

Strategic Review of Telecommunications

Phase 2 consultation document

Policy Annexes (F-L)

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Annex F

Regulatory theory and approaches

- F.1 In our Phase 1 consultation, we noted the various different types of regulatory approaches pursued by Oftel since 1984. We commented that there had been different degrees of emphasis given to different forms of competition at various times. In this annex, we build on this analysis to set out a framework for analysing different regulatory approaches. The following issues are addressed:
- **types of competition in telecoms.** We discuss the forms of competition which Ofcom could promote, and their benefits and costs;
 - **regulatory instruments.** We look at the regulatory tools that are available to us to deliver these different forms of competition;
 - **geographic market definition.** We discuss the circumstances and manner in which it might be appropriate to apply different regulatory remedies in different geographic areas; and
 - **conditions for effective competition.** We discuss what determines how effective competition is in delivering desirable outputs to consumer.

Types of competition in telecoms

- F.2 In Phase 1 we highlighted the importance regulatory policy has placed at different times on promoting competition between access infrastructures, between core infrastructures, and between competing retail services. We noted the existence of important trade-offs which needed to be made when promoting these different forms of competition.
- F.3 An important conclusion of this analysis is that there are significant trade-off between different forms of regulation and regulatory objectives. For example, if the economic characteristics of the market dictate that the promotion of services-based competition should be preferred, this will have repercussion on the incentives for operators to engage in infrastructure competition. One of the purposes of carrying out this Strategic Review is so that both Ofcom and our stakeholders can have more certainty about Ofcom's future regulatory strategy in telecoms – i.e. the types of competition that regulation is designed to promote.
- F.4 In Chapter 5 we set out options that Ofcom could adopt in terms of the type of regulatory intervention we pursue. We proposed the principle that we regulation should promote competition and the deepest level where it will be effective and sustainable. However, in principle there is a choice as to where in the value chain we focus our activity. We could focus on:
- promoting competition based on alternative access infrastructure;
 - promoting services competition, regulating all network infrastructure as a bottleneck; and

- promoting competition in core infrastructure, but regulating access as a bottleneck.

F.5 The merits of each of these approaches are discussed below.

Competing access infrastructures

F.6 UK regulatory policy in the early to mid 1990s focused strongly on promoting competition based on alternative access infrastructure. There were several aspects of such a policy. There was positive discrimination in favour of cable networks as the main source of competition in fixed residential telephony, in the form of line of business restrictions on the incumbent providing services in competition to cable. The Government sought through its management of the radio spectrum to stimulate the roll-out of new wireless-based access networks, such as that of Ionica. A similar policy of stimulating infrastructure competition was adopted in mobile, in which the UK was one of the first countries to license four mobile networks at an early stage. Entry into the mobile market was capped thereafter, unlike in fixed in which there was no restriction on the number of companies which could enter the market after 1991.

F.7 What are the arguments for and against promoting competition in access infrastructure? An operator that controls its own access infrastructure to the customer is not reliant on the incumbent to deliver any part of the service except for terminating calls on the incumbent's network. However, some degree of regulatory intervention is still required because in the absence of access on regulated terms to the incumbent's and other networks, it may not be able to deliver full connectivity to its customers. This type of regulatory approach could provide the following benefits:

- it means that there is considerable scope for technical innovation outside of the control of the incumbent;
- it means that the competitor can better guarantee the quality of its service;
- it creates the ability to offer different services and pricing packages;
- although in the short term promotion of entry by infrastructure operators often leads to inefficient cost duplication, this may be countered by the static and (in particular) the dynamic benefits from the increasing degree of competition over the longer run; and
- infrastructure competition also permits a more dynamic market and regulatory environment than basic entitlement to interconnection. It can lead, if successful, to large-scale withdrawal of regulation.

F.8 What are the counter-arguments? The case against promoting competing access infrastructure is broadly based on the following:

- If the market exhibits the conditions of a natural monopoly, promoting competing access infrastructure will lead to inefficiencies, as costs are duplicated and economies of scale or density are not fully exploited. This means that the regulator will need to intervene actively in order to

provide support to the new entrant to counter-act the economies of scales enjoyed by the incumbent. Far from allowing early regulatory exit, in fact these asymmetric policies are likely to need to be maintained for a considerable period of time;

- The particular virtues of access infrastructure-based competition may be lower compared with other forms of intervention; the same benefits may be achieved through other forms of entry combined with suitably targeted regulatory policies. Access infrastructure competition, while removing a monopoly problem, is likely to lead to highly concentrated markets which may be only slightly better than monopolies in delivering benefits to consumers, and could be prone to incentives to collude tacitly or to reduce the degree of competition. So even if competition is sustainable it may not be effective. This suggests that heavy regulatory intervention might still be required. Furthermore, the presence of several networks requires regulatory intervention to allow interconnectivity among them; and
- A policy which focused on access competition alone would run the risk that, if the policy did not achieve the desired objective, there would be no competition in the market at all.

F.9 Most commentators argue that the policy of promoting competing access infrastructures in relation to mobile services has created a healthy and viable market structure. On the other hand, there is a widely-held view that the policy of promoting access infrastructure competition in fixed services has been much less successful. Cable has played an important part in promoting competition for residential consumers. However, the degree of sunk costs and economies of scale in fixed access services is such that entry has only occurred at a limited scale. Another factor that limited the incentives of new entrants in the provision of access infrastructure is the disincentive created by the price controls imposed on BT's retail services. The limited geographic reach of the cable companies combined with the financial problems they experienced at the turn of the decade has led many to question whether the policy of promoting access competition in fixed access infrastructure was appropriate.

F.10 On a forward-looking basis the question is whether a return to a strongly pro-access infrastructure competition model would be the best policy approach for the fixed market. To address this, Ofcom needs to consider whether new technologies have the capacity to exhaust economies of scale at a lower level of output (i.e. their Minimum Efficient Scale (MES) is lower) and whether the degree of sunk costs is sufficiently limited not to deter entry and investment in the first place. In other words Ofcom needs to consider whether the benefits of access infrastructure competition could be obtained at an acceptable economic cost.

F.11 The evidence presented to us in Phase 1 of our Review suggests that the economics of the current generation of access technologies are unlikely to support further competitive entry into the access part of the market other than to serve some high-spending consumers or supply niche services. In relation to next generation access networks which have yet to be built, there may be more scope for competition to be feasible given the right regulatory framework, which is why Ofcom is keen to explore the options for making

next generation fibre investments contestable (as discussed in Chapter 8). Through our spectrum management strategy, we will also seek to encourage new wireless-based technologies which may provide greater scope for access-based competition in the future. But we consider that a return to a policy which had as its primary component the promotion of competing fixed access infrastructure would be inconsistent with our duties in current market circumstances.

Services-based competition

F.12 The EU regulatory framework, which became part of UK regulatory policy after the 1997 liberalisation package was introduced, led to a move away from promoting access infrastructure competition alone, towards a model in which the main tools to promote competition were those that encouraged resale and services-based entry into the market. In particular, the UK reversed its earlier policy not to introduce Carrier Pre-Selection (CPS).

F.13 Thus, since 1997 greater emphasis has been placed on services-based competition. However, overall competition in services has continued to be seen as a complement to infrastructure competition. It is possible to contemplate a regulatory approach based principally on the promotion of services competition, perhaps more along the lines of the model adopted in UK domestic gas and electricity supply. In this section we consider such an approach.

F.14 The main argument used against infrastructure competition is that it may inefficiently promote competition in what may be a natural monopoly. Instead, regulatory policy could focus on allowing competition to take place in those service elements where it is feasible and desirable, such as customer care and billing. There are three elements to this argument:

- if most, if not all telecommunication infrastructure (i.e. not just access, but the core infrastructure and backhaul as well) were a natural monopoly, then services competition, coupled with tight remedies imposed on access to the incumbent's infrastructure, would be the appropriate regulatory response;
- if next generation core and backhaul networks displayed greater natural monopoly characteristics than today's PSTN, because for instance they had fewer points of connection further back into the core network, competing but less extensive networks could not exploit economies of scale; and
- promoting services competition would also reduce the geographic differences in the level of competition. By promoting competition in infrastructure, entry is likely to occur only in some areas. In contrast, services competition would be available everywhere.

F.15 Even if the condition of natural monopoly is not met for all the various parts of the telecom network infrastructure, further arguments can be advanced for greater orientation of policy towards services competition. One argument is that a significant larger proportion of innovation comes increasingly from service provision and application design at the edge of networks – particularly if next generation networks use open standards. On this analysis, innovation may be as important in terms of application design,

billing management, bundling of services, segmentation and branding as it is in the introduction of new physical features such as higher bandwidth broadband services.

- F.16 Access regulation might only be partially successful in mimicking what would be the outcome of a competitive wholesale market. Ideally, if competition in network infrastructure was feasible, service providers could have a choice between wholesale providers of telecoms infrastructure. This would reduce the service provider's dependency on any single supplier and create the conditions where, through competition between the wholesalers, there would be maximum scope for cost-savings and innovation in the provision of infrastructure services. This would be a better outcome for service providers themselves than a pure services-based regulatory model. While the all-IP infrastructure of the future offers greater scope for service innovation at the edge of networks, this does not provide incentives for innovation in the network provision itself. For instance, an IP network can be configured to offer service providers different levels of service quality, different ways of aggregating bandwidth, the scope to access bandwidth-on-demand and so on. Competition between IP networks remains the best means in theory to stimulate the creation of the right set of service features to meet consumers' needs.
- F.17 Only if conditions for competition between networks could not be created at any level without undue inefficiency would it be appropriate to think about a regulatory model where all infrastructure was treated as a natural monopoly. Again, the Phase 1 evidence suggests that there is scope for competition in IP networks, provided the networks are not configured so as to rule out such competition. This is why Ofcom remains concerned to ensure that the access and interconnection arrangements of the BT 21st Century Network create appropriate scope for competition. If they do, there is no reason to consider that this part of the market is a natural monopoly in the same way that current generation access is.
- F.18 In summary, Ofcom's view is that services competition is a necessary, but not a sufficient condition for effective competition in telecoms. It would therefore be unwise to base our regulatory policy solely on services competition. Indeed, such an approach could impose significant risks if it undermined the incentives for new infrastructure investment. At the same time, Ofcom is conscious of the benefits which services competition has introduced into the market – we see the continued existence and viability of services-based competition as an attribute of a well-functioning telecoms market. Our policy proposals are therefore intended to maintain a strong role for services-based competition.

Competing core and backhaul infrastructure

- F.19 Having considered the case for promoting access competition and services competition, we turn to the final broad approach: promoting competition in core and backhaul infrastructure, while regulating local access as a bottleneck.
- F.20 This approach would imply a continued focus on imposing access conditions on BT. However, these access rules would (as now) be designed to promote deep infrastructure deployments by alternative network

operators (i.e. as close as possible to the customer). This is the key difference between this option and the option of promoting services competition.

- F.21 Specific regulatory policies would be, as now, the maintenance of an LLU regime designed to allow facilities-based competition at the deepest level where competition will be effective and sustainable. It would also imply maintaining other forms of regulated access to BT's network for as long as these appear necessary and proportionate, such as Carrier Pre-Selection for voice services, FRIACO for unmetered narrowband internet access, and DataStream for broadband alongside LLU. Our expectations of what forms of access product will be required in the future are set out in Chapter 8.
- F.22 As Ofcom noted in the statements on broadband policy that we issued in the spring, LLU may not be economically viable in some areas with insufficient number of subscribers for a considerable period of time. That would imply maintenance of bitstream access products like Datastream at least for those areas.
- F.23 Moreover, backhaul – the connectivity required between local exchanges and core networks, sometimes referred to as the middle mile – may also require continued regulation at least in some parts of the country where replicated backhaul assets are uneconomic. Ofcom is aware of the practical difficulties that differentiating between areas with different competitive conditions might involve, and wants to examine this in more detail. We discuss these issues later in this annex.
- F.24 As noted above, evidence presented to us suggests there is scope for competition in core IP networks. However, it also suggests that the number of such networks is unlikely to be very large. Therefore, in regulating access and backhaul bottlenecks with the move to IP networks in mind, we may need to reflect a possible consolidation of the market for core networks.

Regulatory tools

- F.25 In this section, we consider the theoretical case for three of the policy instruments that could be used to pursue the various forms of competition we have identified. We discuss the following regulatory tools:
- forbearance;
 - direct promotion of access competition; and
 - conduct regulation.

Forbearance

- F.26 Forbearance is the deliberate and publicly announced decision by a regulator to abstain from intervention. Regulators might want to forbear in emerging markets where there is considerable uncertainty about future demand and cost conditions, given the risks involved in making regulatory decisions based on imperfect information. Another reason to forbear is when it can be expected that the market will become competitive in a sufficiently short period of time to make any regulatory costs from early

intervention higher than the potential benefits. Forbearance could therefore be thought as a mechanism aimed at encouraging investment. However, in order to be effective, the regulator needs to provide a credible commitment that it will not renege on the initial promise. If a regulator cannot credibly commit to maintain such a policy in the future, operators will take this into account in their decisions and the policy will have a limited effect.

- F.27 It can be argued that forbearance is already a feature of the regulatory measures available to Ofcom. Under the European framework, where Ofcom has examined a market and found no Significant Market Power, the various access conditions listed in Articles 9-13 of the Access and Interconnection Directive are disapplied. Technically, a finding that there was no SMP could take place even if there was some evidence of market power, if for instance that market power was considered likely to be transient in nature.
- F.28 Therefore, a finding of no SMP could be based on the conclusion that although the current level of market power is high, it is likely to diminish over the period of the relevant market review. Furthermore, the EU framework encourages forbearance from finding SMP in newly emerging markets despite the fact that the company first into the market may have an initially high market share (used as a proxy for market power)¹. Again this presumption is based on the fact that either a high market share in this case is not evidence of market power, or because market power is likely to be transient.
- F.29 However, more explicit forms of forbearance operate in other jurisdictions. In the United States, the Telecommunications Act 1996 contains explicit powers to forbear from regulation in certain circumstances. But we believe forbearance in the USA has proven problematic to apply. It is necessary to demonstrate that certain objective conditions laid out in the 1996 Act are met before forbearance would be permissible. There is in fact much similarity between the conditions which must be met before forbearance can be applied in the USA and the conditions of the EU market reviews which (as noted above) allow European regulators to forbear from finding SMP or applying certain remedies in given circumstances.
- F.30 Our discussion on this issue in Phase 1 elicited some thoughtful views. BT argued that the regulator should focus on giving contingent commitments – in other words, making clear that if certain pre-conditions are met at a certain point, the expectation would be that regulation could be withdrawn from that point onward. However, BT and others also noted the difficulty for the regulator in making strong or credible commitments, however contingent.
- F.31 In practice, a formal forbearance policy along USA lines is something which Ofcom could introduce only if the EU framework was modified. However, there is scope for Ofcom to vary remedies which apply when SMP is found. Our intention under Option 3, as set out in Chapters 5 and 8, is to focus regulation on enduring economic bottlenecks and ease regulation downstream of these bottlenecks. We will forbear from applying additional

¹ See Recital 27 of the EU Directive on a Common Regulatory Framework for Electronic Communication Networks and Services

layers of regulation where this is practicable. We recognise the strength of the argument advanced that for such forbearance to have an impact, it has to constitute a credible commitment. We will be exploring this issue of regulatory commitments further during Phase 3.

- F.32 One important point to make in connection with forbearance is the need for a policy of this kind to be matched by a commitment on the part of the regulated company to conduct itself responsibly. For instance, if the regulator forbears from applying *ex ante* price controls, the regulated company should ensure that its behaviour does not immediately prompt calls for that forbearance to be reversed. We have termed such an approach a 'deregulatory contract' and it will be important to develop a shared understanding of this concept as we identify opportunities for forbearance.

Direct promotion of competition in access infrastructure

- F.33 A radically different policy would be the active promotion of competition in access. In relation to access competition, this could conceivably involve the kind of positive discrimination in favour of access infrastructure which was a feature of Government and regulatory policy in the early 1990s.
- F.34 One important component of that policy was line-of-business restrictions in relation to entertainment services, which only those in possession of a cable TV licence were able to offer in their own right. It is possible to conceive of similar restrictions which could be introduced into the market today to provide similar incentives for the roll-out of certain infrastructure(s). However, the problems with such asymmetric regulation are well known: they can over-protect specific providers and involve the regulator or Government in second-guessing market outcomes.
- F.35 Notwithstanding whether introducing such regulatory discrimination would be appropriate, it is first necessary to examine whether such restrictions can practicably be implemented within the existing framework. The open EU licensing framework creates a permissive regime in which all who meet certain objective conditions are allowed to operate under the new General Authorisation. There is no scope either to restrict those who are entitled to operate under the General Authorisation, or to introduce line-of-business restrictions on certain categories of firm operating under the General Authorisation. Moreover, there is a general presumption in the regulatory framework in favour of a technology-neutral approach.
- F.36 The EU framework does allow conditions to be applied where licences are granted for access to scarce resources such as radio spectrum, provided these restrictions are objectively justified in relation to the network service concerned, non-discriminatory, proportionate and transparent². Thus it is possible to impose restrictions through spectrum licences which would have the effect of creating line of business restrictions. However, this would not prevent someone operating under the General Authorisation (i.e. someone not using wireless or using licence-exempt spectrum) from offering competing services breaking the line of business restriction.

² See Article 6 of the EU Authorisation Directive

- F.37 On balance therefore, we do not think such restrictions are a plausible regulatory option.
- F.38 A less deterministic approach would dispense with any attempt to impose line of business restrictions but would nonetheless license spectrum strategically to promote certain kinds of competitive entry. To a greater or lesser extent, this is the approach which was historically used by the Radiocommunications Agency, with spectrum being parcelled up for allocation for particular uses either through beauty contests or auctions. Ofcom will be consulting separately in the near future on the framework for spectrum management. That consultation will consider the balance between strategic approaches to spectrum management on the one hand, and market-based mechanisms such as spectrum trading on the other, and also the importance of Ofcom's other duties in this area such as its duty to promote efficient use of spectrum.
- F.39 Finally, wider Government policy may also impact the roll-out of new infrastructure, sometimes adversely. Many Phase 1 responses pointed out that Government policies intended to address other issues – the example raised was new legislation to curb traffic congestion – can have a significant impact on the viability of business cases for infrastructure deployment. Clearly, these issues are beyond Ofcom's direct remit but we recognise the importance of the concerns raised.

Conduct regulation

- F.40 Conduct regulation is a term we use to describe the kind of detailed regulation which is central to the current policy approach – i.e. the imposition of detailed, binding conditions on companies with SMP, requiring them to follow certain courses of conduct. In this section we discuss the strengths and weaknesses of this approach and ways that conduct regulation might be bolstered.
- F.41 Throughout the period since BT was privatised in 1984, the best way to set and enforce such conditions has been a subject of lively debate. Reliance on detailed conditions has been argued to lead inexorably to great complexity, limited flexibility and raised compliance costs. It has also been argued that reliance on detailed conditions is made difficult by the presence of an information asymmetry between regulator and regulated, as the regulated party inevitably knows more than the regulator about what detail should be included in a condition on a specific issue.
- F.42 This section looks at three issues in particular:
- the inter-relationship with competition law ;
 - the discrimination problem – the difficulty that conduct regulation has in preventing all forms of discrimination by vertically integrated network incumbents; and
 - equivalence – a concept that could be used in the application of conduct regulation that aims to address the discrimination problem.

Inter-relationship with competition law

- F.43 One solution to the problem of making and enforcing effective licence conditions would be to rely on competition law instruments at least as far as core economic regulation is concerned. In our regulatory Option 1, we suggest that Ofcom could embark on a programme of large-scale deregulation, relying instead on competition law to police any competition problems. To understand the practicability of such an approach and its limitations, it is necessary to examine the way that competition law already applies in this area.
- F.44 Prior to the introduction of the Competition Act in 1998, there was a widespread view in the telecoms industry that what was missing from Oftel's regulatory instruments was an effective prohibition on abuse of market power. However, the 1998 Competition Act granted concurrent powers to Oftel to enforce the Act in the telecoms sector. Oftel had (and Ofcom now has) full powers to take action for abuses of market power and other infringements of competition law such as cartels or anti-competitive agreements and to impose fines on companies for such breaches. If competition law is considered to be an *ex ante* deterrent on anti-competitive behaviour by firms, is continued sector-specific conduct regulation required at all?
- F.45 There are some potential problems with moving to complete reliance on competition law. First, the prohibitions in the Competition Act are usually applied *ex post* – for example, after an abuse has taken place. The deterrent effect even of these types of competition law intervention might only provide a limited constraint, because they have to be supported by evidence in each case, might lead to substantial delays in their application and there is scope for substantial damage to the affected party in the meantime.³ The counter-argument is that the deterrent effect of eventual fines and other penalties should deter the abusing party at the outset. But in practice the deterrent effect exists only if the abusing party believes that they will be caught and considers the likely scale of punishment is likely to outweigh the benefits from conducting the abuse.
- F.46 Second, competition law is better suited to deal with exclusionary abuses than with excessive pricing abuses. The latter are particularly relevant in telecoms markets. This is not to say that competition law cannot in theory perform all the duties with which a regulator with a duty to promote competition is entrusted. However, there have been limited competition law cases dealing with excessive pricing and in general competition authorities are not willing or well suited to monitor compliance with imposed remedies.
- F.47 Third, the principles of competition law, as they can be derived from the statute and existing case law, do not always provide ready-made solutions to the problems experienced in telecoms markets. While competition law can, where necessary, be stretched to incorporate such highly technical matters, there is nonetheless a pragmatic case for addressing such issues through sector rules. This avoids what would otherwise be protracted delays in the development of a body of case law that supports the necessary

³ Interim measures under the Competition Act are of course available where an abuse is particularly clear-cut.

technical requirements. This is particularly important if effective enforcement requires ongoing monitoring and imposition of price controls.

- F.48 Lastly, telecoms regulators are charged with a duty to promote competition in markets where, due to the particular characteristics of the market both in terms of economics and history, it may not otherwise arise. This is wider than the duty of anti-trust authorities that have a duty to protect competition. Were Ofcom to proceed solely on the basis of reliance on competition law, we would be failing to implement our obligations properly. The EU regulatory framework seeks to reconcile the maintenance of sector-specific conditions with competition law by aligning the processes for identifying relevant markets, and the determination of market power within those markets, with the analogous processes developed under Articles 81 and 82. This approach is intended to combine the rigour of the economic analysis of markets, market power and dominance, with the flexibility to design and implement appropriate remedies which are not prefigured or envisaged in current competition case law.
- F.49 The EU framework therefore envisages continued conduct regulation in addition to competition law, albeit operating within a framework intended to provide equivalent analytical rigour to that found in competition law. As we note in Chapter 5, where enduring economic bottlenecks exist it would be entirely inappropriate to rely on competition law alone to address the resultant problems. However, Ofcom does consider that in all other parts of the market the direction of travel should be towards greater use of competition law and less reliance on continued *ex ante* sector-specific regulation.

The discrimination problem

- F.50 While it is clear that competition law is inappropriate to solve the problems of enduring economic bottlenecks, one fundamental problem with the continued use of conduct regulation to address such bottlenecks can be identified. This is the widespread view that conduct regulation has so far proven ineffective when it comes to addressing problems of discrimination by vertically integrated incumbents.
- F.51 Vertical integration should not be regarded as a problem *per se*. In many cases, it can deliver powerful economic benefits. However, in a network industry, wholesale inputs are a critical input for most new entrants. Where the input is an economic bottleneck, the incumbent's market power, incentives and ability (in the absence of effective controls) to leverage it to the benefit of its own downstream business activities can result in significant distortions to competition.
- F.52 Various measures have been adopted to address this problem. A concept of 'undue discrimination' has been included in licences since 1984. This has been bolstered by specific prohibitions on forms of discrimination (e.g. discount schemes or unjustified delays in supplying certain inputs), by attempts to create greater visibility of BT's accounts to enable discrimination to be detected, and latterly by measures to prevent the exercise of price squeezes following a variety of complaints alleging margin squeeze behaviour by BT in favour of its own retail operations. Therefore, the current

regulatory concept of price discrimination does encompass both price and non-price discrimination.

- F.53 Recent experience of the introduction of carrier pre-selection and wholesale line rental, combined with longer-term grievances relating to the launch of broadband services, suggest that an important issue remains. This is that BT's incentives as a vertically integrated operator are in most cases going to be to operate in a way which maximises the synergies between its businesses. BT's wholesale operations are not indifferent between BT's retail operations and those of rivals.
- F.54 Ofcom recognises that some types of discrimination might have an economic and non-anti-competitive justification. For example there might be economies of scope between the vertically integrated retail and wholesale divisions. However, the vertically integrated operator might also engage in discrimination as a way to leverage its market power. Ofcom is aware that costs and benefits of imposing non-discriminatory obligations should be weighted.
- F.55 Latterly therefore, the debate has shifted to whether an essentially reactive 'undue discrimination' framework can sufficiently address the anti-competitive concerns that arise from BT's vertical integration. At a minimum, it is argued, the conduct regulation approach must be intensified so as to create clear *ex ante* rules guaranteeing equivalent treatment between BT retail businesses and those of rivals.

Equivalence

- F.56 Equivalence is a principle used in the application of conduct regulation which is designed to address this problem of discrimination. The concept of equivalence is that BT's wholesale customers should have access to the same set of wholesale products, at the same prices and using the same transactional processes, as BT's retail divisions (we discuss this in detail in Annex G).
- F.57 There are economic arguments for and against such a principle. It is useful to distinguish between two different underlying reasons for behaviour which could disadvantage a downstream competitor which buys wholesale inputs from a vertically integrated firm:
- non-anti-competitive discrimination, which is the result of the vertically integrated firm making use of a cost saving or quality improvement as a result of its vertically integrated structure; and
 - exclusionary discrimination, where a competitor is disadvantaged by the vertically integrated firm purely with the intent of hindering the competitor's ability to compete downstream.
- F.58 Taking the example of a vertically integrated monopolist, who sells wholesale inputs to a number of downstream competitors, the incentive to discriminate in order to exclude or put at a disadvantage competitors will be maximised when:
- regulation limits the profits that can be made upstream, so there is more profit to be made downstream;

- the downstream market is less competitive and therefore the higher are the potential rewards from exclusionary and discriminatory tactics;
- the integrated firm sells the same downstream (i.e. homogeneous) product as its rivals, so it captures any sales that they lose;
- the integrated firm is at least as efficient at the downstream activity as its rivals, so that taking business from them does not reduce the size of the overall market;
- the vertically integrated firm has inherited a large customer base and switching costs are high; and
- discrimination is relatively cheap for the upstream monopolist to undertake and difficult to detect or distinguish from other forms of non-anti-competitive discrimination.

F.59 Though theoretical examples never translate perfectly into real life, many of these conditions are close enough to BT's situation to suggest that it does have an incentive to disadvantage its downstream competitors, whether or not it has in practice chosen to act on this incentive.

F.60 The theory suggests that exclusionary discrimination – disadvantaging a competitor purely with the intent of hindering their ability to compete downstream – is unequivocally harmful. It reduces the degree of competition downstream, causing prices to rise and resulting in welfare losses. If equivalence prevented this activity at no extra cost, it would be unambiguously beneficial.

F.61 However, even non-anti-competitive discrimination may be harmful under certain circumstances. Equivalence would make the vertically integrated firm's costs rise: it would not be allowed to benefit from some vertical synergies because it would only be permitted to use for itself the same wholesale products that it provided to its competitors. However, these higher costs must be assessed in the light of potential benefit of more vigorous competition downstream, whose net effect could still be to reduce final prices in the retail market. In these circumstances, equivalence may or may not be beneficial. It depends upon the relative magnitude of price reductions in the retail market and dynamic gains from competition and innovation versus additional costs imposed to the monopolist by equivalence. Ofcom recognises that these static benefits might imply a cost in terms of dynamic efficiency. That is, under equivalence BT might have a reduced incentive to introduce new wholesale products as it will only be able to capture part of the returns this might generate downstream.

F.62 However, this simple analysis ignores further arguments in favour of equivalence. The first argument is that if the monopolist knew that it would be required to offer equivalence to its downstream competitors before it could supply a new input to its retail divisions, it would build this in at the design stage for new products, possibly relatively cheaply. The second is that the downstream market may benefit from equivalence not just through greater competition and hence lower prices, but also through faster innovation.

Geographic market definition

- F.63 The fifth principle that we proposed in Chapter 5 was that we should accommodate varying regulatory solutions for different products, and where appropriate for different geographies. In this section we look at the circumstances in which it would be appropriate to apply different remedies in different geographies.
- F.64 The European framework requires NRAs, such as Ofcom, to conduct market reviews for a range of predefined wholesale and retail relevant product markets. NRAs have then to assess the geographical extent of these product markets and whether there are one or more operators with Significant Market Power (SMP) in each market. If there are, Ofcom determines what remedies would be appropriate, using one or more of the regulatory instruments listed in the European framework. To date, in the various market reviews conducted by Oftel and Ofcom, markets have been defined on a national basis (or more precisely national markets with the exception of the Kingston area where Kingston Communications operates which has been identified as a separate geographic market).
- F.65 However, as part of this Review, Ofcom is examining how in the longer run (i.e. beyond this round of market reviews), the evolution of competitive conditions, and of the way in which competitive conditions differ from area to area, might affect Ofcom's approach to market definition and the development of appropriate remedies. For example, if the degree of competition is expected to increase significantly over time in some areas but not in others, Ofcom will consider how this could be taken into account either in the market definition, or at the remedy level or both.
- F.66 The purpose of market definition is to identify the boundaries of the market, and within it which firms compete with one another; it is therefore an integral part of competition analysis and, now, of the European framework. As well as defining markets in terms of which products are deemed to be sufficiently close substitutes to be in the same product market, it is also important to consider the geographic dimension of a relevant market. This is a task which the EU regulatory framework has assigned to each NRA, such as Ofcom.
- F.67 Markets are usually defined on the basis of the extent of demand and supply substitutability which can take place in the short run. However, geographic market definition can be complex in the case of fixed network markets. This is particularly the case in the provision of access infrastructure, where the scope for supply-side substitution tends to be more limited because of the considerable time and cost involved for an operator not currently serving a particular candidate area to deploy new infrastructure, in response to a non-transitory increase in price.
- F.68 As a result the analysis tends to rely on examining the scope for demand-side substitution. However, given that network access services are not transportable – i.e. a customer is very unlikely to move locations to take advantage of cheaper prices by a supplier located in another area – this could in theory justify the identification of very many highly localised geographic markets even though the analysis of competition at the level of

these individual markets would not be particularly meaningful or would raise practical difficulties.

- F.69 Alongside a consideration of demand- and supply-side substitution, Ofcom considers that, there could still be valid reasons for continuing to define geographic markets relatively widely even if the extent of competition varied between areas, perhaps because of variations in the availability of competing services. One reason would be where, in the absence of regulation (with the exception of USO requirements), a firm chooses to adopt uniform national prices and another reason would be where consumers typically purchase a bundle of products/services on a national basis. However, where these factors are absent, it may be necessary to adopt a more pragmatic approach and to consider aggregating markets to reach a definition of the geographic market that is more analytically meaningful e.g. by considering the similarities, or lack thereof, in competitive conditions between areas.
- F.70 Ofcom also recognises that the development of remedies may vary according to the extent of competition even within a market which has been defined as being national in scope. For example, our approach could reflect the fact that different remedies would be more effective in different geographies, depending for instance on customer density.
- F.71 Such an approach could require setting remedies which allow some flexibility but at the same time would address the concerns that a complete removal of SMP obligations might entail. For example, over time competition in broadband via LLU may be sustainable in some areas, but not in others. It would be interesting to consider whether it would be possible to develop and apply different remedies to reflect these differences: for example a relaxation of regulation at the retail level in more competitive areas combined with the backstop of wholesale obligations (non-discrimination, obligation to supply etc).
- F.72 At the same time, it is possible that in the future the development of competition might support a move from national markets to defining markets on a geographical basis. One possible solution to the practical consequences that might stem from defining a multitude of separate geographic markets is that similar, if not identical, remedies could be applied to those areas that face similar competitive conditions. This recognises that the geographic extent of the markets could be relatively limited but that the range of appropriate remedies needed to deal with large numbers of local markets could also be relatively limited.
- F.73 If geographic markets are defined on a local basis, and if they are deemed to be effectively competitive – where no operator on its own or jointly has SMP – then there would be no scope to impose *ex ante* regulation in these markets. Competition law would continue to apply though, and the market definition process under competition law would be the same as under the *ex ante* sector rules, and as such would be expected to reach the same conclusion on the appropriate boundaries of the market.
- F.74 As part of this process of considering how to take account of variations in the geographical extent of competition, Ofcom would need to ensure that its decisions on market definitions and any remedies were based on sufficiently dis-aggregated evidence in the future. This is likely to entail the

need to gather more disaggregated data on the availability of products and services –for example down to postcode level – in order to be able to examine different permutations of geographic market definition. This would need to be part of the regular reporting cycle by which operators report volume and value data to Ofcom.

- 1 c) *What factors need to be taken into account when considering the scope of demand and supply-side substitution in telecoms markets on a geographical basis?*
- 1 d) *To what extent would it be appropriate in the future to take into account differences in competitive conditions in different areas through (i) the aggregation of similar geographic areas or (ii) through different remedies?*
- 1 e) *Would you support a requirement to provide Ofcom with data on particular products on a geographic basis as part of the regular reporting requirements? What is the correct level of disaggregation?*

Conditions for effective competition

- F.75 An important issue raised by a number of responses to our Phase 1 consultation was when competition in a market might be deemed effective. The underlying idea is that where a market is deemed to be effectively competitive, *ex ante* regulation is not necessary. Because telecoms regulation has been developed principally to address the problem of a market dominated by a single incumbent fixed-line operator, the question of whether the emergence of competition could be sufficient to be considered effective has historically attracted less attention than the question of how to address the problem of single firm dominance.
- F.76 EU Framework Directive states that *ex ante* regulatory obligations should only be imposed where there is no effective competition; that is, in markets where there are one or more undertakings with significant market power (SMP). Effective competition in the EU framework is therefore synonymous with the absence of SMP. The concept of SMP is equated to the competition law concept of dominance, which in economic terms consists of the concept of market power ranging from the extreme of monopoly to a position of substantial or significant market power. However, while dominance is usually assessed through a backwards-looking analysis, SMP is necessarily applied in a forward-looking manner.
- F.77 Dominance and SMP might be enjoyed by either a single firm or a number of firms. A single firm could either be a monopolist or a firm sufficiently large or whose ability to set prices above the competitive level is not constrained by current and future demand and supply substitutes. Joint dominance can be applied where conditions in a market are conducive to collusive outcomes.
- F.78 In economic terms however, the conditions necessary for competition to be effective are more complex than simply a lack of SMP. The question of when competition could be considered effective is highly complex, and economists have not been able to provide simple guiding rules. There are, nonetheless, some general features that could be assessed on a case-by-case basis to guide the assessment of whether competition might be

effective. The relevant factors include the number of competitors, their relative size, the presence of entry barriers, the way firms compete, the presence of switching costs and sunk costs, whether customers have any countervailing buyer power, availability of information, degree of innovation and so on. All of these factors are integral part of the EU SMP Guidelines⁴.

- F.79 The SMP concept only captures types of market failure that confer market power to companies in a market. But some market failures, such as externalities, public goods and merit goods, do not involve market power. For example, the presence of externalities can lead to over- or under-provision of a service compared to the social optimum, but it may not confer market power to anyone in the market.
- F.80 In markets with the economic characteristics found in telecoms, residual competition problems can remain even after single firm dominance has been eroded. Conditions of perfect competition are rarely if ever found in the real world, and regulators thus have to concentrate on achieving the second best outcome – the optimal outcome possible in the real world. This may mean promoting a market structure which, while not exhibiting conditions of perfect competition, nonetheless delivers very significant benefits over and above those of the current market structure. The economic theory does not therefore invalidate an approach of promoting competition between a small number of viable firms at some levels of the value chain, so long as the resulting market structure is less imperfect than that which would arise in the absence of regulation, and so long as regulatory intervention to move the market closer to perfect competition could be imposed only at an unacceptably high cost.
- F.81 Encouraging certain forms of inter-platform competition may reduce the likelihood of tacit collusion taking place between market players, because of the different cost-structures, service offerings and business incentives of the companies concerned. This highlights for example the value both of increased fixed-mobile competition in voice services and of alternative infrastructure platforms in the delivery of broadband services.
- F.82 Ofcom has powers under the Enterprise Act to conduct sector investigations, which could be used, as the problem of single company dominance diminishes in importance, to look at problems of weak competition in markets stemming from oligopolistic structure, and market failures other than those which arise from the exercise of market power.

⁴ EC Commission, *Commission Guidelines on market analysis and assessment of significant market power under the Community regulatory framework for electronic communications networks and services*, 8 July 2002.

Annex G

Achieving equality of access

- G.1 In this annex, we set out in detail our thinking on how equality of access between BT and rival businesses purchasing inputs from BT could be achieved without the structural separation of BT. This is a top priority for Ofcom as, if it is successfully addressed, relaxation of regulation can be contemplated in many areas. We explore why equality of access is critical and how it might be delivered. We also ask some further questions for consultation.
- G.2 The annex is divided into two parts:
- **change at the product level:** we look in detail at how models of product, process and price equivalence might be implemented for different regulated wholesale products; and
 - **behavioural change:** we examine what opportunities are currently available only to BT, how these could be shared with competitors or removed, and how BT's transparency could be improved at the organisational level in order to increase industry confidence.

Change at product level

- G.3 A core element in equality of access for BT's wholesale customers is that these customers should have access to the same or similar set of regulated wholesale products, at the same prices and using the same or similar transactional processes, as BT's retail activities. We refer to this concept as equivalence.
- G.4 Despite the relatively straightforward concept and apparent agreement in principle among stakeholders, this issue is complex. Different players in the debate are currently using different terms, or different interpretations of the same terms. Only by going into a significant level of detail can this issue be effectively progressed. This section discusses how equivalence might be implemented, with a view to setting out the terms and framework for a debate within the industry during the Phase 2 consultation period. It is organised into the following parts:
- what equivalence is, and its different models;
 - equivalence of outcome;
 - equivalence of input;
 - application of different models of equivalence to regulated wholesale products; and
 - application of equivalence to associated products.
- G.5 In this annex we discuss BT's wholesale products and the application of equivalence to them. It is important to stress that we are only referring to

those products in markets where BT has, or may in the future have SMP, and which therefore appropriate are for *ex ante* regulation. We refer to these as 'regulated wholesale products'. For products where BT does not and will not have SMP, BT (like its competitors) is free to sell in any manner, subject to competition law.

What equivalence is, and its different models

G.6 Ofcom considers that in order to deliver equality of access to regulated wholesale products, equivalence must be delivered across three key areas:

- **product:** including the features, functionality and quality of service of the regulated wholesale product;
- **process:** including the processes and quality of the processes for forecasting, ordering, provisioning, migrating and fault repair of the regulated wholesale product as well as the systems they depend upon; and
- **price:** covering the price of the various aspects of the regulated wholesale product.

G.7 It is important to recognise that these are not static requirements and that equality of access must be maintained throughout product development, and on an on-going basis. Therefore, we define equivalence as also applying to product development and in-life product management. By these we mean:

- **product development and introduction into service:** equality in the ability of BT's wholesale customers to influence the prioritisation of new product developments, and in these customers' awareness of changes in products; and
- **in-life product management:** equality in the ability of BT's wholesale customers to influence and/or be aware of changes in products that arise through the lifecycle of the products; such as provisioning, fault management and billing.

G.8 There are two aspects of this interpretation of equivalence that are important and worth emphasising. The first of these is transparency. It is critical that the products, processes and prices that BT provides to its own retail product teams are evident. Otherwise, it is impossible to ascertain whether the products it offers to its competitors are equivalent or not. The second is that these requirements are on-going, and therefore equivalence should be achieved at all points in time.

G.9 To date there has been no agreed definition of equivalence, or indeed agreement on the term. Ofcom considers there to be two models of equivalence that could be applied to BT's regulated wholesale products:

- **equivalence of outcome.** In this model of equivalence, BT's competitors would have access to regulated wholesale products which offered similar functionality at a similar price to the product used by BT's

retail activities. It would be provided using a transaction process and systems of similar functionality and capability but, crucially, it may be provided by different systems or processes; and

- **equivalence of input.** In this model of equivalence, BT would be required to offer the same regulated wholesale product to its competitors as it used itself, in every respect. As before, these products would have the same functionality, and be available at the same price, but in this case also use the same transactional processes and systems as those used by BT's retail activities. This would mean that BT's retail activities and BT's wholesale customers would experience the same quality and reliability, including any delays or glitches.

G.10 The key difference between the two models is how equivalence is delivered. In equivalence of input exactly the same products and processes are used by wholesale customers as are used by BT's retail activities. In equivalence of outcome, approximations of the products and processes are used. These two models of equivalence, and their relative advantages and disadvantages, are discussed in more detail below.

Equivalence of outcome

G.11 The equivalence of outcome model we are proposing here is a new model. However, in some respects it is similar to the approach adopted by Oftel. Therefore, we begin this section exploring the weaknesses of the current approach to understand the potential effectiveness of the equivalence of outcome model.

G.12 The Oftel approach started from the position that the regulated wholesale products that BT offered to its wholesale customers should be comparable to those that BT offered itself, though there was no requirement for the use of exactly the same product and processes. Also, differences between regulated wholesale products used by BT's retail activities and by its competitors were permissible so long as they were not material, or if the cost of BT providing a comparable outcome was not proportionate to the requirement for it. In practice, under the approach employed by Oftel, the onus has typically been on BT's customers to demonstrate that any difference in a regulated wholesale product (or the lack of such a product) was unreasonable and material, and that the requirement to remedy this was proportional to the cost of doing so.

G.13 However, the Oftel approach has not been successful in delivering equality of access. There are many examples of this including LLU, carrier pre-selection, PPCs and wholesale line rental. In each case it took several years before viable regulated wholesale products were made available and in some cases there remain significant areas of lack of equivalence. As well as being unsatisfactory to citizens, consumers and the telecoms industry, this approach has created a need for the regulator to take a far more active role in wholesale product design than is desirable.

G.14 There have been a number of causes for this failure:

- **the problem of circularity.** In LLU, for example, inferior processes were deemed acceptable and proportionate to the low demand

(compared to BT's process for provisioning the equivalent of LLU to its own end-to-end wholesale service, IPStream). Yet the reason that demand for LLU was low was partly *because* of inferior processes;

- **information asymmetry and lack of transparency.** Equivalence, or the lack of it, is not currently transparent. The lack of information symmetry means it is very difficult for wholesale customers to identify clearly or illustrate where there is a lack of equivalence – or indeed for BT to illustrate where there is equivalence. In addition, it is difficult for wholesale customers to challenge the estimated costs of remedying any lack of equivalence, as these costs are internal to BT;
- **lag in equivalence.** The approach frequently results in delays between the lack of equivalence occurring, it being identified, and an equivalent product being introduced. This is due to the time taken for an inferior product or process to be investigated and resolved. In this period BT typically has the opportunity to secure a competitive advantage in the retail market;
- **allows material detriment.** The way in which the various tests were applied often meant that, even though each incidence of lack of equivalence might reasonably be deemed immaterial by itself (and therefore not require urgent correction), the cumulative effect of many such incidences was a wholesale product that was materially inferior to that which BT used;
- **did not result in equivalent products.** The approach adopted resulted in wholesale operators purchasing different products to that which BT's retail activities used. One key example of this is PPCs, where BT purchases network components while wholesale customers purchase PPCs. This has made monitoring and identifying problems more difficult;
- **weak incentives for BT.** Under the historic regime, Oftel did not have powers to fine companies for breach of conditions. This means BT was given little incentive following a breach to implement a remedy wider across its business, to prevent the same breach happening elsewhere. Indeed it could be argued that BT's incentive was to spin out the remedying of a breach for as long as possible; and
- **excessive regulatory intervention.** Resolving disagreements between BT and its wholesale customers required detailed, time-consuming and protracted intervention by the regulator to the degree that Oftel/Ofcom was frequently required to effectively design wholesale products. In such a situation there is a big risk of Ofcom being gamed. Ofcom believes that such a level of regulatory intervention is not light touch and is sub-optimal.

G.15 Ofcom believes that the equivalence of outcome model can be made to overcome many of the weaknesses of the historic regulatory approach highlighted above. The particular steps that we would consider to ensure that the equivalence of outcome model delivers better equality include:

- **requiring re-engineering of products** to ensure closer equivalence. One example of this is the re-engineering of the CPS local call product in July 2004 which removed a key source of lack of equivalence between BT's retail activities and competitors;

- **setting clearer guidelines for SMP conditions.** There are several possible options here. They include:
 - clear guidelines as to what undue discrimination means; in particular that conduct that has the potential to harm competition would be prohibited without the need to wait for actual harm and clear illustrations of discriminatory behaviour to occur;
 - reviewing the scope of investigations to address the issue of cumulative immateriality;
 - expanding the role of Key Performance Indicators (KPIs);
 - broadening the definition of a repeat breach in order to reduce the incentive and ability to breach conditions repeatedly without a fine;
 - requiring damages as part of a remedy to a breach of an SMP condition;
- **setting clearer definitions and guidance.** The broad purpose of this would be to give industry clearer guidance on the objectives of equivalence, and how it would be interpreted. One example is to specify better which of BT's services a particular regulated wholesale product would need to be equivalent to. So for instance, guidelines for LLU could specify in advance that relevant BT services for LLU include retail line rental, DataStream (and/or IPStream) and HDSL-based leased lines. Alternatively, guidelines could be set for acceptable behaviour in in-life product management to prevent, for instance, BT arbitrarily changing the reject codes for WLR;
- **stricter application of the Access Guidelines** to require that BT's wholesale activities do not supply BT's retail activities with any new products/connections in markets where BT has SMP until it also supplies other wholesale customers with equivalent regulated wholesale products;
- **more use of the Competition Act** to enforce equivalence requirements;
- **more proactive efforts by Ofcom** to identify and address potential areas of lack of equivalence, for example in migration products; and
- **improvements in transparency and information asymmetry.** These are explored in the section on behavioural changes later in this annex.

G.16 It may also be possible in certain circumstances to expand the use of the Independent Telecommunications Adjudicator model across more products. This has been successful to date in LLU, though its suitability for other products would need to be assessed on a case-by-case basis.

G.17 The disadvantage of the equivalence of outcome model is that it will not necessarily overcome all of the problems of the approach used by Oftel, and therefore might not achieve equality of access. BT would still have some incentive and ability to access the network more efficiently. Though there is a higher requirement for equality, this model still requires regulatory intervention to decide whether differences between regulated wholesale products are acceptable, and therefore there still remains the potential for lag. There are also the same problems of lack of transparency, information asymmetry and the incentive to game the regulator.

- G.18 However, Ofcom believes that equivalence of outcome model can be superior to the approach used previously and is worth exploring particularly in circumstances where equivalence of input is not suitable.

Equivalence of input

- G.19 Under this model, BT's wholesale customers would be able to use exactly the same set of regulated wholesale products, at the same prices and using the same transactional processes, as BT's retail activities. So for example, if equivalence of inputs was applied to WLR, BT's retail activities would be required to purchase the same WLR product as its wholesale customers, and transact through the WLR gateway.

- G.20 In principle, equivalence of input delivers many advantages over equivalence of outcome:

- **it will deliver closer equality of access** and is thus more likely to deliver the benefits of competition and innovation;
- **it generates better incentives for BT.** It would improve the incentives for BT to provide high quality wholesale products to its wholesale customers. If a regulated wholesale product or process was lacking in some way, BT would be incentivised to solve the problem because its retail activities would suffer from the problem as well as its competitors;
- **it increases transparency and reduces information asymmetry.** One of the key problems of the equivalence of outcome model is that it will not address the problem of transparency and information asymmetry. Though equivalence of inputs would not fully solve these problems, transparency would improve;
- **it is easier to monitor compliance.** Given the lack of transparency and comparability of products and process inherent in the equivalence of outcome model, it is difficult either for operators or for Ofcom to check for compliance. In the equivalence of input model these problems are largely overcome; and
- **it requires less intervention by Ofcom.** The requirement for Ofcom to intervene to determine whether differences were acceptable and effectively to design products would be substantially reduced. On this measure, equivalence of input is not only a superior approach to the historic regulatory approach, but is also superior to a strengthened equivalence of outcome model.

- G.21 Ofcom recognises that there are some disadvantages with the equivalence of input model. The key ones are:

- it may result in additional cost and delay. If, for instance, equivalence of inputs was to be applied to existing regulated products it would require re-engineering of systems and products for both BT and BT's wholesale customers. Notwithstanding where these costs are recovered, it would add a cost burden onto the industry;
- it may reduce the incentive for BT to innovate at the wholesale level if it were unable to benefit solely, or earlier, to improve its competitive position at the retail level. If investment enabled competitors to

challenge BT in a retail market where BT holds a high market share, BT would have a particular disincentive to invest; and

- there may be good technical or commercial reasons why regulated wholesale products offered to BT's competitors are different to those offered to BT's retail activities, and these differences may genuinely be desirable. The equivalence of input model does not recognise this.

Application of equivalence

- G.22 In this section, we discuss our view of the principles that we should use in deciding how and where the different models of equivalence should be applied. There are two broad considerations. The first is where in the network the regulated product is, and the second is the relative cost.
- G.23 BT currently provides regulated wholesale products that allow its competitors to access its network at different levels. For example, in current generation broadband, it offers LLU (which provides access to the local loop) and DataStream (which provides access at the ATM layer) among others. Thus, it is necessary to identify where in the network equivalence of input should be applied.
- G.24 In principle, equivalence of input could be required for all regulated wholesale products, and a review could be carried out everywhere BT provides a regulated wholesale product to assess the net benefits. The costs would mostly be a function of the products and systems (re)design that BT would have to undertake, less any savings in overheads. The benefits would depend on the impact that equivalence of input is expected to have on competition in the retail market; whether prices might fall and what dynamic benefits, through innovation, there might be.
- G.25 Given the potentially high costs of applying equivalence of input to existing products, there may be diminishing benefits from each additional application of equivalence of input within the same product value chain. In contrast, for yet-to-be introduced wholesale products and processes in regulated markets, if equivalence of input is built into the product and process design at the start, the incremental cost is likely to be much smaller. For this reason, Ofcom suggests that in markets where BT has SMP **equivalence of input should be enforced when the cost is proportionate, such as for all new wholesale products, processes and systems that are required by regulation.** In particular, Ofcom believes that equivalence of input should be a requirement of BT's 21st Century Network design programme. Ofcom will take a proactive role in identifying which new products are likely to be in markets where BT has SMP, in order to identify where equivalence of input should be built in early.
- G.26 As we reflect in our proposed principles outlined in Chapter 5, Ofcom believes that it is sensible to focus regulatory interventions to particular points in the network. A natural consequence of this is that, where equivalence of input may be costly, its application should be focused as well. These two issues together suggest a principle that **when the cost is significant, equivalence of input should be used at specific levels in the value chain.**

- G.27 One of the principal benefits of equivalence of input may be a dynamic benefit: its ability to deliver faster innovation in the retail market. There is typically greater scope for competitive innovation the deeper in the network - the closer the customer and the network layer - competitors purchase wholesale products. For this reason, Ofcom suggests that **in general, equivalence of input should be introduced at the deepest levels in the network at which competition will be effective and sustainable going forwards**. This is consistent with the main principles proposed in Chapter 5. This also implies that equivalence of input should apply to regulated wholesale products that give access to the enduring economic bottleneck (i.e. where effective and sustainable competition is unlikely to develop).
- G.28 Given its complexities, equivalence of input is likely to work best when the regulated wholesale product involved has simple functionality and pricing characteristics, and is stable. However, at different locations and at different times the level in the network, below which an enduring bottleneck facility exists, will vary. For example, taking current generation broadband as an example again, in some locations competition in services using LLU is likely to be sustainable. At other, mostly rural, locations, competition may not be sustainable in services using LLU. But as demand for broadband changes over time, the picture may shift. In general, Ofcom suggests that although the points at which competition is sustainable may change, **the points at which equivalence of input should be applied should nonetheless be clear, simple, and provide certainty**.
- G.29 The benefits of introducing equivalence of input may only be derived for the lifetime of a product. For some of today's regulated wholesale products, this expected lifetime is quite limited and the cost of applying equivalence of input quite significant, thus challenging the merits of applying this model of equivalence in such circumstances. **If it is inappropriate to enforce equivalence of input, equivalence of outcomes should be required**.
- G.30 We discuss investment in next generation broadband access (in particular fibre) in Chapter 8, where we outline several options. Some of these options include the application of equivalence of inputs.
- G.31 We also note that it will be necessary to ensure that any re-engineering involved in introducing equivalence does not put an unreasonable burden on BT's wholesale customers.
- G.32 Ofcom's initial review of the application of equivalence to key existing regulated products is described in Figure 1 below, which we reproduce from Chapter 6. We will consult separately on this.

Figure 1: Applying equivalence to existing regulated wholesale products

Product	Suggested approach/rationale
Local loop unbundling	LLU is likely to be a key regulated wholesale product and thus it is critical to achieve equality of access.
DataStream	Will be the key broadband access product in areas where LLU is not viable, but is likely to be superseded by a next generation bitstream product
Wholesale leased lines (TISBO) (e.g. PPCs)	Critical access product today for operators serving business customers. For equivalence of input to be applied, substantial product re-engineering would be required. Products such as PPCs may have a relatively limited life as demand moves towards Ethernet type products. This might limit the justification for major re-engineering
Wholesale leased lines (AISBO) (e.g. wholesale LES, backhaul extension service)	These product will be critical going forward both for LLU operators and also for operators serving the business market.
Wholesale line rental	Product is critical for competition in voice telephony, and will need to be replicated under the 21CN. Current product is not fit-for-purpose, but product design lends itself to equivalence.
Carrier pre-selection	Product now provides reasonable level of equivalence
FRIACO	Product for unmetered internet access increasingly superceded by broadband access products, with declining usage
Indirect access	Product increasingly superceded by carrier pre selection

Approach to equivalence for associated products

- G.33 Figure 1 does not address the full range of regulated wholesale products which will deliver equivalence of access. This is because there are many products that wholesale customers buy that BT's retail activities do not buy or do not depend on. In these cases, even applying the equivalence of input model will not address the requirements of wholesale customers or promote effective and sustainable competition. These types of product break down into two categories.
- G.34 The first category is products that BT's retail activities do not buy, or where there is a fundamental difference in BT's requirements from those of its wholesale customers. A key example of this is products such as interconnection circuits. BT's retail activities typically use end-to-end wholesale products purchased from its wholesale activities, and these do not require interconnection circuits.
- G.35 When 21CN is implemented, LLU might fall into this category as well. As we discuss in Chapter 8, one of the planned features of the 21st Century Network is the ability for BT to provide broadband to a new customer using

software, eliminating the need for physical jumpering. By contrast, the lines of those customers wishing to take up broadband from a LLU operator have to be jumpered onto the LLU operator's DSLAM. In effect BT will not 'purchase' the jumpering service; currently it does.

G.36 The second category is migration products. There are several types of these; including migration to different products in the network (e.g. IPStream to LLU), between wholesale products (e.g. transfers between shared and fully unbundled metallic path facilities), between service providers (e.g. IPStream to IPStream) or from PSTN to IP (for example, from FeatureNet to an IPVPN product). There is a need to co-ordinate these migrations in some cases. BT's competitors will be significantly disadvantaged in the retail market if such wholesale migration products are poor. Although in theory BT could use these migration products, in many cases there is little or no incentive for BT to provide a high quality service, since to do so would increase competition at the retail level.

G.37 While the need for good quality products in these two cases is clear, it is unlikely that applying equivalence here will be effective in delivering equality of access. Therefore, Ofcom would consider a number of alternative approaches to address these issues:

- examine ways of engineering products and services so that the equivalence of outcome model could be better applied. The re-engineering of the CPS local call product is one example of this. For LLU in a 21CN world, a next generation LLU product could be engineered;
- set absolute service standards based on setting a level that is reasonable and objectively justifiable in light of the overall objectives to promote competition. This could be based on a test that any such associated product should be competitively neutral, in that it neither favours nor hinders wholesale customers competing with BT at the retail level, and also meets the objective of promoting effective competition. This could be combined with approaches such as international benchmarking or an independent evaluation of BT's business process design;
- accept some underlying functionality differences but impose strict price equivalence (through pooling and spreading of costs) and strict monitoring of compliance; and
- proactive action by Ofcom to identify where issues may arise and to resolve them as quickly as possible. In this case, it could be appropriate to include migration products to and from markets where BT does not have SMP.

5 a) *Do you agree with Ofcom's definitions of the various forms of equivalence?*

5 b) *Do you agree that equivalence of inputs can deliver more effective equality than application of equivalence of outcomes?*

5 c) *Do you agree with the principles proposed on where equivalence should be applied and the specific suggestions for individual products?*

5 d) *How do you suggest the principle of equality is achieved for 'associated products' that BT does not depend on (such as migration products)?*

Behavioural change

G.38 As we discuss in Chapter 6, we believe that in addition to changes at the product level, substantial behavioural changes by BT are fundamental to delivering equality of access. The way that BT conducts its internal business could create both the incentives and the means for treatment that would result in inequality of access.

G.39 Many of the responses to our Phase 1 consultation called for changes to BT's organisation and governance. In some cases, the degree of organisational change that respondents requested was very significant. For example, Centrica wrote that:

“Physical separation is required to provide confidence that confidential information will be protected and financial separation is required to ensure no cross-subsidies between competitive retail and monopoly wholesale activities”.

G.40 This section discusses Ofcom's view of the problems that need to be addressed. At this stage, Ofcom has not identified a preferred set of solutions to address the problems, though we briefly discuss some options. We look to the management of BT very quickly to deliver detailed proposals for change. During and following this consultation, we would like to work with BT and industry to take this issue forward.

Types of inequality of treatment

G.41 As discussed earlier, many wholesale customers believe that BT treats them very differently to the way in which it treats its own retail activities. Some of the specific examples of this type of behaviour that have been highlighted during Phase 1 include:

- **knowledge of wholesale innovation.** If earlier and/or more information is available to BT's retail activities – about the network, major developments (such as 21CN), feature changes, technical information and price changes in regulated wholesale products – this allows BT's retail activities a first-mover advantage. The same issue is true regarding flow of information from BT's retail activities to BT's wholesale activities. This can happen in a number of ways. Firstly, Group activities such as those led by the Chief Broadband Officer or BT Exact draw on information from the wholesale and retail activities, and this information can potentially be shared. Secondly, management or board meetings discuss issues pertaining to one part of the business while executives from other parts are present. Lastly, such information flows can occur through the normal on-going activity at the operating level. Many wholesale customers feel that they do not receive the same opportunity;
- **influencing wholesale product and process investment priorities.** BT's retail activities are able to exert more influence than BT's wholesale customers over regulated product development and process changes. For example, BT requires a reject code for certain orders (examples include BT Access Reward customers and NHS lines). BT's wholesale customers are also required to go through a lengthy, complex

and sometime ineffective Statement of Requirement process for any product or process changes. BT's retail activities use a less demanding process and are able to get changes more quickly. This is magnified by what wholesale customers perceive as an ineffective consultation process during the planning and development of new products;

- **providing higher performance processes.** For example, in the case of WLR over 40 per cent of appointments were missed in some months recently. Comparable figures for BT's own retail customers' appointments are not available, but competitors are concerned that far fewer appointments are missed;
- **more retail competitor intelligence.** BT's retail activities could become aware via BT's wholesale activities of commercially sensitive information pertaining to BT's other wholesale customers, through the use of common staff or common systems; and
- **allocating costs in a distorted way.** Some stakeholders have suggested that this could be possible in the form of, for instance, BT loading excessive common costs away from a retail product where BT had a high market share and onto a product where BT had a low market share.

G.42 Equality of access requires that inappropriate competitive advantages that flow from BT's unique status, such as those illustrated above, need to be removed. Removal of these advantages does not imply that the different parts of BT should be prevented from collaborating with one another, but that wholesale customers should be able to collaborate with BT's wholesale activities in a similar way.

G.43 Transparency is equally important. Together with equivalence and solutions to remove incentives, transparency needs to be sufficient to illustrate equality of treatment to build the confidence of BT's customers. This implies the need for significantly less information asymmetry.

Options

G.44 At this stage we do not propose any particular way to address these issues. However, we recognise that potential solutions fall into two broad categories – both of which are important. These are firstly, removing at all levels in the organisation the incentive and ability to discriminate; and secondly, providing transparency to show there is equality of access and to aid monitoring and enforcement.

G.45 Below, we discuss some possible options for resolving these issues that have been put forward by respondents to our Phase 1 consultation. All have implications in terms of cost, regulatory burden, proportionality and timings. In considering which of these should be pursued, it will be necessary to consider the trade off between how they might help achieve equality of access, and the cost involved in pursuing them.

G.46 Options that were put forward that would contribute to removing the incentive and ability to discriminate included:

- **changes to the location of certain functions within BT's organisation.** As many stakeholders have pointed out, the current allocation of functions between BT Wholesale and BT Retail does not reflect well whether functions are in fact wholesale or retail in their nature, or whether they are regulated or unregulated. For example, engineers working for BT Retail are required to provision lines for wholesale customers purchasing Wholesale Line Rental;
- **separate management boards.** To achieve equality of treatment it may be necessary that BT Group's executive board or other executive committees do not consider issues relating to markets where BT holds SMP when representatives from other operating units are present;
- **reducing the role of group activities.** It may not be appropriate for certain activities to be led at the group level;
- **different staff locations.** Many stakeholders have said that while staff from BT's regulated wholesale activities and BT's retail activities are located on the same site there are likely to be inappropriate information flows;
- **discrete internal IT systems.** It is possible that some of the IT systems that BT uses such as management information systems could allow confidential information to flow between BT's regulated wholesale activities and BT's retail activities;
- **clear rules on information sharing and influence** to ensure that information sharing and influence that happens at an individual level is consistent with equality of access. This could be implemented through the compliance activities described below; and
- **different brands.** In the case where a physical visit is made by BT on behalf of a wholesale customer, the use of the BT brand (on, for instance, the van) could legitimately create confusion in customers' minds about the nature and role of BT. It may be important for BT's retail competitors that all customers perceive that BT does not have preferential access to bottleneck products.

G.47 Many of these changes would imply a form of partitioning by BT. Clearly such boundaries would need to align with where equivalence is applied.

G.48 In the Phase 1 response, Centrica Telecommunications referred to the Competition Commission review of Centrica's purchase of a gas storage facility that would give it control of an upstream market. In addition to many of the other remedies suggested in this section, the Commission considered a requirement that the upstream business should outsource to third parties activities that had previously been undertaken by the downstream part of the new combined business. Several stakeholders also referred to the model applied to British Gas prior to its voluntary demerger which including physical, financial and information separation as a possible model for BT.

G.49 Some stakeholders have gone even further, and argued that though BT should remain under common ownership, it should be separated entirely into legally distinct entities. Ofcom believes that providing other measures are taken and prove satisfactory, this significant further step would not be necessary.

- G.50 It is essential that other measures are also taken to improve transparency and confidence; this is the second category of options that respondents put forward in Phase 1. The particular solutions could include:
- more transparent accounting information;
 - a clear and specific commitment to equality and external verification of internal policies and procedures; and
 - transparent policies with external monitoring.

- G.51 **More transparent accounting information.** Transparent and usable accounting information is essential in order to check for fair allocation of common costs, to check for margin squeeze and to ensure compliance with other obligations. Financial reporting places a significant regulatory burden on BT but many stakeholders do not believe that it is sufficient. As Cable & Wireless put it:

"there are significant gaps in the data produced and ... it is not possible to fully understand allocation of common costs and potential cross subsidies between competitive and non-competitive services".

In recognition of the complexity and scale of published accounting information, Ofcom and BT have agreed in principle to set up an industry forum to ensure that sufficient focus can be given to areas of perceived opacity.

- G.52 **Clear and specific commitment to equality and external verification.** Ofcom recognises the significant investment made to date by BT in regulatory compliance. Recent initiatives have included consulting with competitors on compliance activity, publishing an annual compliance report, and significant investment in training, which includes training all managers on BT's information sharing obligations. However, these compliance activities have not secured the confidence of the rest of the industry. Therefore, it may be appropriate to strengthen the compliance policy which could include guidelines covering: where certain activities reside in the group; statement of duties and roles of executive staff and certain management boards; code of conduct for all staff; commitment to serving wholesale customers equitably; clear rules on information sharing and use of Chinese Walls; provision for gardening leave when staff move between BT's retail activities and BT's regulated wholesale activities; and transparency of staff incentives. Implemented effectively, some of these policies will also help to reduce the incentive for individuals to discriminate.

- G.53 **Transparent policies with external monitoring.** We note that the BBC faces a similar issue to BT, with the relationship between its publicly funded assets and its commercial activities that exploit these assets. The BBC takes the approach of separating its activities into legally distinct businesses. It publishes on its website its Fair Trade Commitment, Fair Trade Guidelines and a quarterly review of related complaints received. Compliance is monitored directly by the board. An important step for BT would be to extend external and independent verification to cover a wider range of policies and to monitor their application, and to publish both its codes of conduct and verification reports.

Annex H

Competition in voice services

H.1 In this annex we look at the prospects for competition in voice services, and outline our proposals for changes to regulation in more detail than that given in Chapter 8. Voice services have historically been the main source of revenue for telecoms companies and the most important service from a consumer perspective. We believe that the market for voice services could see very significant changes over the next few years, which will require the adaptation of its regulation. We believe there to be good prospects that stronger competition for voice services will emerge. At minimum, Ofcom's regulatory approach will need to factor in the changeover by BT from delivering voice via the Public Switched Telecommunications Network (PSTN) to delivery via its new 21st Century Network (21CN).

Sources of competition

H.2 The annexes to our Phase 1 document contained a detailed assessment of the level of competition in voice markets. We concluded that though BT remained dominant in retail fixed voice markets, there was more competition in the UK than in many other countries. Here we look at the future prospects for competition from five sources. They are:

- service providers using carrier pre-selection;
- cable;
- mobile;
- unmanaged voice over IP; and
- managed voice over IP.

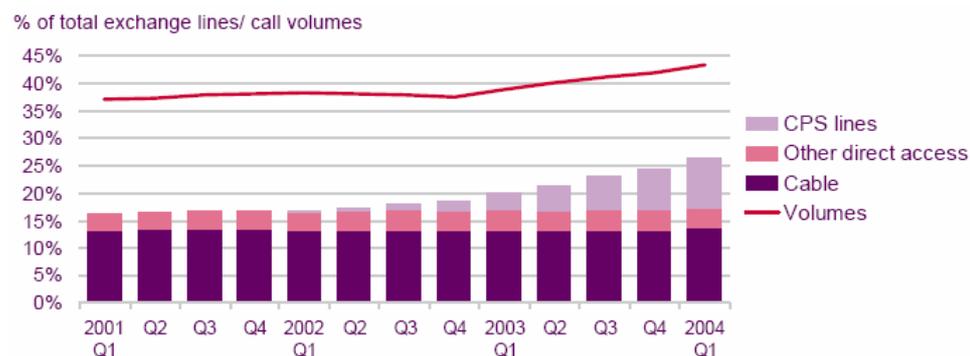
Service providers using carrier-pre-selection

H.3 Recently, service providers using carrier pre-selection have been successful. They now have more than 4.2 million lines⁵, and the different types of indirect access supplier have a 20 percent share of fixed call volumes⁶. Figure 2 shows the non-BT share of lines and fixed call volumes.

⁵ Source: Ofcom market intelligence, September 2004

⁶ Source: Ofcom market intelligence, June 2004

Figure 2: Non-BT share of lines and fixed call volumes 2001-2004



Source: Ofcom / operators

H.4 Competition from service providers using carrier pre-selection is likely to continue a-pace. Once Wholesale Line Rental has been made fit-for-purpose, it could accelerate further.

Cable

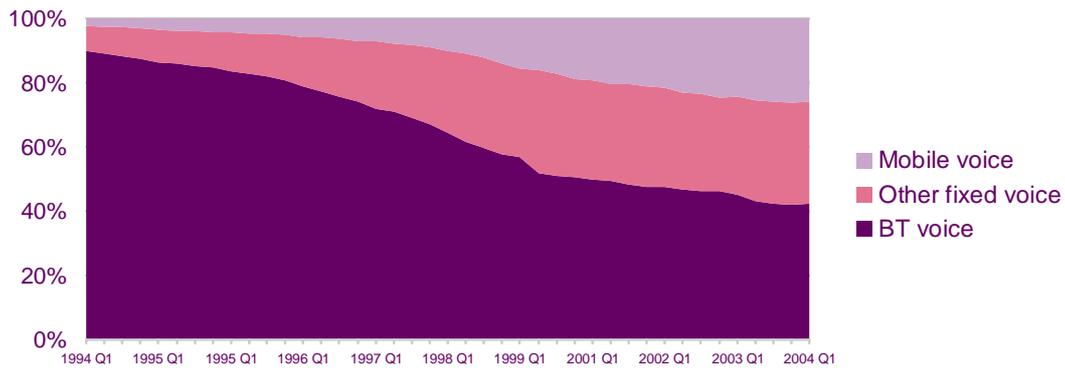
H.5 Over half of UK homes have access to cable, and it has been a source of competition to BT since the early nineties. Cable operators have an overall market share of 14 per cent of the market for calls in the UK, which suggests a market share of around a third in areas where cable is available. The resolution of the financing problems of the cable industry may create scope for competition from cable operators to intensify.

Mobile

H.6 Three-quarters (76 per cent⁷) of the adult population now has a mobile phone. There is evidence that at the level of individual calls, some consumers are substituting their mobile phone for their fixed line. Ofcom's consumer research found that 42 per cent of individuals said that they sometimes used their mobile phone to make a call instead of their fixed phone. While the volume of voice calls on fixed networks is falling, the volume of calls on mobile networks is increasing. Figure 3 shows the share of voice calls carried originated on different platforms.

⁷ Source: Ofcom market intelligence

Figure 3: Share of voice calls by platform⁸



- H.7 To date, our research shows that this call substitution is largely the result of behavioural change by a proportion of consumers who find it more convenient to use their mobiles. There have recently been significant reductions in the pricing of the principal categories of calls on fixed networks, driven by increases in competition. At the same time mobile prices for similar call categories have been relatively flat for the last couple of years, so the price differential has in fact increased. This suggests that price has not been the principal driver of the recent changes in fixed and mobile call volumes. The prices of fixed and mobile calls remain orders of magnitude apart: for instance, whereas fixed operators' average revenue per minute (including line rental) of a fixed call is 3.6 pence, the average revenue per minute for mobile operators (again including fixed charges) is 18.7 pence⁹.
- H.8 There is scope for the degree of fixed-mobile substitution to increase in the future, perhaps driven by price factors. In recent times, the cost per incremental peak hour minute on mobile networks has been high, as capacity constraints on GSM networks make it ever more expensive to deliver additional traffic. As mobile operators invest in further 3G capacity, this situation may change. Not only may 3G be a cheaper technology than 2G for delivering both voice and data traffic, but the additional capacity gives mobile operators room for growth which until now has been unavailable. Of course, as we noted in our Phase 1 document, the extent to which mobile operators use 3G to compete on price with the fixed voice providers will depend upon their commercial strategies as well as on the underlying costs of the technology.
- H.9 While there are prospects for fixed-mobile substitution, the economic test for fixed and mobile voice services being considered in the same market (discussed below) is tightly defined and requires a high level of substitution. While substitution is likely to continue to increase, particularly for certain customers, we do not believe that fixed and mobile voice services will meet the tests necessary to be regulated as a single market in the short term.

⁸ Source: Ofcom, operators

⁹ Source: Ofcom market intelligence, from operator data, June 2004

Unmanaged voice over IP

- H.10 As we discussed in our Phase 1 document, voice over IP offers the potential for new service functionality, at lower costs than services delivered over the PSTN. Like mobile telephony, but unlike the way PSTN services have traditionally been supplied, it may be provided at varying degrees of quality of service.
- H.11 Early voice over IP service providers targeted at the residential and small business market are providing services over broadband connections which they do not themselves control. These types of voice over IP service provider do not have complete control over the quality of service that the customer experiences. Should broadband networks become capacity constrained in future, quality of service may decline and these service providers may not be able to prevent this.
- H.12 These types of supplier have been very successful in other markets, such as Japan and the USA. For example, there are around four million VoIP subscribers in Japan, representing around a quarter of all broadband users. However, in these markets the opportunities for arbitrage-based entry via VoIP are much greater than in the UK. Nonetheless, with residential broadband penetration continuing to grow at a rate of around 50,000 per week, these service providers could be very successful in the UK as well.
- H.13 Ofcom wishes to promote efficient competition from these types of service provider. We published a consultation on Voice over Broadband in September 2004 ("New Voice Services") setting out how we proposed to do this.

Managed voice over IP

- H.14 Corporate consumers are currently leading the way in deploying voice over IP, and typically these consumers are making use of managed networks that are needed in any case for their data requirements. Because these are managed networks, it is possible for service providers to control the quality of service that these customers receive.
- H.15 In future, service providers are also likely to offer voice over IP with managed quality of service to residential consumers and SMEs. BT will offer such a service to all its customers as it rolls out its 21st Century Network.
- H.16 Most importantly, operators using broadband access products such as LLU could offer such voice over IP services too, either directly to consumers or wholesale to service providers. This is an example of why we believe competition in current generation broadband is our top priority. Through this mechanism, competition in broadband could generate competition in voice services without need for further voice-specific regulation.

Impact of next generation networks

- H.17 We stated above that we believed that the voice market could experience fundamental change as a result of migrations to IP and to next generation networks. This is for two reasons.

- H.18 First, VoIP service providers exploit the fact that telecoms networks typically make higher margins on voice calls and lower margins on data capacity. As broadband take-up increases, and particularly as NGNs are rolled out, the addressable market for VoIP operators will expand enormously. So in the medium term, VoIP has the prospect of ending telcos' ability to make differential margins between voice and data services. Analysts are predicting major changes to voice tariff structures as a result. It may be increasingly common for customers to buy large buckets of calls at a flat rate, rather than paying per call. Some analysts even predict that voice calls will be provided for free, bundled in with access.
- H.19 Second, as networks migrate towards using IP, there could be fundamental changes in termination arrangements, as we discuss in Chapter 8. It is not yet clear what arrangements will be adopted for IP voice termination, but this also could have far-reaching implications for tariff structures.
- H.20 These changes imply a very different voice market in future from the one we see today. In future, there is likely to be vigorous competition to supply access to consumers – from BT, cable, operators using LLU, mobile operators, fixed wireless access suppliers and others. Over these various access mechanisms, packages of services may be offered – such as instant messaging, email, and content services – of which voice will only be one application. In addition, voice over IP service providers may be providing voice services over access platforms provided by others.

Proposals for withdrawal from voice-specific regulation

- H.21 Ofcom believes that this combination of changes in the voice market offers the opportunity for a progressive withdrawal first from PSTN-specific regulation, then from much voice-specific regulation. The factors that could allow such a withdrawal are:
- increased competition from service providers as a result of CPS, and in future WLR. As competition from service providers using these products intensifies and the retail market becomes more competitive, many of the existing remedies in these retail markets may no longer be necessary;
 - competition in current generation broadband and evolution to NGNs. Chapter 8 discussed how Ofcom proposes to promote broadband competition at the deepest level where competition will be effective and sustainable. As operators compete using regulated data access products such as LLU and DataStream, these operators could use these access products to offer voice services. Therefore a competitive voice market could result from wholesale regulation designed for data; and
 - increased inter-platform competition from mobile. Effective competition in voice between fixed and mobile platforms would substantially increase the level of competition in retail markets, and could also increase competition in wholesale markets, perhaps rendering regulation in these markets unnecessary.
- H.22 Under the European framework, regulation of telecoms markets involves defining an appropriate market, assessing whether any operator(s) have significant market power in these markets, and if so determining appropriate

remedies. A withdrawal from regulation would need to take place within this framework. In this section we set out our proposals for a withdrawal from voice-specific regulation under this process.

H.23 Chapter 8 describes five stages to our proposals, reflecting the different opportunities to withdraw regulation. We discuss these stages in more detail in this annex. The stages are:

- Stage 1 – fit-for-purpose wholesale line rental;
- Stage 2 – withdrawal from regulation of fixed retail voice markets;
- Stage 3 – withdrawal of remedies from the first tranche of fixed wholesale voice markets;
- Stage 4 – evolution of remaining fixed wholesale voice markets; and
- Stage 5 – definition of an inter-platform voice market.

H.24 During this process, we will have regard to the principle that we set out in Chapter 5, and create scope for market entry. We will facilitate inter-platform competition in voice wherever possible. This could have a number of implications. For example, it might be that the current structure of termination rates is hindering the extent of competition between different platforms, and Ofcom should work to address this. We will also continue to ensure that voice over IP services are not artificially impeded as they enter the market. We will do all that we can to ensure that fixed and mobile platforms compete strongly with one another, for example by encouraging innovative business models such as voice over WLAN.

Stage 1: fit-for-purpose wholesale line rental

H.25 Before we can commence deregulation, the basic building blocks necessary to achieve competition in today's market need to be in place. Therefore our immediate priority is to introduce a fit-for-purpose wholesale line rental product, and Ofcom is working on this in parallel with this Telecoms Review. Full customer ownership is critical to service providers' ability to compete with BT on equal terms, so providers must be able to offer a complete range of calls and access services.

H.26 Although WLR in its current form has had some success in the business market, further work is required in several areas for it to be fit-for-purpose in the mass residential market. The three main areas are:

- **retail margin.** Despite recent rebalancing by BT, there is still insufficient margin between the wholesale and retail residential line rental. Ofcom believes that a significant margin increase for the service provider is required for WLR to be a viable commercial proposition, and would prefer to see this delivered through a reduction in wholesale charges than an increase in retail charges. Ofcom believes there is scope for such a reduction, possibly delivered via a modified approach to the valuation of the underlying network assets, and is currently exploring this in more detail;
- **transaction costs and service performance.** Most (but not all) of the functionality required for WLR has now been delivered. However,

concerns remain about the effectiveness of business processes, their ability to scale to high volumes, and the resulting transactions costs. The result has been poor service performance from BT to its wholesale customers. Further work is required in areas such as process automation and order rejection rates; and

- **behavioural change by BT.** Alternative providers must have confidence not just that wholesale systems and processes are fit-for-purpose, but also that they will be operated in a manner that does not favour BT's retail activities. Some behavioural change by BT, of the form discussed in Annex G, is required that prevent this type of outcome.

Stage 2: withdrawal from regulation of fixed retail voice markets

H.27 We expect a fit-for-purpose WLR product to have been introduced and competition to have strengthened as a result in 2005. The exact time that such a milestone has been reached is open to some interpretation. Oftel previously set out a detailed set of tests for what constitutes a fit-for-purpose WLR, but it may be appropriate to review some of these tests. For example:

- **volume.** Oftel originally expected to have to carry out an assessment three months after product launch, at which point a transaction volume of 50,000 orders a month was expected. Order volumes tend to follow an S-curve, and this low estimate of order volumes reflected the short period between product launch and assessment. Given the greater maturity of the market by 2005 (for example, there are currently close to 500,000 CPS transactions per month), it might be appropriate to set a higher hurdle; and
- **equivalence implemented.** Oftel also set out a number of detailed tests for operational effectiveness of the processes and systems implemented for WLR. In practice, a good high level test of whether WLR processes and systems are fit-for-purpose would be to consider whether BT's retail activities might reasonably be required to use the same systems and processes.

H.28 If CPS and WLR-based competition works as intended, this could address some of the other factors in the retail market that are presumptive of dominance. For example, it could reduce barriers to entry; address some of the advantages of vertical integration; neutralise economies of scale enjoyed by BT; and offset the advantage of a highly developed distribution and sales network. Regulation of retail voice markets has already been relaxed significantly. However, greater deregulation of the voice retail market would be possible because the upstream wholesale market would be more competitive.

H.29 Figure 4 shows the SMP remedies that we expect it will be appropriate to review once this point has been reached.

Figure 4: Withdrawal of SMP remedies in retail voice markets, once WLR is fit-for-purpose and proven

Market	Current SMP remedies	To be reviewed when WLR and CPS are proven and fit-for-purpose
Residential (lowest 8 deciles) inland calls, IDD calls, exchange lines	<ul style="list-style-type: none"> • RPI-RPI price control • Price changes notified within 24 hours • No undue discrimination 	<ul style="list-style-type: none"> • Review all SMP regulations; consider an RPI-zero safeguard cap initially
Residential (top 2 deciles) inland calls and exchange lines	<ul style="list-style-type: none"> • Price changes notified within 24 hours • No undue discrimination 	<ul style="list-style-type: none"> • Review all SMP regulations
Residential (top 2 deciles) IDD calls	<ul style="list-style-type: none"> • Price changes notified within 24 hours • No undue discrimination 	<ul style="list-style-type: none"> • Review all SMP regulations
Business inland calls and exchange lines	<ul style="list-style-type: none"> • Price changes notified within 24 hours • No undue discrimination 	<ul style="list-style-type: none"> • Review all SMP regulations
Business IDD calls	<ul style="list-style-type: none"> • Deregulated – no SMP 	<ul style="list-style-type: none"> • n/a

- H.30 A relaxation of price control regulation in the provision of calls and exchange lines to the lowest eight deciles of the residential market could have quite a significant impact. It would allow BT scope to rebalance its tariffs between calls and rental. Of course, the requirement to offer wholesale line rental and call origination would result in a competitive constraint on the prices BT could charge at the retail level. Nonetheless it will be particularly important that universal service mechanisms are protecting those who have trouble affording basic telephone services.
- H.31 BT has argued that the way Ofcom applies the ‘undue discrimination’ condition prevents BT from offering bespoke tariffs which deviate from its published prices to particular customers, such as large business customers. If this regulation were withdrawn, BT would have greater freedom be able to offer such bespoke tariffs. However, it would still be bound by the Competition Act, and any resultant bespoke tariff would need to be compliant with the Competition Act.
- H.32 The requirement not to exercise undue discrimination also prevents BT offering cheaper tariffs for on-net voice calls (i.e. from one BT customer to another) as mobile operators commonly have done. Even with effective wholesale remedies, it may still be appropriate to oblige BT not to exploit its market share in this way. For this reason, if BT continues to have SMP it may be necessary to retain a minimum set of regulations on undue discrimination which would prevent this kind of tariffing.
- H.33 This Stage 2 review could be conducted as a review of regulatory remedies arising from existing market reviews, rather than through the rerunning of

those reviews. This has the benefit of allowing an early and rapid review of the remedies.

Stage 3: withdrawal of remedies from the first tranche of fixed wholesale voice markets

H.34 At the same time as it reviews the retail voice markets, Ofcom proposes to review the SMP remedies in a number of wholesale voice markets. Figure 5 shows the wholesale voice markets that we propose to review.

Figure 5: Withdrawal of remedies in first tranche of fixed wholesale voice markets

Market	Current SMP remedies	To be reviewed when WLR and CPS are proven and fit-for-purpose
Wholesale IDD (small number of routes)	<ul style="list-style-type: none"> • Obligation to supply • No undue discrimination • 7 days notice of price changes • Obligation to publish a reference offer • Accounting separation 	<ul style="list-style-type: none"> • Review all SMP regulations
Call origination	Core set of conditions (below) plus: <ul style="list-style-type: none"> • Obligation to supply CPS, IA, FRIACO, NTS call origination 	<ul style="list-style-type: none"> • Review obligation to supply indirect access and FRIACO
Inter-tandem conveyance and transit	Core set of conditions (below) but: <ul style="list-style-type: none"> • Only 28 days notice of price changes 	<ul style="list-style-type: none"> • Review all SMP regulations and assess impact of NGNs on competitive structure
Local-tandem conveyance and transit	Core set of conditions (below)	<ul style="list-style-type: none"> • Review all SMP regulations and assess impact of NGNs on competitive structure
Single transit	Core set of conditions (below)	<ul style="list-style-type: none"> • Review all SMP regulations and assess impact of NGNs on competitive structure

Core set of SMP regulations:

- | | | |
|--|---|---|
| <ul style="list-style-type: none"> • Obligation to supply • Set procedures for requests for new forms of access • No undue discrimination | <ul style="list-style-type: none"> • Publish a reference offer • 90 days notice of technical changes • Publish QoS stats | <ul style="list-style-type: none"> • Cost-oriented prices • Charge control • Accounting separation |
|--|---|---|

H.35 We believe that in general regulated wholesale products should be withdrawn once they have been superseded by other wholesale products,

and once the number of customers using them has fallen to a residual level. Wholesale indirect access (IA) may soon reach this point. When operators sell calls to consumers using wholesale IA, the consumer has to dial a short code to route the call onto that operator's own network. This approach is being superseded by carrier pre-selection in which the calls are automatically routed to the operator's own network. Indirect access users have increasingly been migrated to CPS. We will therefore review the continued need for a separate IA wholesale service being provided at the same time as we review the retail voice markets. We will also review the continued need for FRIACO, as we discuss in Chapter 8.

- H.36 There is currently increasing competition in a number of call conveyance markets, especially call conveyance in the core network. It is therefore appropriate to review the remedies in these markets. However, the level of competition that exists between today's PSTN networks may not necessarily be translated once networks are upgraded to NGNs – it depends partly on the new network architectures. Ofcom will need to review remedies in these markets with this in mind.
- H.37 Again, the most practical way forward may be to review the appropriateness of the remedies we apply in wholesale markets, rather than re-open existing market reviews.

Stage 4: evolution of remaining fixed wholesale voice markets

- H.38 BT plans that the majority of its customers will be connected to the 21st Century Network by 2008. Before that happens, it will be necessary for Ofcom to consider how PSTN-specific regulation would need to migrate to IP-based networks.
- H.39 Figure 6 shows the wholesale voice markets that we propose to review at this stage.

Figure 6: Evolution of remaining fixed wholesale voice markets

Market	Current SMP remedies	To be reviewed when WLR and CPS are proven and fit-for-purpose
Wholesale exchange line services	Core set of conditions (below) plus: <ul style="list-style-type: none"> • Obligation to supply WLR • 28 days notice of ISDN 30, ISDN price changes 	<ul style="list-style-type: none"> • Possibility of withdrawal of voice-specific remedies where effective voice competition using converged access products • IP equivalent WLR product required where such competition ineffective
Call origination	Core set of conditions (below) plus: <ul style="list-style-type: none"> • Obligation to supply CPS, NTS call origination • [FRIACO and IA obligations will have been reviewed in 2005] 	<ul style="list-style-type: none"> • Possibility of withdrawal of voice-specific remedies where effective voice competition using converged access products • IP equivalent CPS product required where such competition ineffective
Call termination	Core set of conditions (below) but: <ul style="list-style-type: none"> • No processes for new access • No obligation to notify technical changes • No QoS stats 	<ul style="list-style-type: none"> • IP equivalent call termination arrangements

Core set of SMP regulations:

- | | | |
|--|---|---|
| <ul style="list-style-type: none"> • Obligation to supply • Set procedures for requests for new forms of access • No undue discrimination | <ul style="list-style-type: none"> • Publish a reference offer • 90 days notice of technical changes • Publish QoS stats | <ul style="list-style-type: none"> • Cost-oriented prices • Charge control • Accounting separation |
|--|---|---|

H.40 As we discussed earlier, there is a prospect that wholesale fixed voice markets could become competitive in some areas and for some customers without need for such voice-specific regulation. This could be due to competition from other platforms (such as cable and mobile), and from VoIP. VoIP operators may use data access products such as LLU and DataStream (or its evolution) to manage the quality of service that they offer. In this way, competition as a result of regulation of wholesale broadband markets may increasingly mean that voice-specific wholesale

regulation can be relaxed. We note that under the current European framework, CPS must be introduced where SMP is found in call origination. In future, should data access products start to perform a similar function, it may be appropriate for this obligation to be reviewed.

- H.41 It is not yet clear how extensive this kind of competition in wholesale voice services based on regulated data access products could be. For example, operators using LLU and DataStream would be likely to offer wholesale call origination, termination and exchange line services to broadband customers. So in exchanges where there were several such operators, there could be strong competition in wholesale voice markets for these customers.
- H.42 Such a wholesale fixed voice market may also be much more competitive in some locations than others. For example, it may only be viable to provide wholesale voice services via LLU in certain areas. So whereas in some locations competition might be such that Ofcom may be able to withdraw voice-specific wholesale regulation, at least to some customers, in other locations it might not be. It may therefore be appropriate for Ofcom to consider different regulation in different areas. In areas, and/or for customers where competition in wholesale voice markets is not strong, it will be necessary for there to be next generation CPS and WLR products in place. Ofcom is interested in views as to what such products would look like. For example, next generation CPS could be an IP origination product, with a quality of service suitable for voice and certain other features. The WLR equivalent in an NGN world could be a bitstream access product with QoS fit for voice.
- H.43 Many service providers currently rely on regulated wholesale products in these markets. One important question would be whether rival platforms could become substitutes at the wholesale as well as the retail level. If such wholesale competition existed, service providers would be able to negotiate commercial wholesale arrangements with a range of platform operators – such as BT, cable operators, or Altnets who access BT's network using regulated broadband access products – instead of relying on the current regulated voice wholesale access products. In principle, BT's SMP at the wholesale level would be removed altogether by such a development.
- H.44 Existing market structures exhibit different degrees of vertical integration of retail and wholesale activities. In mobile for instance, service providers with powerful brand and distribution advantages have been able to negotiate voluntary MVNO deals with the network operators. In the narrowband internet market strong independent ISPs operate in the retail market alongside the tied ISP brands of BT and the cable companies. NTL has also moved cautiously towards an open platform approach in relation to broadband in its agreement to allow AOL to sell services direct to its customers.
- H.45 It is clearly possible that a market model in which there are a range of open platforms competing to host the retail businesses of voice service providers will emerge. Indeed, we hope this will be the case. In relation to an economic analysis of SMP, the different platforms would need to be wholesale substitutes, not complements. A service provider would need to see the option of placing its retail activity with one platform or another as a realistically equivalent choice. So cable, with its limited geographic footprint,

might not be a realistic alternative for a service provider wishing to offer services on a national basis.

- H.46 Moreover, in an effectively competitive wholesale market, service providers could be expected not just to be able to select between alternative wholesale suppliers at the outset, but also once they have an existing customer base. It would be important that charging structures, terms and conditions did not lock in service providers to a particular network operator. We would also have to consider the economic costs of a service provider reconfiguring its infrastructure to use an alternative network operator.
- H.47 While the focus of our proposals is to encourage competition at the deep infrastructure level, our presumption is that the structure of the market in the future will allow for service providers adding value through effective marketing, distribution, advertising, brand, bundling, content and so on. However, we would also expect that some service provider business models will need to adapt over time, as in future there will be reduced scope for arbitrage based on regulatory intervention in the existing fixed voice tariff structure.

Stage 5 – definition of an inter-platform voice market

- H.48 As discussed earlier in this annex, though there is strong evidence of increasing substitution between fixed and mobile networks, current levels of substitution are some way short of the conditions necessary to define fixed and mobile voice services within the same market. However, Ofcom will regularly monitor whether these conditions have been met, and expects to carry out a formal review by 2008.
- H.49 The usual tool for determining whether two markets constitute a single market is the SSNIP test¹⁰. This test looks both at supply side and demand side substitution. It will be important that the switching and migration processes between alternative platforms are such that customers are able to migrate easily between suppliers. In addition, there may need to be evidence of behavioural change by consumers. Not only must consumers see alternative platforms (such as fixed and mobile services) as close substitutes, but they must be willing to switch readily between suppliers. As discussed in our consumer research (Annex M), consumer inertia and lack of awareness of alternative suppliers currently mitigates against this.
- H.50 Were the conditions met to define fixed and mobile call origination as a single voice market, the SMP assessment in this market would follow similar lines to that used in the mobile call origination market. As in that market, the

¹⁰ Substitution between products underpins the market definition approach used by Oftel and Ofcom for the market reviews, which is itself based on competition law. The European Commission's *Notice on the Definition of the Relevant Market for the Purposes of Community Competition Law* defines markets by examining substitutability between products. Suppose that the price of a product were permanently raised above the competitive level by a small margin (in the range 5-10 per cent). If substitution to other products were sufficiently high to render the price rise unprofitable because of the resulting loss of sales, the closest substitutes should be included as part of the relevant market. The market is the smallest set of products such that a profitable price rise can be implemented for the group. Although demand substitution is generally the most significant factor in this assessment, substitution may also occur on the supply side, i.e. when a supplier of another product (that is not necessarily a demand substitute) switches its production to the good in question.

conditions for single company SMP (i.e. one firm with a dominant position) would be eroded as there would be additional sources of competition from a range of suppliers using different infrastructures. It would be important to demonstrate that, while the source of single company dominance had been eroded, the resultant market was not one where concerns about collective SMP could arise. The extent that customers are willing and able to switch between alternative platforms will also be an important in assessing SMP in the market.

H.51 If no SMP were found in any voice market, whether wholesale or retail, no remedies would be appropriate in this market. Figure 7 shows how Ofcom expects eventually to be able to withdraw completely from any voice-specific regulation through this mechanism.

Figure 7: Withdrawal of SMP regulation in wholesale voice markets, once fixed and mobile defined as a single market

Market	Current SMP remedies	To be reviewed when WLR and CPS are proven and fit-for-purpose
Wholesale exchange line services	<ul style="list-style-type: none"> • [Reviewd in Stage 4] 	<ul style="list-style-type: none"> • Review all SMP remedies
Call origination	<ul style="list-style-type: none"> • [Reviewd in Stage 4] 	<ul style="list-style-type: none"> • Review all SMP remedies
Call termination	<ul style="list-style-type: none"> • [Reviewd in Stage 4] 	<ul style="list-style-type: none"> • IP equivalent call termination arrangements

- 9 a) *Do you agree that Ofcom should review regulation of retail voice markets in 2005?*
- 9 b) *Do you agree with Ofcom's proposals for deregulating call conveyance markets and wholesale IDD?*
- 9 c) *When would it be appropriate to remove the requirement on BT to provide indirect access?*
- 9 d) *How should PSTN-specific regulation evolve under NGNs? What should next generation CPS and WLR products look like?*
- 9 e) *What are the prospects for increased competition for voice services provided using broadband access products (such as LLU and the evolution of DataStream)? What conditions and transitional arrangements would need to be in place to allow service providers to secure access on the basis of commercial terms rather than PSTN-specific regulated products?*
- 9 f) *How should Ofcom ensure competition in areas where alternative platforms were not in place?*
- 9 g) *When do you expect fixed-mobile substitution to result in a single economic market for voice call origination?*

Annex I

Duct-sharing and next generation broadband access

- I.1 One of the regulatory options for next generation broadband access that we discussed in Chapter 8 was making the investment contestable. In this annex we consider how this might be achieved.

Significance of civil infrastructure costs

- I.2 Although subject to considerable uncertainty, at present it appears to us that the most likely form of next generation access deployment is the progressive deployment of fibre-optic cable closer to the customer (but not necessarily all the way to customer). Analysis undertaken by the Broadband Stakeholders' Group suggests that a very high proportion of the roll-out costs of fibre are in the civil infrastructure. Measures taken to reduce the civil infrastructure costs, such as use of existing ducting, ducting being laid for new housing, and use of cabinets and other local loop plant ('external plant'), could considerably reduce barriers to entry. BT and the cable operators have an advantage over other operators in this regard in that they have an existing duct network, at least in some parts of the network, and in some areas.
- I.3 It may be possible to use other civil infrastructure already in the ground, for instance gas pipes or sewers, as ducting for next generation broadband access. At present we are sceptical that these networks are sufficiently extensive or fit-for-purpose to provide a ready-made alternative to existing telecoms infrastructure, and if so, in what parts of the country. However, we would welcome inputs on this point. Under the Communications Act there is also scope for local authorities or other public bodies to benefit from the rights to build civil infrastructure contained in the Communications Code, and thereby create their own civil infrastructures to support broadband services. Ofcom is aware of only limited activity on this front to date although the Highlands and Islands has recently applied for the right to operate under the Communications Code, albeit as both a network and conduit provider.

Infrastructure-sharing

- I.4 Ofcom believes that a pre-condition for contestability in the investment in fibre-based next generation broadband access is that there is open access to existing civil infrastructure on an on-demand basis. In that case, the inherent advantage of those with existing networks in the race to deploy next generation access networks would be eroded.
- I.5 The concept of infrastructure-sharing has a long and somewhat chequered history in the UK. Though it has the potential to reduce costs, regulators have been concerned that it has the potential to reduce the level of competition. The Telecommunications (Interconnection) Regulations 1997 and the 1984 Telecommunications Act included provisions encouraging

infrastructure sharing, but fell short of mandating such sharing. In response to calls from the Broadband Stakeholders' Group to pursue infrastructure-sharing, Oftel published guidance note on its policy in June 2002, which noted the practical difficulties of sharing ducts and poles. We believe that it remains the case that in general little infrastructure sharing is happening in relation to wired networks, though some network operators now co-ordinate the installation of fibre in trenches. There is some mast sharing between mobile companies, but this does not address the principal problem here, given the likelihood that next generation access networks are likely to require fibre to be deployed deep into the network.¹¹

- I.6 Legally it would be possible for Ofcom to apply conditions requiring infrastructure-sharing. The most appropriate route for imposing such conditions would be under section 73(3) of the Communications Act, as an 'access-related' condition. Such obligations could be, but need not be, confined to operators with SMP in a relevant market.

Practicalities

- I.7 Oftel's statement of June 2002 noted that infrastructure-sharing has a number of practical difficulties related to ease of maintenance, security, legal liability and so on. We assume these issues remain highly relevant and need to be resolved to make a policy along the lines suggested remotely practicable. We would be interested in views on whether the simplest and easiest solution is that the incumbent (or its contractor) has the responsibility for deploying dark fibre in a duct on request, rather than an obligation to allow third parties to lay their own fibres. If this is the case, there remain a number of important second tier issues which would need to be resolved. For instance; whether a third party could request that a duct or other facility is upgraded to allow fibre to be deployed (recognising that not all existing duct may be suitable for fibre without such work); and how the costs would be distributed if, as a consequence of upgrading the duct and deploying dark fibre, BT would then be able to rent out capacity space to other third parties.
- I.8 Similarly, if new civil infrastructure companies enter the market, or operators pool existing civil infrastructure in some way, this reduces but does not remove the need for regulation. For instance, concerns have been expressed that should local authorities build and lease out their own shared civil infrastructure, these same authorities also manage streetworks in their area. In theory, they might face a temptation to obstruct independent streetworks - although we note that the Government intends significant safeguards in relation to local authorities' streetworks activities.

¹¹ Mobile mast-sharing has not been without controversy as some have questioned whether it could lead to reduced competition between mobile operators. We think it is clear that in fixed networks, civil infrastructure sharing would be likely to stimulate rather than reduce competition because the civil infrastructure has such strong natural monopoly characteristics.

Annex J

Regulation in the wider communications value chain

J.1 Chapter 4 discussed how the telecoms sector was likely to evolve, as the drivers for change in the sector took effect, and as the sector increasingly converged with the media and IT sectors. These changes could have implications for the future role of telecoms regulation. They are important for four reasons, which we discuss in this annex:

- findings of market power need to reflect countervailing buyer power;
- In assessing market power in the networks part of the value chain, we need to recognise that there may be more than one source of market power in the value chain;
- some of the manifestations of market power elsewhere in the value chain may be transient, but some could arise from enduring bottlenecks; and
- telecoms networks may increasingly displace traditional forms of content distribution, including those used for public service broadcasting.

Findings of market power need to reflect countervailing buyer power

J.2 For most telecoms services, market power currently arises in the provision of network services, whereas the market for the provision of end-user services is often more competitive. However, some final consumers – i.e. large businesses – might have some countervailing buyer with regards to telecoms providers. This is because they could be a particularly important customer or because they could exercise the option of self providing telecoms services. This type of countervailing buyer power is likely to constrain the providers' market power, although in practice the extent to which this might be sufficient is uncertain.

J.3 The existence of such countervailing buyer power is well-understood and is reflected in the SMP analysis. It will be important to reflect this concept when in future we consider transactions conducted between network operators and purchasers of inputs from network operators who may occupy a position elsewhere in the telecommunications value chain.

Sources of market power elsewhere in the value chain

J.4 In future market power could arise at different stages of the value chain. An example of how this could arise is in relation to ownership of key content rights. Network operators may find that they are increasingly distributing scarce or premium content in the form of entertainment and information services. Control of exclusive distribution rights such as scarce or premium content could itself confer market power. Market power through control of content may extend beyond the kind of entertainment services which currently exist on pay TV platforms, to encompass the new services which

will be offered over broadband and mobile platforms. Particularly successful or compelling services could drive consumers' choice of platform. We should note however that while there is a proven case for ownership of certain key broadcasting rights conferring market power (sports rights, for instance), there is as yet little evidence of new services offered over mobile devices, for instance, having such powerful properties.

J.5 Where market power exists at two levels of the value chain, these cannot be presumed to cancel each other out to the benefit of consumers. Indeed, there are some risks that this might result in even higher prices for final consumers if the two suppliers do not co-ordinate their pricing decisions – this is a well known effect called double marginalisation¹². This could be avoided if the parties that have market power are able to co-ordinate their decisions. However, either way the final consumer will not enjoy lower prices simply because content providers can now extract more of the monopoly rent from the network provider. To protect the consumer, regulation might have to address multiple rather than single sources of market power.

J.6 A situation could arise where both a platform operator and a content provider have market power. This might imply that remedies might have to be imposed in a different way on the network provider. The case for regulating the source of market power in relation to the content itself is considered below. There might also be more complex situation where because of convergence, the same scarce content could potentially be provided on a separate delivery platform including a broadband network. In this case it is the content provider that has market power, and could try to protect it by entering into an exclusive agreement with the distribution platform that can provide the highest profit potential. Therefore, it could be possible that for some type of services convergence might lead to a shift of market power from network to other providers – i.e. suppliers of content.

Market power elsewhere in the value chain may reflect an enduring bottleneck

J.7 Ofcom's discussion of a wider value chain as part of this Review elicited mixed responses. Many respondents welcomed our attempt to look beyond the narrow confines of traditional telecoms regulation. For example, Warner Brothers wrote,

"Ofcom is well placed, sitting at the heart of relevant communications industries, to provide support for industry anti-piracy initiatives and we would welcome any initiatives by Ofcom in this area".

On the other hand, several companies from the IT and content sectors expressed concerns that Ofcom might be contemplating an extension of the regulatory techniques used on telecoms networks to their industries. This is

¹² Double marginalisation in its extreme form could emerge when two monopolies exist along the vertical chain. When this occurs, final or retail prices might be excessively high (higher than the monopoly price). This is because the upstream firm sets the price for its intermediate product without taking into account that this will be the cost faced by the downstream firm. Double marginalisation might occur with less extreme consequences even when the two firms have some degree of market power but not necessarily monopoly power. This inefficient outcome could be avoided either via contractual and pricing arrangements or vertical integration.

an understandable concern and it is worth clarifying that while we consider it necessary to examine the wider value chain, this does not prefigure an ill-considered extension of regulation throughout that value chain.

- J.8 There is however a logical difficulty caused by increased convergence of telecoms, which is subject to one set of complicated regime of sector rules, broadcasting which is subject to a different set, and ICT and the internet which have almost no sector-specific regulation, although they are subject to generally applicable competition law. The EU framework partially addresses this by defining telecoms networks widely so that they encompass to some extent what we might naturally think of as broadcast networks and ICT. Nonetheless the principal focus is on physical networks and this is reflected in the list of Relevant Markets. ICT issues are largely addressed outside of the regulatory framework under competition law. Content is subject to competition law but is specifically excluded from the regulatory framework. At present, therefore, bottlenecks in any part of the value chain other than the traditional telecoms network would probably be regulated under competition law alone.
- J.9 For this approach to be intellectually coherent, it would be necessary to argue that bottlenecks in telecoms networks continue to have unique characteristics which necessitate *ex ante* controls, but no bottleneck anywhere else in the value chain has similar characteristics. Ofcom believes that at some time in the future this might be no longer the case.
- J.10 Ofcom believes that the decisive factors in determining whether *ex ante* controls are required should be: (a) whether the bottleneck in question is likely to be enduring in character; (b) whether *ex ante* regulation would be likely to provide additional regulatory certainty for the market, including the owner of the bottleneck; (c) whether the remedies required to avoid abuse of the bottleneck are such that an ongoing sector-specific regime is the best mechanism to protect and promote competition. In most cases, we consider that the right regulatory strategy would be to adopt a light touch approach based on competition law and, where appropriate, the promotion of interoperability. This is reflected in our proposed regulatory principles. However, we do not rule out that the analytical approach set out above could lead to the identification of new candidates for *ex ante*, sector-specific control.
- J.11 Examples of where such an approach could be justified include access to and use of key content rights which confer market power on the owner and/or distributor, particularly where rights are tied up for very long periods or there is evidence that competition for the rights is ineffective. Ofcom would be particularly open to using an *ex ante* approach where there was a realistic prospect that without regulation the creation of new services or the development of new sources of competition would be severely restricted. For instance, this might be the case in relation to the availability of rights for distribution on new mobile and broadband platforms.
- J.12 The devices which are connected to telecoms networks, and the software which they use, could also become sources of market power. In general, our attitude to intervention in relation to devices and software will be cautious. We are mindful of the general argument that, in such markets, short-term accrual of market power is the spur for others to enter the market

and to innovate. We consider that the presumption in the EU framework against intervening too early in new markets is an important factor here.

- J.13 Nonetheless it is possible to envisage circumstances where it would be necessary to act, particularly if there was a danger of market power in relation to one part of the value chain being leveraged to undermine competition in another part of the value chain.
- J.14 Moreover, where markets can be tipped decisively in favour of one technology or software solution in a very short space of time, regulatory action may need to be swift and timely, and it may not be possible to wait for the outcome of a course of conduct to be manifest in the market before intervening. However, we would examine sceptically the arguments for tipping of markets in this way.
- J.15 We recognise that it will not always be possible or sensible for Ofcom to take the lead on such matters, which may need to be addressed on a trans-national level. But Ofcom intends to play an active part in any future proceedings. It is also realistic to anticipate that accruals of market power in relation to software and devices will be anticipated and to some extent headed off through efforts to promote greater interoperability of devices and adoption of open standards.

Telecoms and broadcasting

- J.16 Ofcom has been criticised for being a converged regulator conducting separate strategic reviews of telecoms and public service broadcasting (PSB). While the specific tasks of the two reviews and the issues they raise are very different, Ofcom accepts that we should make clear what linkages we consider exist between the two reviews.
- J.17 Ofcom's analysis of the broadcasting market suggests that broadcasting in its current form will continue to the end of the decade and beyond. We have seen nothing in the evidence submitted to the Telecoms Review to contradict this. Commercial TV over DSL services is now available, though it is at a very early stage of development. Other forms of broadband entertainment may increasingly displace time currently spent viewing TV broadcasting, but the evidence on this trend is very mixed – not least because the countries at the forefront of broadband adoption have weak terrestrial and pay TV markets.
- J.18 In Ofcom's review of public service broadcasting, a number of arguments were advanced for a citizen rationale for PSB policy. It may be useful to consider the extent to which such arguments are also relevant to the Telecoms Review.
- J.19 It was noted that even if the TV market provided all the programming that consumers desired and were willing to buy, it would probably not offer sufficient programmes that are valued by society as a whole. There are a number of specific categories where programming could deliver particular outcomes valued by society. The purposes of programming in these categories were:

- to inform ourselves and others and to increase our understanding of the world through news, information and analysis of current events and ideas; to stimulate our interest in and knowledge of arts, science, history and other topics through content that is accessible and can encourage informal learning;
- to reflect and strengthen our cultural identity through original programming at UK, national and regional level, on occasion bringing audiences together for shared experiences;
- to make us aware of different cultures and alternative viewpoints, through programmes that reflect the lives of other people and other communities, both within the UK and elsewhere.

J.20 In the future, what we currently think of as telecoms networks will play an increasing role in delivering content which is at present mainly delivered via broadcast networks. As these new content distribution networks emerge, there is the potential for greater competition in content distribution; for example between terrestrial, cable, satellite and online platforms. What our PSB review refers to as 'consumer market failures' could diminish or disappear, and the future market may also provide more elements of public service broadcasting. Were this to be the case, then PSB and telecoms policy would need to converge as 'public service broadcasting' increasingly became 'public service content' delivered across multiple platforms.

J.21 As noted above, content currently being delivered across what we think of as telecoms platforms remains at present largely complementary to existing broadcast content. The broadband and 3G networks which would provide the means to deliver new public service content on a ubiquitous basis are being built, but take-up has some way to go before reaching levels achieved by digital broadcast media. We have proposed a new Public Service Publisher to take advantage of and encourage the further development of such new distribution platforms.

J.22 This suggests that the right focus of policy at this stage is to ensure that there are no artificial barriers or impediments to the roll-out of the networks that will support such services. If we are successful in creating an environment where such services can flourish, in time the implications of a developing, non-broadcast content market for public service content policy will need to be examined.

Annex K

Universal service: future scope and funding

- K.1 This annex considers how universal service obligations (USO) may need to evolve as the telecoms market changes over time, and expands on the discussion of USO issues in Chapter 10. In parallel with the Telecoms Review we are carrying out a Universal Service Review, which is consulting on specific changes to the existing universal service obligations. While the Universal Service Review will look at the practicalities of delivering some aspects of the current universal service arrangements, this Telecoms Review looks at how the arrangements themselves may need to evolve in the medium to long term.
- K.2 The basic requirements of current USOs were set out at BT privatisation in 1984. There have been some modifications to the scope of certain requirements – in relation to phone boxes, schemes for light users, and so on. The obligation to provide a fixed line is now defined not just in terms of voice services but also a line capable of supporting the internet. Despite periodic reviews, the conclusion that USO can be solely funded by BT has also continued unchanged.
- K.3 In Phase 1, we noted that whatever the merits of this low-key debate in the past, the time may be coming when we need to look much more thoroughly at both the scope and funding of USO. In this document, and in the light of the consultation responses we have received on this point, we set out in more detail our thinking about how USO may need to evolve.
- K.4 Certain parameters of the debate need to be made clear at the outset. First, it is a matter for the Government, not for Ofcom, to determine universal service obligations. Second, the Government is itself constrained by the EU framework. The Universal Service Directive (USD)¹³ restricts the services that can be included in a universal service requirement by a Member State and sets out the process for establishing and funding the costs of any universal service obligations imposed. Member States are not in a position to extend the scope of what is covered by USO (for instance, broadband). The Commission is understood to be commencing its review of the USD in 2005.
- K.5 Therefore, stakeholders should recognise that the conclusions we draw on this issue during the Telecoms Review will not feed through into immediate policy changes but into the medium term review of the provisions of the Directive expected for 2005.
- K.6 This section is divided into the following parts:
- current universal service obligations;
 - the rationale for universal service obligations;

¹³ Directive 2002/22/EC (*Universal Service Directive*)

- the rationale for the current UK universal service obligation;
- the evolution of universal service requirements under next generation networks;
- the ability of mobile to meet existing universal service obligations; and
- extension of universal service obligations to broadband.

Current Universal Service Obligations

K.7 The concept underlying the UK universal service obligation is that basic telephone services should be available to everybody following a reasonable request and at an affordable price¹⁴.

K.8 Under the Communications Act, it is the duty of the Secretary of State for Trade and Industry to make an order setting out the general requirements which must be provided as universal services. It is Ofcom's responsibility to carry out the order and ensure these services are provided. Ofcom imposes certain general conditions on all providers, such as a requirement that action to effect payment or disconnection must be proportionate and not unduly discriminatory. In addition, using objective, transparent and non-discriminatory criteria, Ofcom designates certain companies - BT and Kingston Communications - to provide specific further services.

K.9 The specific requirements¹⁵ for BT and Kingston Communications are to:

- provide a connection to the public telephone network at fixed location, at a uniform price, following a reasonable request, that connection to include functional internet access;
- provide at least one scheme for consumers with special social needs who have difficulty affording telephone services;
- provide uniformly-priced public call box services;
- ensure that tariffs for universal services do not entail payment from end-users for unnecessary additional services;
- provide a basic level of itemised billing at no extra charge; and
- provide universal services that accord with defined quality thresholds.

K.10 In addition, BT must:

- provide a relay service for textphone users; and
- keep an up to date database, and provide directories and the contents of the database to certain other providers.

K.11 BT and Kingston are responsible not only for providing these services, but also for funding their provision. Any net cost of the USO is therefore met by

¹⁴ See paragraph 1.1, *Designation of BT and Kingston as universal service providers and the specific universal service conditions*, Oftel 22 July 2003

¹⁵ *Designation of BT and Kingston as universal service providers, and the specific universal service conditions*, Oftel, July 2003

BT and Kingston and funded by cross-subsidisation from other activities. Oftel considered that funding these services did not provide an unfair burden on BT. Oftel also considered that there were significant net benefits to BT and Kingston as a result of being the designated universal service provider.

The rationale for Universal Service Obligations

K.12 Arguments for USOs based on efficiency fall into two categories: those based on direct effects on users of communications services and those relating to the interaction of the communications sector with the broader economy.

Economic efficiency arguments

Network externalities

- K.13 When an additional person joins a communications network, existing members benefit because a) they can contact a new person (a so-called line externality) and b) they receive calls from the new customer (a call externality). New prospective customers may not take these effects into account, and hence may stay off the network or not make calls, even though it would be efficient for them to do so.
- K.14 Call externalities are often disregarded on the ground that business callers already internalise the benefit their customers get from their calls, while non-business customers can alternate the origination of calls or (for example, when calling their grandparents) they take the called parties' benefits into account.
- K.15 As far as line rentals are concerned, requirements on networks to interconnect ensure that any existing customer can contact any other, but there may still be too few on the network. This provides a possible justification for requiring uniform, subsidised line rentals.
- K.16 However, the subsidy should only reflect the marginal value of an additional customer on the network. In periods when first the fixed and then mobile networks were gaining new customers, these externalities may have been substantial, but when just about everyone who wants to be is connected (often twice) the costs of a general subsidy probably exceed the marginal benefits. It then becomes more sensible to focus subsidies on the few customers who might otherwise leave the network as line rentals rise, at the same time extending use of the networks by lowering call prices. This position has been reached in the UK in relation to fixed and, probably, mobile networks.

Broader connections with the economy

- K.17 Use of communications services can have broader effects throughout the economy. The development of ICT has been shown to enhance economic growth. Closer to home, cheap communications can encourage teleworking and reduce congestion costs from travelling to work. Though they may be substantial, these effects are difficult to measure and take into account.

Equity arguments

- K.18 Access to communications services also provides necessary support for vulnerable groups including the poor, elderly and disabled. Such access goes some way to equalising conditions between rural and urban communities. It also provides a means by which people can exercise their social and political rights more effectively.
- K.19 The income redistribution goal deriving from the equity argument could be achieved through the general tax and benefit system operating in the UK. This would give beneficiaries a choice over how to spend their extra money. Raising the taxes to finance such payments across the economy as a whole is less disruptive and more efficient than raising an equivalent 'tax' on telecoms services alone. However:
- vulnerable groups may underestimate the benefits of telephone services – for example the access they give to the emergency services and NHS Direct, which is infrequently required; and
 - in times of fiscal austerity, it may not be practicable to raise new taxes to provide sector-specific benefits.

The rationale for the current UK Universal Service Obligation

- K.20 The previous section highlights the efficiency and equity arguments, which can be deployed to justify a USO. The UK's USO was never explicitly designed in reference to these principles. Rather it has developed gradually over time. Most recently, many of its elements have been fixed by European obligations under the Universal Services Directive.
- K.21 Figure 8 provides a list of the potential rationale for the various elements of the current USO.

Figure 8: Rationale for the current USO in the UK

Universal service obligation	Rationale
Obligation to use proportionate and non-discriminatory practices to effect payment and disconnection	<ul style="list-style-type: none"> Equity: designed to ensure that suppliers do not cherry-pick among their customers by discriminating against less profitable sections of their customer base in payment terms or disconnection policies
Supply of connections at a uniform price	<ul style="list-style-type: none"> Equity: designed to address the need to keep rural communities in touch with the rest of society. Averaged pricing implicitly subsidises phone connections for remote customers Externality: to the extent that such customers would not otherwise have a phone, there are network externalities from their connection
Provision for those with special social needs or difficulty affording telephone services	<ul style="list-style-type: none"> Equity: current light user scheme is designed to subsidise those on low incomes. Users are eligible for the light user scheme by virtue of low telephone usage. Because low income is not perfectly correlated with low telecoms usage, the scheme is imperfect in achieving this Externality: to the extent that such customers would not otherwise have a phone, there are network externalities from their connection
Provision of uniformly priced public call boxes	<ul style="list-style-type: none"> Equity: provision of call boxes provides a means of connection for those, often on low incomes, who do not have their own phone connection Provision of public call boxes, particularly in remote areas, is also a means of contact with emergency services for many people
Ensure that tariffs for universal services do not entail payment for unnecessary services	<ul style="list-style-type: none"> Necessary to prevent extra, profitable services being bundled in with any unprofitable universal services
Provision of a basic level of itemised billing at now charge	<ul style="list-style-type: none"> Equity: itemised billing allows those with difficulty paying to budget more effectively
Provide universal services at defined quality thresholds	<ul style="list-style-type: none"> Necessary to underpin the universal pricing obligation and ensures that the USO provider does not neglect maintenance in high cost areas
Specific obligation for disabled people; e.g.: <ul style="list-style-type: none"> relay service for textphone users free directory enquiries for visually impaired 	<ul style="list-style-type: none"> Equity: a well-targeted redistribution to individuals with specific disabilities
Supply directories and databases for the provision of directory services	<ul style="list-style-type: none"> Externality: all users benefit from callers being able to contact one another by finding out one another's number

Evolution of universal service obligations under next generation networks

- K.22 The obligations are largely service-specific rather than technology-specific, so they will apply to next generation networks just as they do to current generation networks. But there may be a number of issues around the migration to NGNs, and around supply of certain aspects of the USO over NGNs.
- K.23 First, we suggested in our Phase 1 report that there may be an issue of inclusion as networks were upgraded to NGNs. We suggested that, given a requirement for uniform pricing, it may not be economic for BT to upgrade its network to NGNs in all areas, leaving pockets of customers, often vulnerable customers in remote areas, unable to benefit from the upgrade. We highlighted the danger that there could be a strain on averaged pricing as fixed costs of legacy networks were shared between fewer customers. But BT's NGN plans have now mitigated this concern – to generate the cost savings which are motivating its migration, BT intends to introduce its NGN to all areas.
- K.24 Second, as BT builds the 21CN, we assume it will build into the network specifications at least the same level of provision for disabled people as is currently supported on the PSTN. Previous experience suggests that whether the net cost of providing special services rises or falls will depend on how early in the design and build process BT identifies the need for such special services. In principle, a NGN provides a significant opportunity for the provision of specialist services, because the open specification nature of the environment would allow software and hardware developers to focus on delivering such services outside of the usual telecoms operator product development process. We will be asking BT to set out its plans in this area publicly at the earliest opportunity.

The ability for mobile to meet existing Universal Service Obligations

- K.25 Over the last decade, the growth in mobile connections has reached the point where, of those without a fixed line, 85 per cent have a mobile connection. Mobile uptake was greatly facilitated by the introduction of pre-pay packages for mobile with subsidised handsets. These schemes allowed consumers to make (albeit relatively expensive) calls without paying any fixed line rental.
- K.26 Such a tariff scheme has strong resemblance to BT's light user scheme. This coupled with the near ubiquitous coverage of the mobile operators, suggests that mobile phones may in effect already be playing a role in delivering universal service to voice services. It might be argued that they are providing a connection at a uniform price, to those with special social needs or difficulty affording telephone services – the only part of the existing obligation that they do not meet is the supply of the service to a fixed location. However, the additional requirement in the USO as defined, that the connection also provides functional (defined at 28.8kb/s) access to the internet is probably unable to be provided by the current (second) generation of mobile phones. This may be possible with 3G technology, but

3G is unlikely to provide universal coverage. As such it is unlikely that mobile availability could be a substitute for a fixed line USO.

- K.27 However, this may be to emphasise the current definitions unduly. For instance, BT and Kingston are already allowed in certain circumstances, where the physical geography is challenging, to charge a consumer the full amount for connection to the network. As such costs can run into thousands of pounds, it is not unreasonable to consider that consumers in these circumstances would welcome mobile technologies as an alternative. Thus a case can be made for at least allowing some common sense in the way that USO is delivered in these extreme cases.
- K.28 More generally, views differ within the industry and among user groups as to the importance of the quality differences between mobile and fixed networks for consumers. If consumers are relatively indifferent between the two networks (provided of course that the mobile network allows a connection at all), then there may be a case for relaxing the distinction as regards the delivery of fixed and mobile services.
- K.29 Mobile companies reacted with alarm to the suggestion that there might be a role for mobile technology in delivering USO. For the avoidance of doubt, we are not suggesting that mobile technologies should be subject to an additional USO, but that a USO couched in terms of basic voice and data services might be delivered via either means. Whether mobile companies themselves would have any part to play in such an environment is an issue discussed in relation to possible future funding models for USO, which is discussed below.

Funding and allocating Universal Service Obligations

- K.30 A universal service obligation has two broad elements: its scope, and its funding mechanism. This section considers how to fund the USO and how deregulation and competition may affect possible choices.

Funding Universal Service without competition

- K.31 When BT was a nationalised monopoly, it funded unprofitable services though cross-subsidisation from profitable services. The main flow of this subsidy was from call revenues to access and connection revenues. Whether this flow was efficient was left largely unconsidered.
- K.32 The privatisation of BT in 1984 created profit maximising incentives which were incompatible with this practice. Consequently explicit universal obligations were formulated to ensure that vulnerable consumers continued to be served in a similar way. BT's price cap weightings were continually adjusted to ensure that any rebalancing of the tariffs away from subsidising access prices was slowed.

Funding Universal Service with competition

- K.33 The introduction of competition into telecoms complicated the issue of funding the USO. Liberalisation created two problems. First, the most desirable markets for new entrants were the most profitable, such as international calls. These were exactly the sectors which BT was using to

fund the obligations. Second, because BT's tariffs were unbalanced – that is to say calls were generally significantly above cost and access subsidised, new entrants could easily enter the market and make a profit in the calls part of the market.

- K.34 These two problems increased the pressure on BT to rebalance its tariffs. However, up to the mid 1990s, the rate of rebalancing was itself constrained by the use of specific RPI-X caps on line rental. Since then, the structure of retail price control (where the weights in the control are based on the spending of the lowest 80 per cent of residential customers) have had the same effect. These controls were put in place for reasons largely to do with social policy and political considerations (because of the typical bill profile, line rental increases would at that time have fallen disproportionately on those on lower incomes, while those on higher incomes would have benefited from cheaper calls).
- K.35 Thus BT and the regulator have wrestled with a three-cornered problem: the need to promote competition, which is likely to lead to reduction in call prices; the need to safeguard universal service, which relies on a cross-subsidy from profitable services, particularly calls; and the need to avoid a sharp rebalancing between call prices and line rental, because of its social and political ramifications. Overall this policy held together reasonably well when BT was still very profitable overall and in particular while there was considerable excess profit in the retail business to be redistributed between these different aims.
- K.36 The fullness of time has modified but by no means removed this problem. BT has been allowed gradually and progressively to rebalance its prices so that line rental is now much closer to being fully cost-reflective. However, the introduction of carrier pre-selection and wholesale line rental has sharply increased the downward pressure on calls prices across all categories.
- K.37 As competition continues to erode high margins across a widening set of products, at some point providing the USO may become an 'unfair burden' to BT and to Kingston. At that point it will be appropriate to introduce alternative mechanisms for funding and allocating the USO. We consider the alternatives below.

Funding mechanisms

- K.38 In other countries, such as the USA and France, a separate universal service fund has been set up. All communications providers are obliged to contribute to this fund. In France operators contribute to the USO fund in proportion to their telecoms revenues, which is then managed by the Caisse des Depots et Consignations. In the USA the framework is somewhat more complicated, but services that have been designated as communications services, pay into a USO fund in an inverse proportion to their local loop costs. This effectively creates a transfer from long distance carriers to local carriers. While the USA framework has had some success in ensuring provision of the USO, it has also created protracted legal battles over whether a service is designated as communications or information (which do not contribute to the USO fund).

K.39 In the UK, as competition becomes more widespread and effective, it is clear that some type of USO funding arrangement separate from cross subsidisation will become necessary. The more effective competition in the telecoms market becomes, the faster this issue will come into focus. Such a fund could theoretically be implemented through several means, in particular:

- direct levy on all consumers of communications services (for example, a fixed amount that appears directly on the bill);
- an indirect levy on consumers via a levy on communications providers and services. (the USA/French model); and
- Government intervention via taxation.

K.40 The exact details of such a fund are out of the scope for this document. However, as discussed previously while direct Government taxation is likely to be the most effective means, it is probably one of the most difficult to implement.

Allocating the Universal Service Obligation

K.41 At this point it is important to note that competition for USO is feasible. One could easily think about breaking the single USO area into a number of different geographic areas. For example London could be split into boroughs. In many of these areas, there are at least two suppliers. Therefore in these areas there could be competition in USO provision, or competition for exclusive contracts. In areas with only one supplier, entrants could be allowed access to the incumbent's infrastructure, or subsidies to help build competitive infrastructure. Of course, these options have pro and cons, but they do demonstrate that the USO should not be thought of as a single unchangeable entity.

K.42 If there are multiple carriers willing to provide universal service, economic theory suggests that the regulator should pick the most efficient firm. However, picking this firm raises information problems – the regulator cannot know which firm is most efficient. Auctions have been proposed as a solution to this problem, by introducing competition for the market as well as in the market. While the literature on this area is relatively new, the following points can be made:

- auctions do allow the most efficient carrier to be selected for the USO;
- USO auctions that determine the market structure within the auction are unlikely to deliver the best market structure. This is because firm profits pick the winner, but overall welfare picks the best market structure; and
- even single licence USO auctions may suffer from the bottleneck problems common to regulation. If USO entrants have to use incumbent's facilities to provide USO, regulatory intervention is likely to be necessary.

Should universal services be extended to broadband?

- K.43 Since 2003, BT and Kingston Communications (in Hull) have been obliged to provide 'functional internet access' on each fixed line telephone connection. Oftel did not mandate a minimum speed, but took the view that a connection speed of 28.8 kbit/s was a reasonable minimum for functional internet access. The rate was set to balance the needs of consumers with a minimum additional burden on the USO providers. Oftel also said that the rate might need to be revised to reflect advances in networks and equipment, and changing social and economic conditions.
- K.44 Broadband access is growing very rapidly. In June 2004 there were 4.4 million broadband subscribers in the UK, and penetration was growing a close to 50,000 per week¹⁶. Nevertheless, current penetration rates are well below the 80 per cent penetration rate of voice telephone services when BT was privatised in 1984.
- K.45 The proportion of customers who are unable to connect to broadband services is declining quite rapidly. In December 2003, 84 per cent of UK households had the potential to connect to broadband either by digital subscriber line and/or cable modem, an increase of 18 percentage points on a year earlier. Within the last twelve months, BT announced first that it would be extending its policy of establishing a trigger level of demand before certain exchanges would be upgraded for broadband, then that it would anyway upgrade all exchanges with a trigger level to broadband. At the end of June 2004, BT estimated that exchanges representing 90 per cent of the population had been upgraded to broadband. By summer 2005, all but 600 of the smallest BT exchanges in rural areas will be broadband enabled. Around 99.6 per cent of the population will at that point be on broadband-enabled exchanges.
- K.46 In August 2004, BT announced that it would be extending trials of its extended reach technology, which allows DSL to be received by customers who lived more than 6km from the exchange, which had previously been the upper limit. BT expects this extension to mean that 99.8 per cent of lines connected to a broadband exchange should be able to get a 512 kbit/s service.
- K.47 The combination of these announcements mean that BT expects the availability of DSL to be around 99.4 per cent of the population by summer 2005 – on a par with the percentage of homes that can receive good quality analogue TV signals.
- K.48 So within a year, the proportion of customers that cannot receive at least a 512 kbit/s service is expected to be less than 1 per cent. Aside from DSL, there are technologies which could address these customers. One of these is wireless. For example, in December 2003, Ofcom made the 5.8GHz Band C spectrum range available to support local wireless services providing downloading speeds of up to 1 Mb/second, particularly . Though these technologies may be suitable for some locations where DSL is unavailable, they are very unlikely to be commercially viable in all of them.

¹⁶ Source: Ofcom market intelligence

K.49 To meet the gap, a number of public sector initiatives have been developed:

- the UK Government's broadband aggregation project is designed to aggregate public sector demand for broadband, including in remote and rural areas. It aims to provide companies with adequate commercial incentives to connect communities which otherwise would not be connected. The Government is committed to investing £1bn on public sector broadband connectivity between 2003 and 2006. This will include pooling demand for broadband services for schools and connecting up the surgeries of general practitioners, hospitals and health authorities;
- the Government has established a £30m broadband fund to encourage the development of innovative broadband schemes in areas where residents do not have access to a mass-market broadband solution; and
- the three devolved administrations (Scotland, Wales and Northern Ireland) and many of the UK's Regional Development Agencies (RDAs) have their own broadband strategies. Northern Ireland aims to be the leading broadband region in the UK with a goal to be the first region in the UK to have 100 per cent coverage of broadband services. In February 2004 BT was awarded the contract to provide a '100 per cent broadband' service to Northern Ireland. In Scotland and Wales, the administrations are also developing strategies to provide affordable broadband access. One North East, the RDA for the North East, also has a similar initiative. However, there have been concerns expressed about compatibility of such schemes with State Aid rules.

K.50 So for current generation broadband, the vast majority of users will have their needs met by private sector investment (largely by BT), and the targeted public sector mechanisms described above are designed to address much of the remainder.

K.51 However, it has to be recognised that, with the bandwidth capabilities of broadband services likely to increase, the extension of universal services to broadband is something of a moving target. The consensus from our Phase 1 consultation was that bandwidth requirements for residential users would increase to between 4 and 6 Mb/s between now and the end of the decade. Such offerings will require a further round of upgrades of the copper and cable networks, perhaps through the roll-out of fibre deeper into the network. Cable is almost exclusively in urban areas, and that BT is likely to upgrade the exchanges which are in areas of the densest population first. Therefore it is likely that the same urban/rural, metropolitan areas/regions divide that occurred for the first generation of broadband will reappear as and when such a network upgrade occurs. Moreover, the problem is likely to be more severe because of the physics and geography of BT's network assets. The much higher speeds discussed above are possible only over relatively short copper link lengths – so the proportion of customers in upgraded exchanges who nonetheless cannot receive these faster services is likely to be much greater.

K.52 Thus even if the need for a broadband USO in current generation broadband has diminished, it is possible to articulate a possibly much more severe digital divide emerging towards the end of the decade. How can or should Ofcom and the Government prepare for this?

The scope for extending the USO to broadband services

- K.53 As already discussed, the EU Universal Service Directive imposes restrictions on what can be covered by universal service obligations. A review of the directive will start in 2005. In the meantime, Member States “remain free to impose special measures (outside the scope of universal service obligations) and finance them in conformity with Community law but not by means of contributions from market players”¹⁷. This effectively rules out any UK-specific initiative to develop a broadband USO scheme except one funded through taxation.
- K.54 Nevertheless, the UK should be in a strong position to contribute to the European review of USO obligations starting in 2005 and so should begin to consider whether it should support extending the USO to broadband services.
- K.55 The important questions are: whether there are serious network externalities and evidence of inefficiencies in the speed of broadband rollout to households in the UK; whether there other inefficiencies creating barriers to a market-led offering of broadband services; whether broadband is necessary for social inclusion; what would be the costs and benefits of a broadband USO; and if there were net benefits, whether these could be achieved more efficiently through other means. These issues are closely related to the criteria set out in Annex V to the USD, which sets out how the Commission review is to be conducted and the issues it is to consider.

Network externalities

- K.56 Similar network externalities exist in broadband as in other telecoms technologies. But since the ability of households to connect to broadband services has grown very rapidly over the past year and over 90 per cent of households are already connected to broadband enabled telephone exchanges, it is difficult to make a convincing case that network externalities are a powerful barrier to efficiently rapid broadband rollout. It might be, of course, that high price is a significant barrier to connection to broadband services by many users.
- K.57 For many users of broadband, direct network externalities are not strong. For example, the ability to connect to the internet and download information faster than a dial-up modem or the ability to download video footage over a telephone line results in little additional network externality. In addition, the current range of services available over broadband networks does not provide a strong case for Government or regulatory intervention. Few public services require broadband technology and none yet currently require universal access in every household.
- K.58 The indirect network externality from broadband may be stronger. The range of content and information services targeted at broadband users would be likely to be greater if more consumers had broadband. So, each existing user benefits from new users by virtue of the new users strengthening the business case for provision of such services.

¹⁷ Directive 2002/22/EC (*Universal Service Directive*)

Other inefficiencies

- K.59 There are potentially net external costs for urban dwellers in the extreme case that living in rural areas were to become unviable due to the inability to access broadband services. If so, it is possible to argue that a broadband USO would be necessary to maintain the viability of rural communities, thereby also improving the lives of urban citizens, for example through reduced congestion. We are clearly a long way from this point. Even if these potential inefficiencies were found to be significant, the case for a USO would still have to demonstrate that the relevant external costs could not be minimised more effectively with other policies, for example, congestion charging.
- K.60 So as yet, the efficiency case for a broadband USO is not compelling. Even if it were, Government and regulators should be wary of early intervention since subsidies can discourage market entrants and distort competition. Alternatively, an unfunded USO obligation could undermine operators' ability to make a reasonable return on investment and distort efficient investment. Finally, any intervention at such an early stage in the development of broadband which was not technologically neutral could seriously distort the development of the most appropriate broadband technology for any particular household or area.

Social inclusion

- K.61 With broadband penetration running at 20percent of households nationally as of September 2004¹⁸, it is far too early to suggest that broadband is an essential technology for social inclusion. Penetration rates will have to rise to levels well in excess of 50 per cent before a household's inability to access broadband services at a 'reasonable rate' could be considered a form of social exclusion. In addition, there are currently no services available over broadband networks which are essential for a household to function in society.
- K.62 In the future, this picture might change. The Government has plans to use broadband for the delivery of certain education, health and other public services. These might become as essential for households as the emergency services, now contactable by telephone, are today. This is clearly some distance in the future, however.

A way forward?

- K.63 The still limited take-up of broadband, the legal restrictions on extending the scope of the current USO, the dangers of distorting the market, the lack of convincing efficiency or social policy arguments for universal broadband access and the number of existing private and public broadband initiatives imply the imposition of a broadband USO in the near future would be undesirable, even if the EU framework permitted it. The latest Broadband Stakeholders Group annual report concluded similarly:

¹⁸ Source: Ofcom market intelligence

“Heavy-handed intervention, either through the imposition of a universal service obligation or through large-scale subsidies would be inappropriate at this stage”¹⁹.

In any case, the market is moving so fast in relation to current generation broadband that any USO designation of broadband for this generation of services may be unnecessary.

- K.64 If there is a need for a USO, it lies in relation to the residual proportion of the population who will remain unserved when BT’s current programme of network upgrades is completed. As discussed above, BT claims that this will be less than 1 per cent of the population. This will largely be clustered in areas, such as the Highlands and Islands of Scotland and mid-Wales, where public money is potentially available to fund broadband infrastructure. However, some publicly funded schemes to increase broadband availability have met with difficulties – in particular, concerns that schemes may breach EU state aid rules. It is necessary to demonstrate that such schemes would address an otherwise eradicable market failure. Because broadband is a fast moving market with rapidly falling prices, and because new technologies are constantly being developed which might provide further scope for rolling out broadband, it has been difficult for the relevant public authorities to demonstrate that such market failure exists.
- K.65 In this area, the work conducted in this Strategic Review may prove helpful. Ofcom has looked at the costs of broadband distribution over a number of different platforms, including DSL, cable and various wireless-based solutions. We can say with a fair degree of confidence that at present we see no prospect of a new technology being deployed which will allow for an entirely market-funded, competitive delivery of services which fall into the areas outside of BT’s DSL upgrade plans. Therefore, in such areas it may well be appropriate to use public money to address the shortfall in supply. Schemes which put competitive pressure on suppliers to supply services at the lowest level of subsidy will be particularly welcome in ensuring that the right technology is selected and there is value for money for the public.

Broadband and economic competitiveness

- K.66 A significant number of respondents, particularly from public sector interests, highlighted the vital importance of broadband services to economic competitiveness – competitiveness of UK small businesses, competitiveness of particular Nations or Regions, or competitiveness of the UK economy as a whole in a global market.
- K.67 Ofcom has had these considerations in its mind in setting out its approach to regulation of broadband products and services. In performing its duties, Ofcom is required to have regard to the desirability of encouraging the availability and use of high speed data transfer services throughout the UK. But the question is whether we should go beyond having regard to the desirable outcomes which will flow from market forces and effective economic regulation, to a position where we actively and overtly shape policy in order to increase competitiveness in one or more of the ways set out above.

¹⁹ *Third annual report and strategic recommendations*, BSG, January 2004

- K.68 Such a policy might involve establishing a policy position on the desirability of next generation broadband services which goes beyond the current market consensus. We could start to put pressure on suppliers using a variety of instruments to deliver a particular, desirable market outcome – the early and extensive roll-out of these services.
- K.69 We think taking such a role to ourselves would be inappropriate for two reasons, one of principle and one practical. The issue of principle is that Ofcom was not expected to contemplate large scale interference in the operation of the telecoms market. Whereas, for instance, the Communications Act is very clear that Ofcom must intervene in the broadcasting market to secure the delivery of certain public service broadcasting outputs, the interventions anticipated in relation to telecoms are confined to the universal service obligations already discussed.
- K.70 The second consideration is practical. Beyond the specific instruments available to us under the universal service provisions, it is difficult to see what levers Ofcom can pull to promote the roll-out of networks, other than those, such as forbearance, already discussed in this document. Ultimately if the private case for making such investments does not currently exist, and the creation of a sympathetic regulatory environment is insufficient to justify the investment, the remaining mechanisms available to make the business case more attractive largely rest with the Government.
- K.71 Our conclusion therefore is that we are constrained in how far we should pursue a wider economic agenda in areas which properly fall to the Government to lead. Having said this, Ofcom does intend to work very closely with Government and other stakeholders to ensure that our regulatory approach interleaves with other public and private sector initiatives to bring forward the undoubtedly desirable investment in next generation broadband access networks.

Annex L

Legal implementation process

L.1 In this annex we briefly discuss the legal processes that would need to be followed to implement each of the regulatory options discussed in Chapter 5.

Option 1: Deregulation

L.2 Any deregulation by Ofcom will need to take place within the European framework. Such deregulation could take one or more of the following forms:

- **in access and retail markets:** reviewing the current remedies in place and determining whether they continue to remain appropriate. In such cases Ofcom must, *inter alia*, comply with Section 86 of the Communications Act 2003. In particular, Ofcom must be satisfied that there has been no material change to the relevant market since an Significant Market Power determination has been made. In this context a material change is one which is material to the change in remedies being proposed;
- **in access markets:** carrying out new market reviews and determining on the evidence available that no communications provider has Significant Market Power; and
- **in retail markets:** determining that the obligations imposed by Ofcom under the Access Directive result in the achievement of the objects set out in Article 8 of the Framework Directive and withdrawing any relevant remedies currently in place.

Option 2: Reference under section 131 of the Enterprise Act 2002

L.3 Under section 174 of the Enterprise Act Ofcom has certain investigatory powers in relation to market investigations. Ofcom would be likely to use these powers were they to consider examining the possibility of making a reference to the Competition Commission. If, following such an examination, Ofcom considered that it had reasonable grounds for suspecting that any feature of a market prevented, restricted or distorted competition, then pursuant to section 131 of the Enterprise Act, Ofcom could make a reference to the Competition Commission.

L.4 If the Competition Commission decided that there was an adverse effect on competition it would be required to decide whether, and in what form, it or others should take action to remedy, mitigate or prevent that effect.

Option 3: Real equality of access

L.5 This option contains proposals which either consist of clarifying the application of the current regulatory regime (for example through the publication of guidelines) or which would be implemented through imposing new remedies or amending current remedies in markets were BT has

already been found to have Significant Market Power. In the latter case Ofcom must, *inter alia*, comply with section 86 of the Communications Act 2003. In particular, Ofcom must be satisfied that there has been no material change to the relevant market since a Significant Market Power determination has been made. In this context a material change is one which is material to the change in remedies being proposed.