may get their voice services from the supplier that can provide the best sports content over pay TV, while others may get their voice services along with the latest smartphone. Others still may get voice services from that supplier that can offer the cheapest broadband.

9. As this happens, heterogeneity in the customer base is exposed that never mattered before such bundling came important. Therefore, for the purposes of assessing the competitive constraints on BT, we need to acknowledge that different customers may now have different sets of alternatives. Going mobile-only is not for everyone, just as not everyone wants pay TV.
10. Provided that BT cannot unduly discriminate between all these different customer groups, these developments are unambiguously pro-competitive. Although each of these various bundles might not be to everyone's taste, each alternative provides a competitive constraint with regard to a certain group of customers and these constraints then cumulate, benefiting all.
11. There are three main issues here. First, this fracturing of the customer base leaves behind some customers who are not interested in bundled services. However, even if they are inert and passive in their choices, provided that there is no undue discrimination, they benefit from the willingness of other customers to switch to alternatives, including bundles. The response to these developments should not be ever more engrained regulation in order to 'protect' a diminishing rump of voice customers.
12. Second, it is not clear what can be inferred market research data with respect to the willingness of customers to give up fixed lines. Asked about this, it is far from clear what people might think they are 'giving up': just voice calls, or broadband, or even movie services? Even if the large majority of customers say they are staying put, this needs to be assessed within the framework of critical loss analysis. The low marginal cost/high fixed cost structure of telecommunications services means that few customers need to be lost for there to be a material competitive constraint on pricing.
13. Third, once we have bundles, traditional competition analysis tools such as the hypothetical monopolist test need to be updated (see also Annex C). Within a vertical supply chain or a bundle, we need to be very careful indeed about how hypothetical price increases of just one link of the chain, or one component of the bundle, are applied. The ultimate impact on retail price may be highly diluted within a vertical chain or bundle. However, it is incorrect to point to a small demand response and conclude that one link or one component of a bundle may form a market in its own right.

Product markets and geography

14. With these new developments, there is also a greater need to think about geography. Whilst fixed voice services over BT's network might be largely ubiquitous, the range of alternatives varies from location to location. Looking on a geographically averaged basis systematically understates competitive constraints in areas where there more competing networks, which naturally tend to be areas where most customers are. Again, provided there is no undue discrimination by BT, customers everywhere ultimately benefit even if competition is geographically heterogeneous.
15. If these various deficiencies in Ofcom's analysis created swings and roundabouts, understating the intensity of competition sometimes and overstating it other times, there would be less need for concern. However, all these various deficiencies in Ofcom's analytical toolkit point in the same direction leading to a systematic bias against finding emerging new modes of competition.

Business customers

16. Turning to business customers, there is a similar picture of fracturing of customers towards different alternatives depending on each customer's particular needs. Mobile services provide a superior alternative for certain types of business customers. Again, smartphones provide a basis for additional functionality that mean in effect that choices are being made across bundles of services.
17. SIP is becoming the technology of choice for many types of business who need Internet connectivity anyway. This is a direct replacement for traditional narrowband services, with a phone on the desk providing good call quality. SIP (and VoIP more generally) can provide a range of extended functionality such as integrated messaging. Mobile operators are increasingly interested in the commercial possibilities in this area and offering services targeted at SMEs.
18. Therefore, the same issue arises that narrowband voice is now often a component of a broader bundle of services that a business is buying. Exactly the same issues arise as we discussed above for residential customers. The nature of the competitive constraints varies across customers according to the relevant and available alternatives for that type of customer. However, these constraints cumulate.

Conclusions

19. Ofcom have adopted an unduly conservative approach in terms of acknowledging the impact of emerging substitutes to narrowband services. Even if it wishes to tread cautiously in terms of the conclusions it reaches on competitive conditions, there is a clear and immediate need to update its analytical methods used to assess competition.
20. Narrowband services are more often than not sold in bundles. The standard hypothetical monopolist test cannot be applied in this case without some modifications. It is simply incorrect to argue that if raising the implicit price of service X has little effect on the overall price of the bundle, with the result that there is little demand response, then the supplier of the bundle has market power in supplying X.
21. Customers differ in their tastes and might buy very different bundles that do not directly compete, yet narrowband services might be contained within these bundles. This situation does not typically lead to a reduction of competition, but an increase in competitive intensity.
22. To the extent that there is a rump of customers that do not buy narrowband services within such bundles, this does not mean these customers are at risk of exploitation provided pricing is subject to non-discrimination conditions. To the extent that customers with different tastes and located in different places have a different set of alternatives for meeting their need for voice calls, the competitive constraints in regard of these different cases cumulate provided BT cannot unduly discriminate.
23. In regard of mobile services, Ofcom's position that substitution between fixed and mobile is emergent rather than emerged is increasingly untenable. Mobile is now surpassing fixed in terms of the typical functionality bundled with the ability to make a voice call.
24. With regard to business customers, we are concerned that Ofcom may not have sufficiently segmented the market to understand what substitutes are available for business of different types.

Annex A: Defining narrowband markets

1 Background

25. Over the past decade, both national regulatory authorities and regulated companies have considered the extent to which fixed and mobile services may substitute for one another. Such reviews have discussed and assessed quantitatively the behaviour of customers and the extent to which substitution has differed between access to fixed and mobile services, and the origination of calls.
26. Previously, a key driver was dial-up internet access causing fixed lines to be unavailable for making and receiving voice calls. Whilst this factor may have kick-started the shift of voice calls from fixed to mobile, the situation now is very different, with mobile penetration much higher and differences in the services and applications consumed over fixed and mobile platforms having widened due to smartphone use.
27. Over this period, Ofcom too has maintained the position that fixed-mobile substitution is developing, but has never reached a sufficient extent to warrant a revision of narrowband market definitions, bringing fixed and mobile into a single relevant market. This position is becoming increasingly unsustainable. However, at the same time, there are other developments that are complicating the picture and meaning that a simple story of fixed and mobile platforms as closely substitute providers of narrowband services is over-simplistic. The two platforms both now offered wide bundles of services – of which voice services are an increasingly unimportant component for many customers – and differentiation of services has arguably increased as a result.
28. Recent developments suggest that an update of such analysis may now be appropriate:
 - a) declining call volumes (already affecting fixed voice origination and with mobile voice origination now showing signs of decline) presumably due to new substitute forms of communication, not just fixed-mobile voice substitution;
 - b) the convergence of technologies (allowing for voice communications through means such as VoIP, SIP and unified communications for

business), creating an interaction between the purchase of voice services and data services;

- c) the increased prevalence of bundling (both across fixed and mobile services and for residential and business customers); and
- d) the take-up of smartphones and the fundamental shift in how mobile devices are used, with mobile phones being intrinsically personal and providing a wide range of networked and non-networked applications, mobile payments etc.

29. In this Annex, we consider the recent developments that are affecting the take-up and use of both fixed and mobile narrowband services, and consider the nature of customer surveys and analyses that might prove helpful to BT in supporting its case to Ofcom for the deregulation of fixed narrowband services.
30. In 2011, BEREC also considered the issue of fixed-mobile substitution in the context of the regulation of telecommunications services across Europe. Member states have also looked at the issue as part of the market review processes they undertake. A notable case arose in Austria where the relationship between fixed and mobile services was considered before the deregulation of relevant *broadband* markets. This case precedent is summarised at [Annex B](#).
31. The increased prevalence of bundling has particular implications for market definition, both in respect of call-level substitution where bundles of minutes are supplied, and access level substitution given broadband, pay TV and even mobile being packaged in with fixed telephony services. The implications of bundles for market definition are an issue that BEREC has also looked at. A summary of the issues BEREC considers pertinent is set out at [Annex C](#).

2 Assessing substitution

32. As with the previous studies undertaken, two levels of substitution need to be distinguished: access-level substitution and call level substitution. Declining call volumes in the UK – both of fixed calls over recent years and mobile calls in the last year - suggest that other forms of communication are becoming increasingly important to customers today. In other words, previously identified shifts from fixed to mobile are now coupled with an *overall* decline in voice traffic, with customers seeking to communicate through other means such as text messaging,

OTT messaging, social networks and VoIP. Some of these alternative forms of communications (e.g. texting or real-time social network updates) may be *much* more likely to happen over mobile platforms than fixed (not least because of widespread smartphone use).

33. Access-level and call-level substitution are linked:
 - a) call level substitution requires a number of access modes for making a call to be available (or at least all available at some point within the time window over which a voice call could usefully be retimed); and
 - b) the anticipation of call-level substitution drives access-level substitution (i.e. a customer who expects to make most of its voice calls on a mobile phone gains little benefit from a fixed line unless for other services, such as broadband).
34. A particularly important development over recent years is the increased prevalence of bundles. When looking at access level substitution, it is relevant that suppliers are increasingly providing bundles that include telephony, broadband and pay TV. Broadband or premium pay TV channels may be important drivers of residential take-up of fixed lines, with voice services playing only a subsidiary role in the household decision about access. Business customers may also purchase bundles, integrating their various communication and business needs.
35. An authority seeking to define a market at the access level may start with a focal product based on the most prevalent bundle being purchased by customers. This may, for example, be the dual-play bundle including fixed telephony and broadband services. Applying a hypothetical monopolist test to this focal product bundle would involve the authority determining the extent to which a small but significant non-transitory increase in the prices (SSNIPs) of the individual components of the product (i.e. the fixed and broadband components) and the price of the bundle would impact on the behaviour of customers. As considered by BEREC (see [Annex C](#)), the markets may take a number of forms depending on the willingness of customers to unpick bundles and the value they place on individual components.
36. Even at the level of calls, bundling is relevant to the extent that customers now purchase bundles of minutes. For example, on the mobile side, providers are increasingly supplying a large variety of bundles including free minutes, text

messages, data allowances and handset subsidies. Chains of substitution will link many of these bundles and for that matter to choices across modes of communication (e.g. mobile call bundles versus fixed call bundles).

37. Considering the full catalogue of effects is not likely straightforward. Substitution will necessarily differ when looking at the behaviour of residential customers (where individual and household decisions also need to be distinguished) versus business customers (ranging from SMEs to organisations with largely mobile workforces). In order to understand substitution decisions, it may be necessary to segment users into groups based on such factors as other communication needs (i.e. not just narrowband requirements, but other requirements that may lead to the purchase of bundled services), household composition, demographics or typical calling patterns.
38. Once initial access mode choices have been made, the subsequent choice of whether to use mobile or fixed for a call on a particular occasion may be moot for many customers; the prices of calls are often effectively zero due to 'free' call bundles. It is likely typically the case that customers tend to buy larger call bundles than they need and seldom exhaust their allowances. Fixed networks have traditionally being disadvantaged by the risk of including minutes to mobiles in these bundles (given the relatively high level of MTRs), but this may change with a move to pure LRIC termination.
39. Finally, mobile phones benefit from intrinsic advantages in the form of mobility and their ability to support other forms of communication such as text messaging that are especially useful on the move. Smartphones may be associated with even greater advantages over fixed through the use of dedicated applications providing OTT services (e.g. Apple's Messages, WhatsApp) that would otherwise require a PC to use through fixed networks. This suggests that there may be an asymmetry in terms of fixed and mobile substitution, with mobile intrinsically more able to serve substitute forms of communication replacing voice. Although there may be differentiation between the platforms, this is primarily 'vertical' differentiation, in that mobile can do everything fixed can, and more. This growing additional mobile functionality means that fixed network will lose some traffic regardless of price. However, not all customers want to pay for additional functionality; nevertheless, those with basic requirements for voice communications are being

competed over by both fixed and mobile providers (for example through pre-paid and SIM-only offers).

Declining volumes

40. Ofcom's latest Communications Market Report (2012) discusses the changing nature of the telecommunications market and the behaviour of consumers in the UK. Volumes of fixed voice calls are declining, with average monthly outbound fixed call volumes per person declining by nearly 27% from 2006 to 2011. Over the five-year period, the largest annual change was seen in 2011 with average fixed voice call volumes falling by 10.5% compared to 2010. The average monthly volume of outgoing fixed calls per person was 154 minutes in 2011.⁵
41. In contrast, over the same period, average monthly outbound mobile voice call volumes per person had increased by over 35%. In 2011, the average monthly outbound mobile voice call volume per person was 164 minutes. Although this number has fallen slightly since 2010 (a 1.7% decline), it is still greater than the average volume of fixed calls.⁶ This is striking given that members of a household typically share a fixed line, whereas mobile phones are personal.
42. Interestingly, 2011 was the first year that average mobile-voice usage declined in the UK. This highlights the broader trend of customers switching to various non-voice forms of communication such as SMS, email, instant messaging and social networking. Indeed, we see that text message volumes continued to increase in 2011 (up by 17%) with the average UK customer now sending around 200 texts per month with a total of over 150 billion text messages being sent in the UK in 2011. This is a significant increase from the UK average of 70 text messages per person in 2006.⁷
43. IP telephony may also be increasing in importance, to the extent that it allows the possibility of avoiding generally higher international call charges. Similarly, over-the-top services like Microsoft's Skype and Apple's Facetime provide the opportunity for video calls. Use of VoIP is increasing, and in 2012, across all age groups, the proportion of the UK population that currently use VoIP services to

⁵ See p 337 of "Communications Market Report 2012"; Ofcom, 18 July 2012.

⁶ See p 350 of "Communications Market Report 2012"; Ofcom, 18 July 2012.

⁷ See p 352 of "Communications Market Report 2012"; Ofcom, 18 July 2012.

make a phone call within the home was 21%, with higher than average use in the 25-34 age group at 25%.⁸

44. Increases in the average time spent per person using mobile messaging services (which include SMS, MMS and IM) and social media (otherwise known as member communities such as Facebook and Twitter) may also be contributing to the decline in traditional voice calls. Between 2010 and 2011, the average monthly time spent using mobile messaging services has increased by 22.7% to 7.5 hours, and time spent accessing social networks has increased by 5.3%.⁹ These new and emerging forms of communication may to some extent simply serve to expand the demand for communication, but it is also feasible that they will at least in part replace some traditional voice calls. These new forms of communications may have intrinsic advantages for certain types of communication (e.g. the need to 'broadcast' a meeting or event to a number of people).
45. A customer's need to communicate exhibits specific characteristics (e.g. the amount of information to be transferred, whether it is time critical, whether it needs an interactive response, whether it is one-to-many and so on) and which occurs in a particular context (e.g. in the street, at home, in the office, with a PC available or without). Different modes of communication will be the most appropriate depending on the characteristics of the communication and the particular context, which defines the feasible substitute modes available for that communication.
46. Looked at this way, it is unsurprising that some voice traffic is switching to new modes of communication as these become commonly available and more widely employed. For instance, a need to broadcast information to friends or family that might previously have required a number of phone calls might be much more easily achieved through email, social media or even texting. In many cases, a short text message is simply a quicker and more convenient alternative to a voice call. Therefore, there are likely to be latent needs that are being met by new forms of communication.
47. Given that these different modes of communication are typically free at the margin (discussed further below), the factors affecting the choice of communication mode

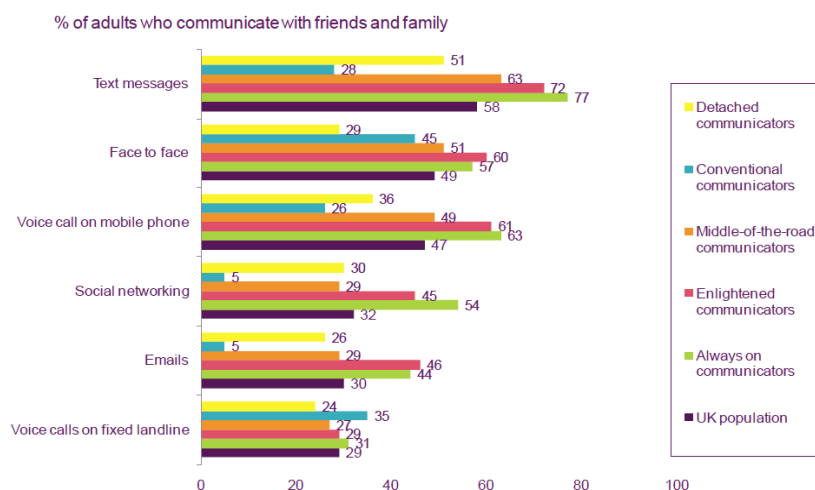
⁸ See p 336 of "Communications Market Report 2012"; Ofcom, 18 July 2012.

⁹ See p 335 of "Communications Market Report 2012"; Ofcom 18 July 2012.

are likely to be convenience, striking the right tone and, perhaps most importantly in practice, social conventions. These conventions have changed incredibly rapidly with technological changes and have tended to start with the young (e.g. texting, Blackberry Messenger, Facebook etc.) filtering out to society as whole. However, this does mean that there is a new generation for whom the social conventions about the appropriate modes of communication to use are fundamentally different to their parents, who might simply have called instead. Therefore, there are strong underlying trends in typical customer behaviours that must be considered unstoppable now.

48. Figure 1 shows voice calls on mobile phones tends to be preferred by most adults in the UK population, rather than voice calls made on a fixed landline (47% versus 29%).

Figure 1: Methods of communications used by UK adults on a daily basis



Source: Figure 3.2 of "Communication choices, a segmentation report on communication methods used by UK consumers"; Ofcom, 13 November 2012.

49. This data has been taken from an Ofcom report published on 13 November 2012, which segments UK adults into five broad types of communicators:
- 'Always-on' communicators, which account for 22% of the adult population. These users tend to be younger, in education and communicate a lot through their mobile phone and the use of social media. This group use newer forms of communication, such as Twitter;
 - 'Enlightened' communicators, which account for 19% of the adult population. As with the 'always-on' group, members of this group communicate a lot and

are more likely to own a computer and a mobile phone, but are in higher 'social grades' and are working;

- 'Middle-of-the-road' communicators account for 22% of adults and use a combination of traditional and new forms of communication, but are less likely to use social media;
- 'Conventional' communicators account for 21% of adults. These are the oldest group and are likely retired, relying mainly on traditional forms of communication such as landlines; and
- 'Detached users', which account for 16% of the population and for whom communication is not a priority. Their main method of communication is through text messages or quick-form text methods such as Twitter.

50. Figure 1 above suggests that it is only the Conventional group that prefers making fixed calls on landlines rather than on mobiles. The figure also suggests that text messages are now the predominant form of communicating on a day-to-day basis with friends and family, with fixed calls being the least used form of communicating. Even emails and the use of social media are more frequently employed than fixed voice calls by the UK population as a whole and by all of the different groups, apart again from Conventional communicators (in other words, the oldest cohort). Therefore, regardless of any formal finding with regard to market definition, it is clearly the case that mobile and new modes of communication are both creating new opportunities for substitution with fixed voice calls and often simply are replacing what would have been a fixed voice call. There is also great heterogeneity in how consumers are making use of these new alternatives.

51. These trends are expected to continue apace. The Ofcom report on customer segments also included predictions in respect of changes in communication methods within the next two years. Ofcom notes that all forms of communication, apart from fixed voice call and post, were expected to increase with the largest increased expected for emails (17%), VoIP (11%) and text messaging, mobile voice

and social networks all increasing by 7%.¹⁰

52. Finally, we see similar trends in respect of business users. The Ofcom Communications report notes that the number of business fixed lines (excluding broadband) decreased for the fourth consecutive year in 2011 (to 9.4m).¹¹ In addition, business fixed voice calls decreased by 9.1% (to just under 29 billion minutes).¹² When businesses re-specify their communications needs and seek a provider, they increasingly have a range of options, such as SIP-based systems, unified communications and so on. Mobile has an important role for business at all scales but is likely to be used in different ways by different types of business user, complicating matters (as we discuss below).

Bundling

53. The increased prevalence of bundling in the market provides a further layer of complication to the consideration of access-level substitution. In the UK, 57% of households now purchase fixed communication services in a bundle with the most popular bundle being for dual-play fixed voice and broadband packages.¹³
54. The relative importance of voice calls to the access decision is likely diminished across both fixed and mobile services, albeit for different reasons:
- a) Fixed access is now often bundled with broadband and high value pay-TV (with premium content unlikely available through other means);
 - b) Mobile access is bundled with mobile internet, texting and value-added services (which includes subsidisation of handsets which increasing provide rich functionality far exceeding just calling or even communicating); and
 - c) Business customers may be buying bundles of services to meet their various needs, including amongst others, the provision of PBXs, voicemail and integrated communications.

¹⁰ This compares to fixed voice calls being expected to fall by 1% (removing the Conventional group from the overall cohort would reduce further the expected decline given that most of the other groups expected larger declines in fixed voice usage), and postal communication to fall by 22%. See figure 6.2 of "Communication choices, a segmentation report on communication methods used by UK consumers"; Ofcom, 13 November 2012.

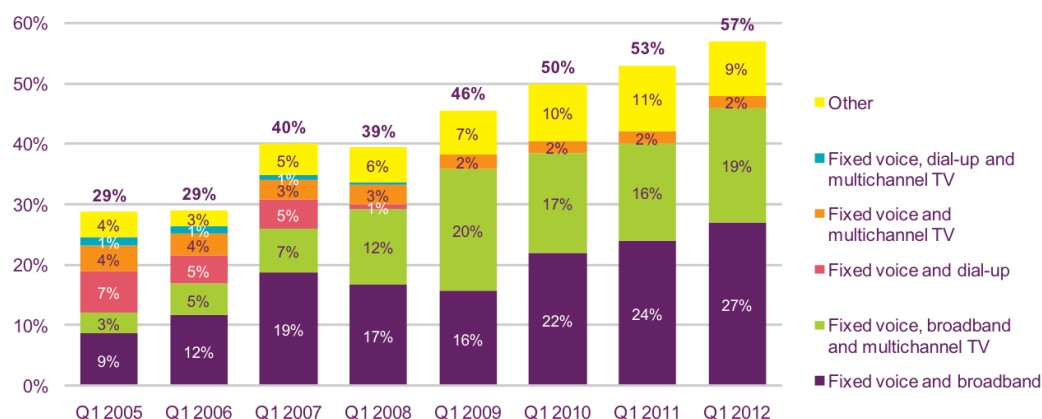
¹¹ See p 321 of "Communications Market Report 2012"; Ofcom, 18 July 2012.

¹² See p 326 of "Communications Market Report 2012"; Ofcom, 18 July 2012.

¹³ See p 31 of "Communications Market Report 2012"; Ofcom, 18 July 2012.

55. In relation to fixed access, it is clear that bundles are becoming more popular and in 2012 one in five UK households purchased fixed voice together with broadband and pay-TV. Figure 2, taken from Ofcom's Communication Market Report 2012, shows the increasing take-up of bundled packages over the past seven years.

Figure 2: Take-up of bundles communications services over time



Source: Ofcom technology tracker, Q1 2012. Base: All adults aged 16+ (n=3772)

56. In relation to mobile access, the decision to get a mobile will be influenced by a number of factors other than the ability to make and receive voice calls. The increased prevalence of smartphones (39% of UK adults now own a smartphone) and the associated large take up in mobile data volumes suggest that voice calls may no longer be the main reason for having a mobile phone, especially amongst the young where smartphone take up is highest at 66% for 16-24 year olds.¹⁴
57. Furthermore, mobile tariffs increasingly offer unlimited text message allowances that may also encourage fewer voice calls, especially for short messages. Mobile operators have strong incentives to encourage messaging over voice to reduce network loading. The prevalence of bundles offering a heavily subsidised smartphone handset, minutes texts and data may also explain the increasing proportion of subscribers on post-pay tariffs, which account for 49.2% of mobile subscribers in 2011, an increase of 3 million customers from the previous year.¹⁵
58. Finally, in respect of business services, there would appear to be little publicly held information on the nature of bundles being offered to businesses. This is

¹⁴ See p 58 of "Communications Market Report 2012"; Ofcom, 18 July 2012.

¹⁵ See p 319 of "Communications Market Report 2012"; Ofcom, 18 July 2012.

unsurprising given the likely unique demands of different businesses (discussed further below) and the contract negotiations that are likely entered into.

Zero-rated voice calls

59. As noted above, at its point of use, customers will often face a marginal cost of zero when selecting between making a call on their fixed line or on their mobile. In fact, mobile providers no longer differentiate on price per minute for a call, but rather offer a wide range of bundles with a different number of free minutes included within the package. Free minutes are offered both to mobile pay monthly and to prepay customers, in particular in relation to on-net calls. Fixed operators also provide free minutes within their packages, for example in the form of free evening and weekend calls or calls to selected friends and family for residential customers and free internal calls for business users. In this way, the dimensioning of bundles becomes particularly important when assessing substitution.
60. Markets for different sizes of bundles will necessarily be linked by chains of substitution, as a hypothetical monopolist of a particular size of bundle will have the option to shift to different sizes of bundles, either within the mode of communication being used (e.g. mobile) or possibly even across modes (fixed and mobile bundles).
61. The latest report by Ofcom on Customer Segmentation, surveys customers about their attitudes to communication methods. As part of this, it asked different customers approximately twenty questions, three of which related to price.¹⁶

¹⁶ Whether they 'often used the cheapest form of communication', whether they 'don't think about the cost and just use the most convenient' method and whether they made 'an effort to use free services online'. See "Communication choices, a segmentation report on communication methods used by UK consumers"; Ofcom, 13 November 2012.

Figure 3: Agreement with attitudes towards communication methods - cost considerations

%	UK population	'Always on'	'Enlightened'	'Middle-of-the-road'	'Conventional'	'Detached'
I often use the cheapest form possible	54	82	18	80	37	44
I don't think about the cost, I just use the most convenient	45	63	75	6	61	18
I make an effort to use free services online	38	69	37	45	4	31

Source: Adapted from Figure 5.1 of "Communication choices, a segmentation report on communication methods used by UK consumers"; Ofcom, 13 November 2012.

62. These responses suggest that price (more precisely the marginal price faced at the point of use) is not important for many customers, as large proportions of the different segments do not think about the cost of using the different methods, and only use the most convenient. For example, 63%, 75% and 61% of the 'always-on', 'enlightened' and 'conventional' communicators respectively do not think about cost when choosing communication methods. These three groups together account for around 62% of the UK adult population.
63. Note that this zero-rating of voice calls only applies to the extent that call minutes within packages remain unexhausted. However, it is likely that customers sign up to larger packages of minutes than they typically consume in any given month, not exhausting their full minute allowance. This may be driven by a desire to avoid future bill shocks or may be due to customers being unaware of their actual usage. Overall, this suggests that most consumers are unlikely to ever face a marginal cost greater than zero at their point of consumption.
64. Possible exceptions to this may be on international calls, calls to premium numbers or calls to other mobile networks. In the case of international calls, however, mobile providers are increasingly offering add-ons to packages that allow free

minutes to international numbers for a fixed fee, while fixed providers are also offering discounts to dedicated numbers abroad. In the case of calls to other mobiles, recent changes to the regulation of MTRs, bringing them closer to pure LRIC, is likely to push even these off-net calls to be included within bundles.

Residential vs. business customers

65. Any analysis of residential substitution would need to consider the fact that the purchasing decisions of a residential customer involves a hierarchy of decisions:
- a) Choice of the access service (i.e. mobile-only, fixed-only, both), which may be strongly influenced by the desire to purchase bundles of other services;
 - b) Choice of supplier;
 - c) Choice of tariff package;
 - d) Choice whether to make a voice call at all or use some other mode of communication; and
 - e) Choice of which platform to originate a particular voice call on.

This hierarchy would need to be unpicked in order to understand better the extent to which residential users may see fixed and mobile as effective substitutes.

66. In addition, residential fixed customers will generally make decisions for a household (rather than for an individual) on their wider communication, broadband and television needs. This may include their needs in relation to premium television content not available elsewhere, and which typically comes packaged with voice calls and broadband services. Mobile customers, on the other hand, will make decisions for their individual mobile subscription package, considering only their individual usage patterns.
67. It will also be important to understand the extent to which a premium on mobility and the intrinsic advantage of mobile over fixed plays a part in customer decisions. It is clear that certain calls can only ever be originated on a mobile (while travelling, for example). However, even here boundaries are beginning to be blurred as smartphones may allow for the use of VoIP via public wifi networks.
68. Business user decisions are altogether more complicated. This is because decisions are likely to depend on:

- a) the size of the business (e.g. SMEs to larger firms with multiple sites, call centres etc.);
- b) their specific communication needs (for example if ubiquitous contactability or if call quality are critical) which may rule out certain types of platform;
- c) the mobility needs of their workforce (e.g. for mobile sales forces) and how these can be integrated with other non-mobile workers;
- d) requirements for redundancy and reliability;
- e) the extent to which more integrated systems may be needed to fulfil their wider business needs (such as for example allowing for seamless call-forwarding facilities);
- f) for smaller retail businesses, the need to access payment systems; and
- g) ensuring effective asset control.

69. Overall, it would appear to be difficult to draw broad conclusions on the behaviour of businesses given their idiosyncratic requirements and the fact that the call prices they face may well be less relevant to them than other aspects of their communication infrastructure. Therefore, it would be important firstly to segment business customers in a manner that reflects more appropriately their requirements and usage patterns, before considering how each segment might respond to hypothetical price increases. We are not aware of Ofcom having attempted to undertake any such analysis (for example in the course of the various BCMRs).

Annex B: European precedent

70. BEREC recently published a report considering the consequences of fixed-to-mobile substitution for market definition.¹⁷ In their report, they acknowledge several factors that contribute to the fixed-mobile convergence debate including:
- the development of new services available on fixed and mobile networks;
 - new technologies improving the performance of mobile networks;
 - new devices adapted to both fixed and mobile usages;
 - new commercial offers and usage habits; and
 - lower mobile termination rates¹⁸
71. The report considers fixed-to-mobile substitution in the context of the retail market for voice calls, and also for broadband services although the presence of bundled offers can sometimes cause the distinction between voice and broadband markets to be less clear-cut. While BEREC noted that the degree of fixed-mobile substitution is highly dependent on country specific factors, the report studies the various factors that NRAs ought to consider in their assessment of fixed to mobile substitution and the implications for traditional fixed voice and broadband markets.
72. BEREC considers that if fixed-mobile substitution is sufficient to define a single market for both fixed and mobile services, then it may be justified to remove ex-ante market regulation on the fixed incumbent. While there are relatively few examples of where this has taken place, in particular for voice calls, Austria presents an interesting case.
73. In February 2010, the regulatory authority in Austria re-defined its wholesale broadband access market based on substitution between fixed and mobile broadband at the retail level. Following an investigation into price and product characteristics and the results of consumer surveys the regulator found that DSL, cable and mobile broadband could all be considered to be in the same market at the retail level and that competition in this market was sufficiently effective that

¹⁷ "BEREC Report on Impact of Fixed-Mobile Substitution in Market Definition", the Body of European Regulators for Electronic Communications, BoR (11) 54, 8 December 2011 (BEREC 2011).

¹⁸ See p 5 of BEREC 2011.

bitstream regulation could be removed. Thus the wholesale market was defined to include only DSL-lines used to provide access to non-residential customers.¹⁹

74. Empirical research has also been undertaken to analyse the strength of fixed-mobile substitution for voice calls in Austria. Using time series data from the Austrian market, Briglauer et al estimate own-price elasticities for fixed voice network access and calls and cross price elasticities for fixed to mobile. They suggest that their findings show that there is sufficient competitive pressure from mobile for the *“retail market for national calls of private users”* to be deregulated.²⁰

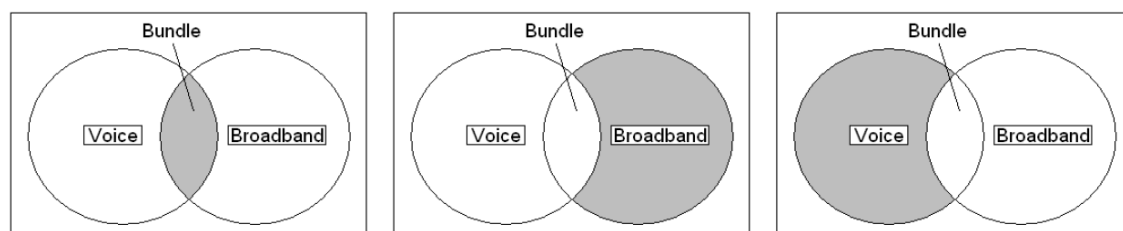
¹⁹ See p 10f of “The impact of technological and market evolution on market definitions in electronic communications: the case of spectrum”; BEREC-RSPG, BoR(10), June 2012.

²⁰ See Briglauer, Schwarz and Zulehner, “Is Fixed-Mobile Substitution strong enough to de-regulated Fixed Voice Telephony? Evidence from the Austrian Markets”, September 2009.

Annex C: Bundling and market definition

75. A market definition exercise starts with a focal product and considers if a hypothetical monopolist of that product could profitably raise the price by a small but significant non-transitory amount, usually in the region of a 5-10% price increase (also known as a SSNIP test). If the price increase were profitable, then the market can be defined for the focal product. If the price increase were not profitable, due to customer switching, the products that consumers switched to would be added to the focal group of products and the test repeated until the market can be defined.
76. A market definition exercise involving bundles is only slightly more challenging as the SSNIP test may reasonably be applied to the bundle, with a consideration of whether enough customers would 'unpick' the bundle in response to an increase in the price of the bundle such that the price increase is unprofitable for the hypothetical monopolist.
77. In a report by BEREC,²¹ a simple example is provided, showing the numerous possible outcomes when considering whether there is a separate market for a dual-play package (including fixed voice and broadband). For example, if the hypothetical monopolist of the bundle can profitably raise prices above the competitive level without customers 'unpicking' the bundle, then it is possible that there are markets for the bundle and for each of the individual products within the bundle (see Figure 4 below).

Figure 4: Market for the bundle and a separate market for each component product

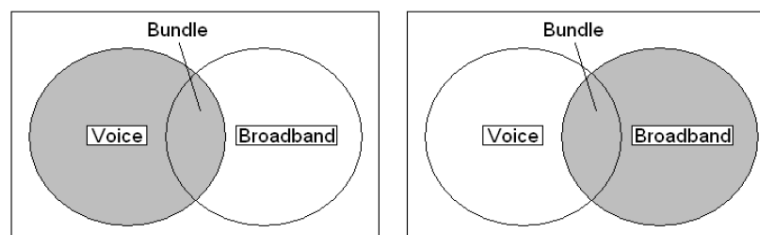


Source: See page 15 of BEREC (2010)

²¹ See "BEREC report of impact of bundled offers in retail and wholesale market definition"; BEREC, December 2010, BoR (10) 64.

78. However, this situation assumes that the individual products also satisfy the SSNIP test and are therefore a market in their own right. Sometimes the availability of the bundle may restrict the ability of the hypothetical monopolist of the individual product to raise prices without an unprofitable response. If the hypothetical monopolist of the bundle could profitably increase prices, then the bundle should be considered as part of the market (see Figure 5 below).

Figure 5: Market for the bundle and one of the components



Source: See page 15 of BEREC (2010)

79. Where customer substitution decisions are not symmetric, the outcome of the market definition depends on the focal product. For example, customers may see the dual-play bundle as a substitute for fixed broadband services, but not the other way around. That is, the price set by the hypothetical monopolist of the individual broadband service is constrained by the availability of the bundle, but this constraint does not work the other way around. Therefore, if broadband is the focal product, then the bundle may be included in the market definition. However, if the bundle is the focal product, it is not necessarily the case that broadband will also be included in the market definition.
80. A further possible outcome would be a single market containing the bundle and all the individual products, that is, a hypothetical monopolist of both the bundle and the individual products could maintain prices above the competitive level.