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Ofcom's Strategic Review of Telecommunications and BT's Undertakings

Prepared on behalf of OPTA, Netherlands

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Contents

Executive Summary

This report has been prepared by NERA Economic Consulting on behalf of OPTA. Its purpose is to review Ofcom's Strategic Review of Telecommunications (SRT) and BT's undertakings ("the UK approach") and to assess what extent they are relevant to the Dutch communications market.

Key Economic Issues

Both the Dutch and the UK markets are dominated by a single vertically integrated infrastructure and service provider (KPN and BT respectively). BT and KPN have been found to have monopoly power over essential facilities, such as customer access networks. In the absence of *ex-ante* or *ex-post* regulation, this market power would allow KPN and BT to leverage their dominance in downstream markets and restrict or foreclose competition to the detriment of consumers.

Where market power is durable and *ex-post* competition law is insufficient to prevent abuse of dominance, *ex-ante* regulation may be justified. However, regulation must be carefully designed to avoid regulatory failure since this can be more detrimental to consumers than market failure. One source of regulatory failure is asymmetric information when an operator possesses more information than the regulator making it difficult to determine the extent to which an operator with significant market power (SMP) is abusing its dominance or complying with regulatory obligations.

Vertical separation (the separation of a firm's upstream and downstream activities) removes the incentive for the firm to discriminate between its own downstream activities and those of other downstream operators or to engage in anti-competitive behaviour. While the need to regulate enduring bottlenecks would remain, regulation of retail markets could be reduced or removed since it would increase the role of the market in efficiently allocating resources and would thereby reduce the risk of regulatory failure.

The rapidly converging nature of the communications industry – that is, the tendency for different network platforms to offer increasingly similar products and services – means that regulation and market analyses should be based on services rather than on the technology over which they are provided.

The UK Approach

The Strategic Review of Telecommunications (SRT) in the UK examined the scope for effective and sustainable competition in relevant telecommunications markets, particularly at the network level, and alternative approaches to regulation. Ofcom concluded that regulation of BT was, and would continue to be, necessary to ensure that its competitors could gain access to parts of BT's network which they cannot fairly replicate ("enduring economic bottlenecks"). In light of this, Ofcom required that BT should make access available on the same terms as it makes available to itself ("real equality of access"). However, the vertical integration of BT provides incentives for BT to engage in anti-competitive behaviour.

In order to avoid a referral to the UK Competition Commission, BT submitted undertakings to deliver real equality of access. Part of these undertakings was the setting up of new and operationally separate (rather than structurally separate) business unit: Openreach. Openreach has its own assets – including all of BT's access and backhaul assets – and provides wholesale products that are provided over enduring bottlenecks. The Equality of Access Board (EAB) was established to independently monitor whether BT is meeting its obligations to provide non-discriminatory access.

Economic Analysis of the UK Approach

The UK regulatory approach minimises the possible impact of market and regulatory failures. It allows competition to act as an effective surrogate to regulation where this is feasible, and regulates where needed and in such a way as to minimise the administrative and information costs associated with that regulation. The undertakings given by BT have allowed Ofcom to focus its regulation on the enduring economic bottlenecks and to continue to roll back regulation in other areas.

Although Ofcom did not opt for complete structural separation, the undertakings implemented by BT in order to provide "real equality of access" effectively mimic the incentives arising from vertical separation. The undertakings effectively remove (or at least greatly reduce) BT's incentive to engage in anti-competitive discriminatory behaviour. The UK approach has encouraged competitive entry and associated investments by competitors in downstream markets. The UK has witnessed increasing infrastructure based competition in broadband and fixed voice markets and greater choice and improved pricing for consumers.

Relevance to the Dutch Communications Markets

The relevance of the UK approach to the Dutch communications markets will be determined by the differences between the two markets and the proposed investments by BT and KPN. One key difference between the two markets is that there is a greater degree of inter-platform competition in the Netherlands than there is in the UK – specifically, cable operators have greater network coverage and their plans to interconnect their IP telephony networks provides the Netherlands with the possibility for infrastructure-based competition.. Another key difference is that KPN is planning to upgrade both its access and core network entirely to next generation technologies whereas BT is focussing on upgrading its core network only. Thus concerns as to whether functional separation provides the right incentives for investment in next generation access networks is not an issue.

One of the key factors underpinning the effectiveness of the UK approach, and providing the incentives for Openreach to implement "real" equality of access, is the ever present threat of a reference to the Competition Commission and a possible vertical separation. Neither OPTA nor the Nma, outside the context of a merger investigation, have the powers to implement a structural separation on the market. In the absence of such a credible regulatory threat of structural separation, functional separation is unlikely to be as effective as in the UK. Nevertheless, functional separation would have its advantages and would increase transparency, minimise the scope for anti-competitive behaviour and ease the regulatory burden.

1. Introduction

NERA Economic Consulting (NERA) has been asked by OPTA to write a report on the parts of Ofcom's strategic review of telecommunications (SRT) that are relevant to the underlying competition problems in the sector and the undertakings made by BT in lieu of a reference to the Competition Commission in order to address these problems (hereinafter: the UK approach). OPTA have also asked NERA to discuss the possible significance of the UK approach for the Dutch situation.

In this report, NERA reviews and analyses the relevant parts of Ofcom's SRT and the undertakings given by BT in lieu of a referral to the Competition Commission under the Enterprise Act 2002. NERA reviews and discusses differences in the UK and Dutch markets and what this implies for the relevance of the UK regulatory model to the Dutch situation.

The rest of this report is structured as follows:

- Section 2 contains a discussion of the key economic issues that are relevant for analysing Ofcom's SRT and BT's undertakings.
- Section 3 provides a description of the findings of Ofcom's SRT and the undertakings given by BT.
- Section 4 uses the key economic issues discussed in Section 2 to provide an economic analysis of the UK approach.
- Section 5 examines the relevance of the UK approach to the Dutch situation and how this is affected by UK and Dutch differences in facilities based competition and the investment plans of the incumbents (BT vs. KPN) and regulatory powers with respect to structural separation.
- Section 6 provides a brief conclusion.

2. Key Economic Issues

This section discusses some of the key economic issues involved in regulation of the telecommunications sector. These issues are relevant to Ofcom's strategic review of the sector, and puts into context the objectives and findings of Ofcom's SRT and the undertakings given by BT discussed in Sections 3 and 4 below.

2.1. Rationale for Regulation

In the absence of market failure, market forces are regarded as the best mechanisms for achieving the efficient allocation of resources and thus maximising benefits to consumers. However, market failure may prevent the efficient functioning of markets. In such cases, an important example of which is the existence of monopoly power over essential facilities such as customer access networks, the purpose of regulation is to try to eliminate the sources of the market failure or to mitigate their impact.

Network industries typically have a number of characteristics which mean that they need to be subject to sector-specific rules in addition to general competition law. Network industries are often characterised by:

- Long-lived sunk investments;
- Increasing returns to scale; and
- An incumbent that retains an extensive network and is therefore likely to retain market power, especially in relation to the network access market.

At the same time, many segments of these industries are also potentially competitive activities. However, the presence of economies of scale (i.e. natural monopoly characteristics) in the network or local loop implies that competition cannot be relied upon to provide the socially optimal outcome.[1] In this case regulatory intervention is often necessary in order to correct the market failure or to mitigate its impact. Given the existence of market power in parts of the network the question then becomes whether to intervene and, if so, how best to intervene.

The economic characteristics of networks mean that there may be significant long-lasting market power which is best tackled through ex-ante sector specific rules. Such rules can address not only concerns relating to market power, but also the use of a more predictable sector-specific framework can allow long-term investors to plan ahead with greater confidence.

However, in regulating network industries, tradeoffs exist between market failure and regulatory failure and these tradeoffs need to be taken into account when determining whether intervention is efficient or whether it is best to do nothing. Regulatory failures arise since regulation invariably occurs under asymmetric information (e.g. the regulated firm is better informed vis-à-vis the regulator regarding the true costs of access to its network).

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[1] Competition in parts of the network, particularly the local loop, may be unsustainable (e.g. destructive competition) or undesirable (i.e. costs would be minimised if operated as a monopoly).

2.2. Key Competition Issues

2.2.1. Promoting competition

Regulatory reforms of the past decade have aimed at allowing competition to work where it can and to regulate where needed and in such as way as to minimise the administrative and information costs associated with that regulation.

The use of different regulatory tools however often involves trade-offs in terms of achieving competition in different markets. A key area where such trade-offs may arise is the relationship between infrastructure and services competition. For example, when setting the level for interconnection tariffs of the incumbent operator there is a trade-off between promoting competition in services provided over the network and promoting competition in the provision of infrastructure itself. Competition at the service level is likely to be stronger if interconnection charges are low. However if service providers have access to another operator's network relatively cheaply, they may have little incentive to build their own infrastructure. The network provider may also have little incentive to invest in up-grading its network. Setting interconnection tariffs above cost can promote infrastructure competition but it may counteract any initiatives to promote competition amongst downstream service providers.

2.2.2. Vertical integration and network access

Network industries can give rise to complex competition issues. Firms interact in supplying both complementary and substitute services at different stages of the value chain, and where they have market power this gives them plenty of scope for significant restriction and distortion of competition. Although the provision of a network in telecommunications may have monopoly characteristics, particularly at the level of the local loop, the provision of services over that network need not. A key challenge for regulators therefore is how to combine regulation of the network with the organisation of competition in activities which use the network as an input.

The key competition issue essentially arises when the main access owner is vertically integrated and can leverage its market power from the access market into a range of services. Whilst vertical integration can bring efficiency benefits arising from economies of scope, in the presence of market power a vertically integrated firm has an incentive to leverage its market power in the upstream network market and restrict or foreclose competition in downstream markets. There are numerous ways in which a firm can achieve this. For example:

- Conducting a price or margin squeeze;
- Cross subsidisation;
- Predation;
- Refusal to supply;
- Price and/or quality discrimination; and
- Bundling of access and services.

There are a number of regulatory instruments that can be used to prevent abuse of market power. These include: price controls; access obligations; regulation of interconnection pricing and terms of agreement; accounting separation; rules on costs allocation and non-discrimination. Whilst regulation can be used to reduce the likelihood of abuse of market power, this often requires close surveillance of the vertically integrated firm's conduct.

2.2.3. Informational asymmetries

Assessment of abuse of market power is complicated by complex cost structures often found in network industries, which can mean that subsidisation and cross-subsidisation are difficult to prove and therefore prevent. The regulatory burden can be quite high in the presence of the significant informational asymmetries that the regulator faces vis-à-vis the firm in question. For example, while retail prices may be relatively transparent, the costs involved in providing those services are not. In order for the regulator to assess whether the firm is discriminating or cross-subsidising its retail activities, the regulator needs to know the transfer prices implicitly charged to the downstream part of the firm for inputs supplied by the upstream part. Even if the regulator possesses such information, the incumbent still has other, more subtle, means of discrimination in the terms and conditions of use of infrastructure between the firm's own subsidiary and other operators' or service providers' use.

These informational asymmetries can be partially remedied by requiring accounting separation of the upstream and downstream activities. However, accounting separation is not foolproof, and the regulated firm will have strong incentives to engage in "creative" accounting to cover up any anti-competitive behaviour. The scope for doing so is also strong when there are significant common fixed costs as is the case in telecommunications. In addition, accounting separation cannot detect non-price forms of anti-competitive conduct such as discrimination in terms of quality of services offered to rival companies. For these reasons, it is often argued that structural separation is needed to ensure a level playing field and offset incentives to discriminate or deny access.

2.2.4. Structural separation

A cleaner and arguably more satisfactory alternative to accounting separation from a competition perspective is vertical separation whereby the upstream and downstream activities are physically divided into two separate firms.[2] By vertically separating the upstream monopoly activities from the competitive downstream activities, the regulator removes the incentive (and in many cases the ability) for the upstream monopolist to discriminate against particular downstream operators, engage in price squeezes or cross-subsidies, etc. The downstream firms are placed on a *level playing field*, with no clear advantage provided to any one firm compared to others.

Vertical separation also makes the regulator's task more straightforward. The need to regulate the upstream network activities would remain although the scope of regulation is reduced. Under vertical separation, the regulator need not worry about discrimination and the

[2] There may be some efficiency losses in separating the upstream and downstream components but this needs to be weighed against the dynamic efficiency gains of greater competition as well as the gain through a reduction in regulation.

main focus of regulation would be to ensure that the network owner did not engage in monopoly pricing or reduce quality. Furthermore, by concentrating regulation on the areas of the economic bottlenecks the regulator may roll back roll back regulation in other areas. In particular:

- There may no longer be a need to regulate the retail sector; and
- There will no longer be a need to monitor transfer prices between the upstream and downstream parts.

2.3. Recent Developments in the Telecommunications Sector

2.3.1. Convergence of communications networks

The case for vertical separation is strong where there are limited possibilities for facilities based competition, such as in electricity where the transmission grids have been separated out from the rest of the production chain. Vertical separation makes the regulator's task more straightforward and minimises the area over which regulation is required. However, the telecommunications sector is one that has been driven by rapid technological changes and the emergence of different access technologies. This allows some scope for facilities based competition, can limit the market power arising from ownership of the local loop network and reduces the need for strict vertical separation.

Rapid technological change has been a key feature of telecommunications markets in recent years. In particular, digitalisation and the introduction of fibre has eased capacity constraints and facilitated the convergence of different types of networks which can now carry similar services (e.g. satellite, fixed and mobile networks, IP networks, and cable). The result has been a wealth of innovations both in terms of infrastructure and services provided over the infrastructures. Whilst many of these technological developments may be pro-competitive, the emergence of fibre optics and investment in next generation access networks (NGA) raises the issue that these developments may only reinforce the market power of incumbents.

These technological developments, combined with the bundling of services in retail markets (e.g. triple play offers), raises a new set of challenges for regulators and close attention needs to be paid to the various incentives that arise under different regulatory models. One of the challenges facing regulators is to ensure that regulation is technologically neutral, whilst at the same time ensuring that markets remain competitive. Where markets truly converge it is important that one technology is not unduly regulated whilst other competing technologies face only very light regulation, otherwise regulation itself will be distorting competition. In addition, where markets are dynamic, regulation needs to be relatively light in touch to minimise the risk that it hinders or disincentivises investment and innovation.

2.3.2. Increased risks of regulatory failure

While regulation is intended to promote the efficient functioning of markets, it can have unintended consequences and a negative impact on the regulated market. As mentioned earlier, a regulatory authority may seek to reduce the monopoly power of the incumbent by regulating the prices of its network services so as to encourage competitive entry and the associated investment by competitors in downstream markets. However, this may reduce the incentives for the incumbent to invest in innovative new services and may result in the delayed roll-out of new technologies.

The problem of regulatory failure is particularly relevant for new and emerging markets since these are characterised by a high degree of uncertainty and complicates the design of effective regulation. Furthermore, in markets where technological innovation and developments are fast-paced, which is the case in the telecommunications sector, the relevant definition of the market is likely to change rapidly. This means that there is a risk that regulation may be too inflexible to adapt to the unpredictable and ever-evolving nature of the market.

3. The UK Regulatory Model

In 2004 Ofcom undertook a review of the telecommunications sector in the UK with the aim of assessing the prospects for maintaining and developing effective competition in telecommunications markets, whilst at the same time having a regard for investment and innovation in the sector. It had been 20 years since the privatisation of BT in 1984 and the sector as a whole had not been subject to a thorough and open strategic review since 1991. In addition, technological innovation was driving changes in the underlying economics of the industry, and the growth of the internet and the emergence of different broadband access technologies was creating (and still creates) new challenges for the sector and for regulation.

Ofcom's objective therefore in conducting a strategic review of the sector was to create a durable medium-term strategy for its regulation of the sector. The results of the Strategic Review of Telecommunications (SRT) were then be used by Ofcom to develop and inform its regulatory strategy in order to promote competition and the interests of consumers.[3]

3.1. Ofcom's Strategic Review of Telecommunications (SRT)

3.1.1. Scope of the SRT

The focus of Ofcom's SRT was to carry out an assessment of the role of regulation in the telecommunications sector as a whole, with a particular emphasis on the role of competition in delivering benefits to consumers. The scope of the review was fairly extensive and considered competition issues as well as consumer protection issues, and it looked at mobile as well as fixed telecoms networks. The main focus of the review however was on fixed networks, as this was identified as the area where most regulation exists and where most of the competition problems (i.e. economic bottlenecks) lie.[4]

The goal of Ofcom is to promote competition where possible and to regulate where the market does not and cannot function efficiently without regulation. The starting point of the review was to ask whether the costs of on-going, sector-specific regulation continued to be justified, and whether the changes in technology and consumer behaviour might render existing regulatory approaches obsolete. With this in mind, the SRT was structured around five fundamental questions that Ofcom addressed. These are:[5]

- What are the key attributes of a well functioning telecoms market?
- Where can effective and sustainable competition be achieved in these markets? In particular, what are the major barriers to effective competition and how can they be lowered; and how does this vary between infrastructure and service provision?

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3 Ofcom, Terms of Reference: http://www.ofcom.org.uk/static/telecoms_review/tor.htm.

4 While the review touched upon consumer protection issues, it did not deal directly with these issues and as such did not specifically address issues such as universal services obligations, consumer protection regulation, numbering regulation and other such matters.

5 Ofcom (2005), "Final statements on the Strategic Review of Telecommunications, and undertakings in lieu of a reference under the Enterprise Act 2002", September 2005.

- Is there scope for significant reduction in regulation? In particular, where is regulation effective and where is it ineffective, and what are the opportunities for regulation to withdrawn or minimised?
- How can Ofcom provide incentives for investments in next generation networks?
- What is the relevance of vertical integration in the telecommunications sector? In particular, what is the case for the structural or operational separation of BT, or the delivery of "full functional equivalence"?

The strategic review was conducted in three phases.

- *Phase One* of the SRT examined the role and importance of the telecommunications sector as a whole in the UK economy. It examined how far competition and regulation have gone in delivering lower prices, higher quality and wider choices to consumer.[6] This phase also reviewed investment and technological developments in the sector.
- *Phase Two* assessed the scope for effective and sustainable competition in relevant telecommunications markets, particularly at the network level. It also looked into alternative approaches to competition and regulation in the sector. Based on this review the SRT laid out a number of options for Ofcom to regulate the telecoms sector.
- *Phase Three* of the SRT produced a final report which identified the key policy issues and a set of proposals for tackling these issues in a coherent regulatory framework.

3.1.2. Key Findings of the SRT

While the scope of the SRT was fairly wide, the focus was on fixed telecoms networks since most existing regulation related to fixed networks, and Ofcom found that it was in fixed networks that the most complex competition problems were evident.[7] Given BT's market power arising from its control over the local loop, Ofcom concluded that a new regulatory approach for the UK's fixed line telecommunications market was necessary for the longer term, *"based on real equality of access to those parts of the fixed telecoms network which BT's competitors cannot fairly replicate"*.[8]

3.1.2.1. What are the key attributes of a well functioning telecoms market?

Ofcom found that the traditional model of regulation and the opportunities for cream skimming by rival firms had been effective in achieving downward pressure on prices and delivering benefits to consumers.[9] However, this model was not very effective in delivering the choice, diversity and innovation required by consumers today. The market has changed and consumers now purchase a much more complex set of services, including voice telephony, internet broadband access, and broadcasting services. In order to deliver

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6 In particular, the SRT looked at the degree of competition in telecommunications markets and undertook comparative international benchmarking of prices and other indicators to assess the comparative position of the UK sector in delivering benefits to consumers.

7 Final statement, p. 3.

8 See: http://www.ofcom.org.uk/media/news/2005/06/nr_20050623.

9 Final statement, paragraph 3.10.

continuing benefits to consumers, Ofcom found that strong competition between infrastructure-based providers, under-pinning competition between service providers, was needed.[10]

> *"Such a market would lead to downward pressure on prices and would also support a range of service provider activities. Service providers would no longer be dependent on regulatory intervention, as they would be able to purchase services from a range of wholesale infrastructure providers.*

However, Ofcom found that competing end-to-end infrastructure in fixed networks was (in the medium term) unsustainable and insufficient to deliver effective competition and that existing regulation was not very effective in delivering this kind of competition.[11] Ofcom adopted the principle therefore *"that regulation should promote competition at the deepest level of infrastructure where it is likely to be effective and sustainable."*[12]

3.1.2.2. Where can effective and sustainable competition be achieved?

The large and sunk nature of investment in telecoms infrastructure, and the large scale economies that are possible, means that there is always likely to be only a small number of network suppliers.[13] While Ofcom's overall approach is to promote infrastructure competition, it found that:

> *"…some assets in the network are either economically impossible or highly economically inefficient to try and replicate: the so-called enduring bottlenecks – mainly, though not exclusively, in the access part of the network. Without open and truly equivalent access to such assets, sustainable infrastructure based competition would be too risky and too easily frustrated."*[14]

However, in order for Ofcom's regulatory approach – promoting competition between competing infrastructures as deep in the network as possible – to work, Ofcom noted that companies who wished to compete on this basis had to rely on BT for access to the parts of the network where competition was not sustainable.[15] Ofcom therefore concluded that:

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[10] Final statement, paragraph 3.13. In particular, Ofcom noted the slow response of the UK market to consumer demand for new broadband services, and the correlation between countries which had strong infrastructure competition and early broadband uptake (Final statement, paragraph 3.12)

[11] See Ofcom (2005), Final statement, .chapter 4.

[12] Final statement, paragraph, 3.14.

[13] Final statement, paragraph 4.2.

[14] Telecommunications Statement: http://www.ofcom.org.uk/consult/condocs/telecoms_p2/statement.

[15] In parts of the network where it is uneconomic for new entrants to build their own infrastructure, competitors are reliant on BT to provide wholesale access to its network. However, Ofcom found that competitors that had to rely on BT had experienced slow product development, inferior quality wholesale products, poor transactional processes, and a general lack of transparency (Final statement, paragraph 4.7)

> *"…in order for competition in fixed telecoms to be effective, BT needed to make such access available on the same terms as it made available to itself: an approach we call* ***equality of access****."*[16]

3.1.2.3. Is there scope for significant reduction in regulation?

In its Phase 2 consultation, Ofcom posed three options for the future of telecoms regulation.[17] The first option was to step back from all *ex-ante* regulation. Given the economic bottlenecks that exist in the network, Ofcom's position was that it could not withdraw from all such regulation. The second option was to make a reference to the Competition Commission under the Enterprise Act as there were inherent market structure issues that would continue to provide incentives for anti-competitive behaviour. Since by its nature a Competition Commission investigation would be time consuming and the outcome uncertain, the third option was to seek to secure from BT "real equality of access". It is this third option that was chosen by Ofcom. The undertakings given by BT in order to provide equality of access are discussed in section 3.2 below.

By focusing its regulation on parts of the network that are enduring economic bottlenecks, and making that regulation more effective, Ofcom expected to be able to deregulate elsewhere. [18] In particular, Ofcom's position is that once true equality of access is in place, it expected to be able to deregulate many retail markets. In particular, "the delivery of real equality of access in relation to it s legacy monopoly access infrastructure will leave BT with much greater freedom to pursue new opportunities in growth markets such as broadband content, high end corporate systems integration, and fixed/mobile integration."[19]

Following upon the offering of a "fit-for-purpose" wholesale line rental (WLR) product by BT, on1 August 2006 Ofcom removed all price controls on BT line rental and calls. The deregulation follows upon Ofcom's SRT and a consultation begun in March 2006 on the removal of these price controls. Ofcom found that the removal of retail price controls was reflected in the rapid growth of competition and continued reductions in the cost of phone services.[20]

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16 See: http://www.ofcom.org.uk/consult/condocs/statement_tsr. In its response to the Phase 2 consultation, BT made the argument that networks were playing a smaller and smaller role in the overall telecoms value chain and thus regulation would no longer be necessary (http://www.ofcom.org.uk/consult/condocs/telecoms_p2/restsrp2/bt.pdf). While Ofcom accepted that there has been a shift in focus away from the network (and network operators) towards service, content, equipment and applications providers, this did not lead to the conclusion that regulation of the network would no longer be necessary. Ofcom's position was that those who had market power over parts of the network would continue to do so (Final statement, paragraph 4.19)

17 Telecommunications Statement: http://www.ofcom.org.uk/consult/condocs/telecoms_p2/statement.

18 An established principal of the EU regulatory framework is that *"downstream markets should not be subject to ex-ante regulation where remedies imposed in upstream wholesale markets are sufficient to ensure effective downstream competition"*. Final statement, paragraph 5.5.

19 Telecommunications Statement, http://www.ofcom.org.uk/consult/condocs/telecoms_p2/statement.

20 http://www.ofcom.org.uk/media/news/2006/07/nr_20060719.

3.1.2.4. How can Ofcom provide incentives for investments in next generation networks?

Ofcom's regulatory approach is not to encourage investment *per se* but to ensure that its regulation does not disincentivise efficient investment. Ofcom's regulatory approach could disincentivise investment if it were:[21]

- To provide insufficient certainty regarding its future approach to regulating new investments;
- To fail to allow efficient investment by competitors by not providing them with access to parts of the network where there are economic bottlenecks; and
- Not to allow investors to earn returns that reflect the risks faced at the time the investments were made.

Ofcom's regulatory approach in this area is to allow a different cost of capital on BT's low risk activities vs. high risk activities.[22] Ofcom states that "many of BT's highest risk activities, notably information and communications technology, are subject to significant competition, and as such are unregulated". On the other hand, Ofcom considered that BT's copper access assets constitute a low risk activity because:

- they are subject to less systematic risk than BT as a whole; and
- because they represent an enduring economic bottleneck.23

In its new regulatory approach for fixed telecommunications Ofcom proposed:[24]

- Separate levels for the cost of capital for the traditional copper access network which differ from the overall cost of capital for BT as a whole; and
- To set out clear principles which BT should follow in the design, procurement and build of its next generation network (NGN) – referred to as BT's 21st Century Network (21CN).

Ofcom states that this approach will provide a fairer pricing regime for competitors using BT's access network whilst allowing BT an appropriately higher return on higher-risk investment; and will help to ensure that other providers who use BT's 21CN do not suffer competitive disadvantage. In particular, Ofcom will consult on "the detailed practical steps to ensure that the development and deployment of BT's Next Generation Network – 21CN –

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21 Final statement, paragraph 6.2.

22 Ofcom's approach was to disaggregate the equity beta that it used in calculating BT's allowable cost of capital between BT's low risk activities and the rest of BT. "Ofcom's approach to risk in the assessment of cost of capital – Final Statement", Ofcom, 18 August 2005 (available online: http://www.ofcom.org.uk/consult/condocs/cost_capital2/statement/)

23 Final statement, paragraph 6.7.

24 Ofcom, A new regulatory approach for fixed telecommunications: http://www.ofcom.org.uk/media/news/2005/06/nr_20050623.

offers all providers the same products, prices and processes on equal terms and does not inhibit reasonable developments by alternative network operators."[25]

A more important issue concerns competitors' access to investments in parts of BT's network where effective competition is not sustainable. This is particularly relevant as existing copper switched network become due for replacement. Ofcom recognises that there may be different challenges as regards providing incentive for investment in next generation access (NGA) networks (as opposed to investments in core network, which is the primary focus of BT's current investment plans in NGN). In particular, Ofcom states that:[26]

> *This tendency for more risky products to be associated with more competitive activities may, however, not hold in the case of NGN. There may be significant risks associated with these networks, but they may also be the source of future potential competition concerns. Indeed, the provision of next generation access assets may be associated with enduring economic bottlenecks. This combination of high risks and a possible lack of competition present a particular challenge for Ofcom's approach to regulation. There may be conflicts between encouraging efficient investments by BT, and promoting competition and efficient investments by competitors.*

Ofcom's regulatory approach in this area is as yet still undefined. With the need to provide regulatory clarity in this area, Ofcom has recently issued a discussion paper in order to determine the relevant issues associated with NGA networks prior to undertaking a consultation.[27]

3.1.2.5. What is the relevance of vertical integration?

Access by competitors to parts of BT's network where effective competition is not sustainable was a central focus of the SRT. However, Ofcom found that, in spite of years of regulation, equality of access was still not forthcoming. Competitors that had to rely on access to BT's network had experienced slow product development, inferior quality wholesale products, poor transactional processes, and a general lack of transparency.[28] Thus the issue of the structural or operational separation of BT was still highly relevant.

At the end of its Phase 2 consultation, Ofcom considered making a reference to the Competition Commission under the Enterprise Act since there were inherent market structure issues (i.e. the vertical integration of BT) that would continue to provide incentives for anti-competitive behaviour. Since by its nature a Competition Commission investigation would be time consuming and the outcome uncertain, Ofcom accepted certain undertakings given by BT in lieu of a reference to the Commission. The undertakings aim to secure from BT "real equality of access".

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[25] Ofcom, A new regulatory approach for fixed telecommunications: http://www.ofcom.org.uk/media/news/2005/06/nr_20050623.

[26] Final statement, paragraph 6.8.

[27] Ofcom, "Regulatory challenges posed by next generation access networks, 23 November, 2006. Available online at: http://www.ofcom.org.uk/research/telecoms/reports/nga/nga.pdf

[28] Final statement, paragraph 4.7.

Equality of access included both equivalence at the product level - giving BT's competitors the same access to the bottleneck parts of BT's network as it gives itself - and organisational changes by BT. Ofcom expects that the undertakings will have the effect of delivering both of these. These are discussed below.

3.2. BT's Undertakings

In lieu of a reference to the Competition Commission and the threat of a possible structural separation, BT undertook to deliver equality of access to its network in order to provide a platform for effective competition in the sector. BT in its commitments undertook to implement new codes of practices, improve transparency and establish "Chinese walls".[29]

3.2.1. Equivalence at the product level

Ofcom has required BT to provide "real equality of access" which means that BT must offer its competitors access to its network with the same operational support systems at the same price as it does to itself. A new business unit (discussed under organisational changes below) was set up to support all providers' retail activities (including those of BT) on a precisely equivalent basis, which Ofcom terms "equivalence of inputs". Equivalence of inputs means that all providers will benefit from:[30]

- "the same products, with equal opportunity to contribute to the development of new products;
- the same prices, offered to all providers equally; and
- the same processes, to ensure all providers are able to order, install, maintain and migrate connections for their customers on equal terms".

At the *product level*, the undertakings defined a number of current products to which equivalence of inputs must be applied, and contain provisions for equivalence of inputs to be applied to certain types of products in future as NGN are rolled out.[31] In order to determine where competitive bottlenecks exist and where facilities are not technically or economically feasible to replicate, Ofcom required BT to offer both bitstream products and unbundled local loop (ULL) to serve every MDF (main distribution frame) or MSAN (multi-service access node). The set of products and services offered by Openreach include:[32]

- Local loop unbundling (LLU) products, including fully unbundled loops (where a provider takes full responsibility for all of the customer's voice and broadband services) and shared loops (where BT Retail continues to provide voice services and another provider is responsible for broadband);

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[29] For a full statement of the undertakings given by BT see: http://www.ofcom.org.uk/telecoms/btundertakings/btundertakings.pdf

[30] A new regulatory approach for fixed telecommunications: http://www.ofcom.org.uk/media/news/2005/06/nr_20050623.

[31] Ofcom considered it import to establish this framework before the implementation of 21CN so that this would enable BT and other market player to invest with confidence. Ofcom also wanted to ensure that BT did not design its 21CN in such a way that other operators would never be able to interconnect to it.

[32] A new regulatory approach for fixed telecommunications: http://www.ofcom.org.uk/media/news/2005/06/nr_20050623. For a detailed list and description of products offered by Openreach, see http://www.openreach.co.uk.

- Wholesale line rental (WLR), where a provider takes responsibility for all voice services and provides a single bill for both line rental and calls; and
- Backhaul products, which are used to connect the local access network to the core network. Some providers have built out their own backhaul networks, but many others are dependent on BT for wholesale backhaul services.

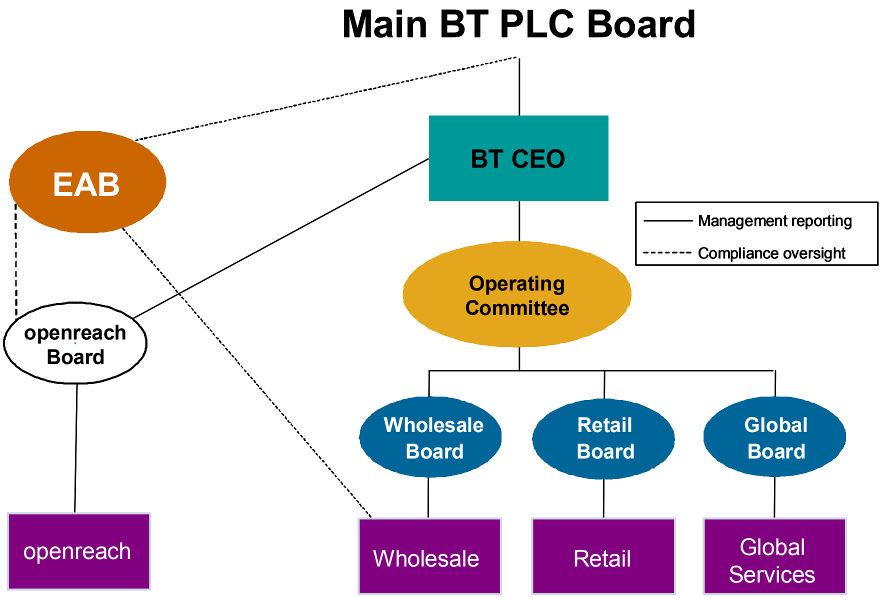
3.2.2. Supporting organisational changes

The undertakings required BT to put in place widespread *organisational changes* that were designed to support equivalence at the product level and to provide equality of access to BT's local loop facilities. This was done through the setting up of a new – and operationally separate – business unit (Openreach). Among other things, Openreach has its own tangible assets – including all of BT's access and backhaul assets – and its own staff whose bonuses are dependent on the performance of Openreach rather than on BT as a whole. These and other provisions aim to protect the independence of Openreach (section 4 below discusses the strengths and weaknesses of these changes). In particular, the Undertakings involved:

- The formation in BT of a new business unit, Openreach, operating the access and backhaul network. Openreach manages and sells the wholesale products made up from the parts of the network that are enduring economic bottlenecks. Openreach sells only to communications providers and not to end users.
- The operational (as opposed to structural) separation of Openreach from the rest of BT through measures such as a separate accounting, operation and remuneration structures. Openreach is run by its own board of directors which could include representatives from BT's competitors and from Ofcom.
- The establishment of "Chinese walls" through a new management to interface with external customers and with other parts of BT on an equivalence basis. For example, no employee of Openreach may share confidential information with any other part of BT or attempt to influence commercial policy.
- The establishment of an Equality of Access Board (EAB) as an independent monitor of BT to ensure that it meets is obligations to provide non-discriminatory access. The EAB also oversees the activities of BT's Wholesale Division.

Figure 3.1 below provides an overview of BT's new reporting structure.

Figure 3.1
BT's New Reporting Structure[33]



33 Source "A new era of regulation", presentation given by Clive Ansell, Group Strategy Director, BT and Steve Robertson, CEO, Openreach, September 22, 2005, http://www.btplc.com/News/Presentations/Industryanalystspresentations/OfcomStrategicReview220905.ppt

4. Economic Analysis of the UK Regulatory Model

In this section we provide an economic analysis of Ofcom's new regulatory approach for fixed telecommunications that followed from its strategic review of the sector and led to the undertakings given by BT. This section draws on the key economic issues discussed in section 2 above. In section 4.1 below we discuss the economic incentives that arise from the UK approach and how this affects the behaviour of the regulated firm. In section 4.2 we discuss the recent Ofcom evaluation of the SRT and the Undertakings given by BT.

The competition problems that arise from vertical integration (see discussion in section 2 above) have led a number of governments to apply, or consider applying, various forms of structural separation to incumbent providers – ranging from accounting separation to full vertical separation. The UK model falls in the middle of the spectrum and is one of "functional" separation. Functional separation entails network access (wholesale) being split from the provision of services to customers (retail). In the UK, this has been done through the creation of Openreach. The objective of the UK approach is to level the playing field by forcing BT's retail operations to obtain network access on an "arm's length" basis and on the same terms as other communications providers.

4.1. Economic Incentives and the Behaviour of the Regulated Firm

4.1.1. Vertical separation and incentive to engage in anti-competitive behaviour

In spite of years of regulation, true equality of access was still not forthcoming and Ofcom found that competitors that had to rely on BT's network continued to experience discriminatory service.[34] One regulatory option to address the issue of anti-competitive behaviour, and was considered by Ofcom, is the structural separation of BT. However, a reference to the Competition Commission to address these inherent market structure issues that provide incentives for anti-competitive behaviour would have been time consuming and the outcome uncertain. Thus, (as discussed above) Ofcom opted to accept undertakings by BT aimed at securing "real equality of access".[35]

Although Ofcom did not opt for complete structural separation, the way Openreach has been set up attempts to replicate the model (and hence the incentives) of vertical separation. As discussed above in section 3.2.2, Openreach operates separately from the rest of BT, it has its own board, management and workforce – with remuneration based on Openreach's performance and not that of BT's – and strong "Chinese walls" have been put in place to ensure that information flows between Openreach and the rest of BT are on the same basis as those between Openreach and other operators.

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34 As mentioned earlier, Ofcom found that competitors relying on access to BT's network had experienced inferior quality wholesale products, poor transactional processes, slow product development and a general lack of transparency.

35 If Ofcom finds that the undertakings are not working in providing equality of access it can still refer the case to the Competition Commission under the Enterprise Act.

The undertakings provided by BT (both at the product level and organisational level) are thus considerably stronger than just accounting separation and in addition to management and performance objectives that are separate from BT, Openreach also has its own tangible assets.

The particular strength of the UK approach is that the Undertakings remove (or at least greatly reduce) the incentives for Openreach to discriminate against other operators in favour of BT. This has allowed Ofcom to concentrate its regulation at the wholesale level and withdraw from regulation at the retail level. In other words, the functional separation provides for non-discriminatory – "real equality" – access to the economic bottleneck and makes anti-competitive behaviour such as a margin or price squeeze much more difficult. This is because the separation of assets increases transparency and reduces the scope for "creative accounting" by the vertically integrated firm.

Although the incentives to engage in discriminatory behaviour are greatly reduced in the UK approach, this does not mean that all incentives to engage in anti-competitive behaviour have been removed. Regulation, however, can now focus on other anti-competitive behaviour, such as ensuring that Openreach does not engage in excessive monopoly pricing or reduce quality.

4.1.2. Minimising Market and Regulatory failures

In the absence of market failures, market forces are regarded as the best mechanisms for achieving the efficient allocation of resources and thus maximising the benefits to consumers. Ofcom's approach to regulating the telecoms sector is one of "light touch" regulation that seeks the least intrusive approach that is commensurate to the problems involved. Given the tradeoffs between market failures and regulatory failures discussed in section 2, the UK approach of "light touch" regulation minimises the possible impact of these failures by allowing competition to work where it can and to regulate where needed and in such a way as to minimise the administrative and information costs associated with that regulation.

Although Ofcom did not go for the option of vertical separation, it felt that the undertakings proposed by BT could give real equality of access.[36] This allows Ofcom to concentrate its regulation on the areas of the true economic bottlenecks and minimises the risks associated with regulatory failure. Concentrating regulation on the areas of the economic bottleneck has also allowed Ofcom to roll back regulation in many areas and allows market forces to act as the mechanism for achieving the optimal allocation of resources. It is likely that the continuation of current trends will mean that regulation can continue to be rolled back and greater reliance can be made on general competition policy.

4.1.3. Informational asymmetries

As mentioned in section 2.2.3 above, the regulatory burden can be quite high under vertical integration due to the presence of significant informational asymmetries that the regulator faces vis-à-vis the regulated firm. The undertakings given by BT effectively act to mimic the incentives under vertical separation and thus increase transparency and reduce informational asymmetries, making Ofcom's task more straightforward.

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[36] Telecommunications statement: http://www.ofcom.org.uk/consult/condocs/telecoms_p2/statement/

By concentrating regulation on the economic bottlenecks and placing these assets within Openreach, the informational burden on Ofcom is reduced. This is because the area over which regulatory oversight is needed is restricted and in many areas market forces can act as an effective surrogate to regulation. In addition, although the need to regulate the network (economic bottleneck) activities remains, the ability (and incentive) of BT to engage in cross-subsidisation is removed. Ofcom therefore does not need to worry about the implicit transfer prices charged by Openreach for inputs supplied to BT since products are now offered to BT and all other providers on an "equivalence of inputs" basis (see discussion in section 3.2 above).

4.1.4. Incentives for Investment

Ofcom's role as a regulator is not to promote investment but to ensure that market failure or regulation does not result in sub-optimal levels of investment. As mentioned in section 3.1.2.4, Ofcom's regulatory approach could disincentivise investment if it were:[37]

- To provide insufficient certainty regarding its future approach to regulating new investments;
- To fail to allow efficient investment by competitors by not providing them with access to parts of the network where there are economic bottlenecks; and
- Not to allow investors to earn returns that reflect the risks faced at the time the investments were made.

The UK approach puts in place equality of access to parts of the network which are enduring economic bottlenecks and is thus designed to provide operators with efficient incentives to invest in those parts of the network where infrastructure-based competition is sustainable. This is because the UK regulatory approach removes the incentives for Openreach to leverage its market power in the network and engage in anti-competitive behaviour in those parts of the market that are competitive. This increases incentives for investments by other operators in those parts of the network were competition is sustainable since they need not worry about discriminatory behaviour.

However, if regulation of the economic bottle neck is not effective and Openreach is able to engage in excessive pricing then investment incentives in the sector overall will be reduced due to suppressed demand. Ofcom's regulatory approach in this regard is to allow a lower cost of capital on BT's copper access assets since they constitute a *low risk activity because they represent an enduring economic bottleneck*.[38] This approach ensures that competitors are provided with a "fair" pricing regime for using BT's access network.[39]

While the UK approach provides incentives for investment at the deepest level of infrastructure where competition is sustainable, an important and as yet still unresolved issue

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37 Final statement, paragraph 6.2.

38 Final statement, paragraph 6.7.

39 Ofcom, A new regulatory approach for fixed telecommunications: http://www.ofcom.org.uk/media/news/2005/06/nr_20050623.

concerns Ofcom's regulatory approach to investment in next generation access networks where effective competition is unlikely to be sustainable.

4.2. Qualitative Assessment of the UK Approach

This section discusses Ofcom's recent evaluation of the impact of the Strategic Review of Telecoms and the Undertakings given by BT.[40] There are three broad areas which Ofcom considered in its evaluation. In particular:

- have the Undertakings been effectively implemented;
- have the Undertakings helped to deliver more effective and sustainable competition; and
- what has been the impact on consumers?[41]

4.2.1. Implementation of the Undertakings

Ofcom considered the Undertakings to be the key to delivering equality of access. Effective implementation therefore requires that BT meet the obligations it gave in the Undertakings not just in terms of meeting the milestones laid out in the Undertakings but also that BT should deliver the broader intention of the Undertakings to achieve equality of access, particularly through appropriate organisational behaviour. Ofcom in its evaluation finds that

- BT has met a key element of the Undertaking through the establishment of Openreach, which was launched on time and achieved one of the biggest ever reorganisations of BT within a tight timescale.[42]
- In general Ofcom and communications providers are positive about Openreach's management.[43] While the actual implementation has raised a number of issues, Ofcom finds that most initial problems have been resolved or there is a process to achieve resolution.[44]
- Chinese walls have been put in place, although there are some concerns about whether these "walls" are effective and can address concerns over potential discrimination. BT has launched an equivalence of management platform (EMP) to interface with other providers and other parts of BT on an equivalence basis. BT is also separating its Management Information Systems (MIS) such that these systems run separately for Openreach and the rest of BT, and this process of separation is still ongoing.[45]

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[40] Ofcom, "Evaluating the impact of the Telecoms Review: An interim report one year on", 18 October 2006. Available online at: http://www.ofcom.org.uk/telecoms/btundertakings/impact1006/impact1006.pdf.

[41] Evaluation, paragraph 1.10.

[42] Evaluation, paragraph 3.10.

[43] Evaluation, paragraphs 3.6 and 3.15

[44] For example, some communications providers raised concerns over the time take to appoint account managers. Evaluation, paragraphs 3.3 and 3.12.

[45] Evaluation, paragraph 3.17

- Ofcom found that while other communications providers often get a different service level to BT itself, this service is not systematically better or worse than that provide to BT. Ofcom found that service performance over a range of wholesale products has at times been poor. However, that this also affects BT's downstream divisions, as well as other communications provides and, therefore, BT has an incentive, as a result of equality of access, to address these issues.[46]

The complexity of the changes inevitably leads to teething problems. However, in summary Ofcom finds that BT has shown itself committed to the delivery of the Undertaking and has expended an enormous amount of energy and resources in implementing them.[47] These views were also expressed by industry participants at a recent seminar held at DentonWildeSapte, where operators expressed the view that BT was committed to delivering on its Undertakings and that after a number of teething problems things were now improving.[48] A number of operators also expressed the view (e.g. Sky) that they were being treated on an "equal" basis.

4.2.2. Promoting Effective and Sustainable Competition

Telecoms companies can compete with each other using their own end-to-end networks that stretch all the way to the consumer. Or they can compete using some of their own infrastructure and some of another company's infrastructure. Finally, they can compete as service providers, using another operator to provide their entire transmission infrastructure. If regulation tries to promote all of these kinds of competition in equal measure, it is likely to be unsuccessful. As already mentioned, Ofcom's regulatory approach is founded on the view that competition based on infrastructure tends to give the greatest benefits and therefore Ofcom's regulatory approach is to "*promote competition at the deepest level of infrastructure where it will be efficient and sustainable; and create scope for market entry that could, over time, remove economic bottlenecks."*[49] The Undertakings therefore were aimed at *"delivering equality of access to BT's enduring economic bottlenecks in order to provide a platform for effective and sustainable deep level infrastructure competition, […]".*[50]

For the most part this approach has been successful and has brought greater competition and allowed Ofcom to roll back its regulation. One year after the SRT and the implementation of the undertakings by BT, Ofcom found that its approach has resulted in increasing infrastructure-based competition in broadband and fixed voice markets and greater choice and improved pricing for consumers.[51] In particular:

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46 Evaluation, paragraph 1.5.

47 While there have been some problems, in general Ofcom has found BT to be committed to the delivery of the undertakings and that they have been effectively been implemented (see Ofcom, "Evaluating the impact of the Telecoms Review, 18 October 2006).

48 BT Openreach: One Year On, held at DentonWildeSapte, 9 November 2006.

49 Final statement, paragraphs 4.3 and 4.4.

50 Ofcom, "Evaluating the impact of the Telecoms Review", paragraph 1.1, 18 October 2006. Available online: http://www.ofcom.org.uk/telecoms/btundertakings/impact1006/impact1006.pdf

51 Ofcom, "Evaluating the impact of the Telecoms Review", paragraph 1.8, 18 October 2006. Available online: http://www.ofcom.org.uk/telecoms/btundertakings/impact1006/impact1006.pdf

- One indicator of the degree of competition in the market is the take-up of wholesale products. Take-up of LLU has taken off and appears to be on track to reach 1.5 million lines in the first few months of 2007. In addition, investment in LLU has increased with a number of large scale operators investing in exchanges. The SRT aimed to encourage investment deep in the network, and in this context Ofcom finds that the take-up of LLU is a particularly important indicator of this progress.[52]
- However, Ofcom finds that while there is investment in LLU, there is less evidence of investment in fibre based products. Access products such as Wholesale Extension Service Access (WESA), which would require investment deep in the network, have not yet been developed, although there has been some progress recently toward product development.[53]

While Ofcom's approach of focusing its regulation on the economic bottlenecks encourages competitive entry and the associated investments by competitors in downstream markets, it may result in the delayed roll-out of next generation access technologies such as FTTH that reinforce these bottlenecks. The UK is not witnessing the same level of investment in NGA networks as seen in some other countries like the US, Japan, Korea and the Netherlands. Investments in NGA networks combine high risks and a possible lack of competition and present a particular challenge for Ofcom's approach to regulation. There may be conflicts between encouraging efficient investments by BT in NGA networks (as opposed to investment in core networks), and promoting competition and efficient investments by competitors.

Prior to beginning a formal consultation, Ofcom recently issued a public discussion document in order to consider the various options regarding the appropriate regulatory regime for next generation access networks.[54] It is highly likely that Ofcom would regulate any new investments in next generation access (NGA) networks since these investments reinforce the natural monopoly characteristics of the existing network. However, on the one hand, *ex-post* regulation of NGA networks may disincentivise *ex-ante* investment in these networks. On the other hand, if Ofcom were to seek to promote competition in parts of the network where it is either inefficient or unsustainable, there is a danger that any competition becomes dependent on regulation for its survival, and may also represent a waste of resources. In addition, if some level of competition is sustainable but is insufficient to constitute effective competition, the full benefits of competition to consumers, in terms of lower prices, greater choice and faster innovation, are unlikely to be forthcoming.

4.2.3. Impact on Consumers

In its evaluation Ofcom states that it is too soon for the SRT to have has a significant impact on consumers, nevertheless it highlighted a number of areas in which there have been significant developments.[55] In particular, Ofcom found that:

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52 Evaluation, paragraphs 1.21, 4.3 and 4.18.

53 Evaluation, paragraph 4.20.

54 Ofcom, "Regulatory challenges posed by next generation access networks", 23 November, 2006.

55

- Increasing competition, arising from the increased take-up of wholesale products (including CPS, WLR, IPStream, LLU) has contributed to the continued decline in prices for fixed services.[56]
- Reflecting increased investments in LLU by other communications providers, operators are offering bundled packages for voice and broadband at particularly competitive prices, and there are an increasing number of higher bandwidth services, allowing operators to differentiate themselves on the basis of speed.[57]

A key aim of the SRT and functional separation of BT's economic bottlenecks was to focus regulation on network bottlenecks and allow a reduction in regulation elsewhere. The increase in competition driven by LLU and the availability of a "fit-for-purpose" WLR product has allowed Ofcom to deregulate in a number of areas. In particular:

- retail price controls that limit increases in the price of line rental and calls have been removed; and
- Ofcom has also removed ex-ante regulation in all wholesale international services markets.[58]

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56 Ofcom states that an important contribution to falling prices has been strong competition among operators over the past couple of years. Consumers can now choose between a multitude of fixed-line call operators, mobile service providers and broadband providers. Evaluation, paragraphs 5.8 and 5.17.

57 Evaluation, paragraphs 5.9 and 5.10.

58 Evaluation, paragraph 4.31.

5. Relevance to the Dutch Market

This section looks at the relevance of the UK approach to the Dutch situation, taking account of differences between the UK and the Netherlands, in particular:

- The extent of facilities-based competition such as cable, and;
- The investment decisions of BT and KPN relating to their next generation core and access networks

We start this section with an overview of these differences in the UK and Dutch fixed communications markets and then follow with a section on the applicability of the UK approach to the Netherlands. Finally, we end with a discussion of some of the issues that would need to be addressed before determining whether or not to apply an Openreach solution to the Netherlands.

5.1. Comparison of the UK Communications Market with the Dutch Communications Market

An issue that is addressed in the recent 2006 review of the EU telecom rules is how the current framework has contributed to promoting investment and enhancing the move from service-based competition to infrastructure-based competition, particularly with regard to facilitating convergence and the take up of broadband. The current EU rules are aimed at giving competitors access to the network of the dominant incumbent, with the view that new entrants will start generating revenue, climb up the investment ladder and start to roll out their own infrastructures.[59]

One of the findings of the EU review is that the most significant factor enabling broadband growth is the existence of alternative infrastructures, in particular cable. The European Commission has found that "in all six Member States which have exceeded 20% broadband penetration (including the Netherlands), cable has an important market share and this is regardless of the effectiveness of regulation".[60] Another finding is that "regulation does play a very important role in the investment ladder, especially in Member States with no or weak alternative infrastructures".[61]

One of the main differences between the UK market and the Dutch market is that in the Netherlands there is an extensive regional cable television network as well as the traditional PSTN. This makes the Dutch market one of the few European markets with strong inter-platform competition. Figure 5.1 provides a graphical representation of infrastructure based competition in the UK and in the Netherlands.

Figure 5.1 illustrates that while proportionally more retail broadband lines are provided by KPN itself, a higher proportion of retail broadband lines are also provided over networks

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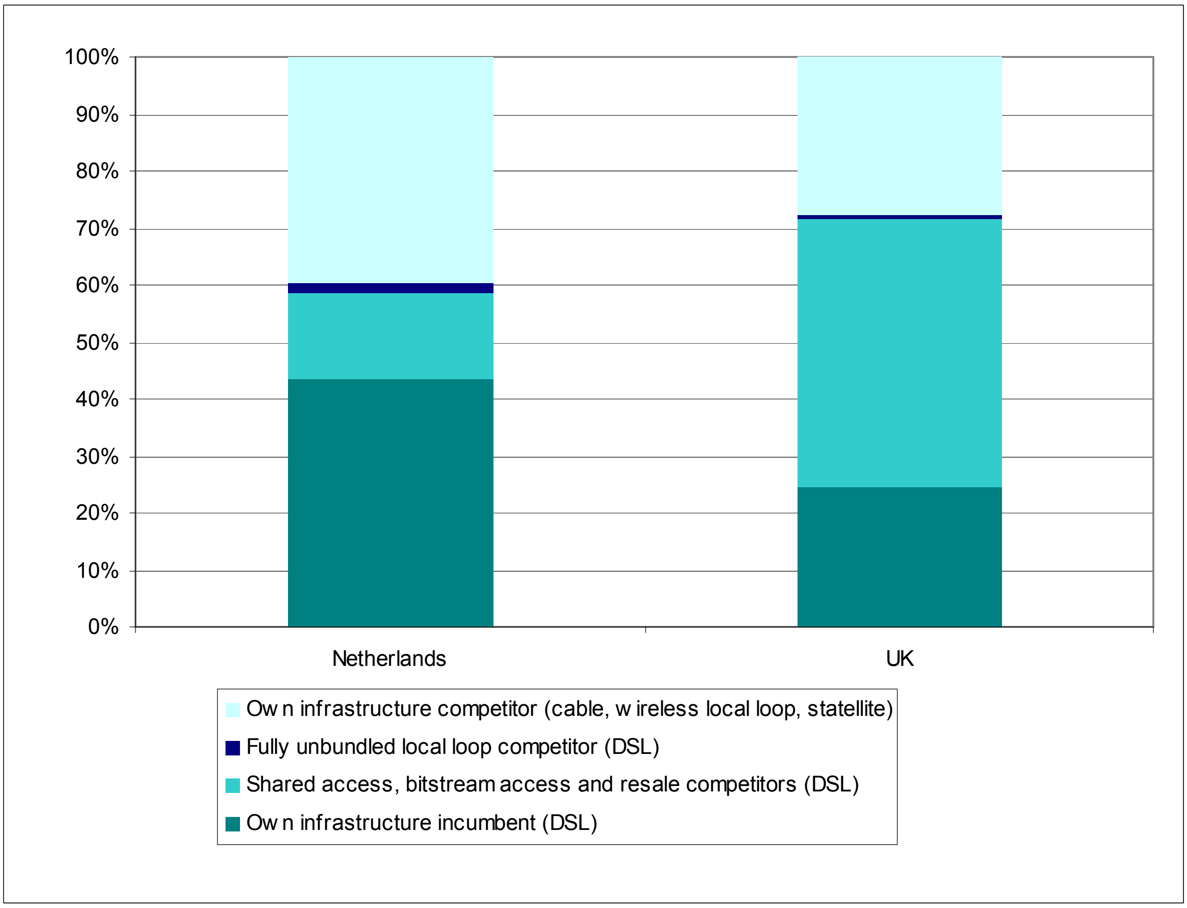
59 Speech by Viviane Reding, "From Service Competition to Infrastructure Competition: the Policy Options Now on the Table", SPEECH/06/697, 16 November 2006.

60 Ibid.

61 Ibid.

competing with the KPN. In the UK, proportionately more retail providers make use of BT's PSTN network than those in the Netherlands.

Figure 5.1
Investment Ladder in Europe
Proportion of Broadband Retail Lines Provided over Incumbent and Alternative Networks



Source: European Commission, 11th Implementation Report

In January 2006, the five leading cable operators – UPC, Casema, Multikable, Essent and CaiW – announced plans to interconnect their IP telephony networks. Between them, the cable operators cover 95% of the country and interconnecting would thereby eliminate the need for them to route calls over the PSTN.[62] IP telephony and VoB (voice over broadband) have been growing rapidly over the last two years which poses an increasing threat to KPN. In addition, there has been an increase in the number of "mobile only" homes as users start to substitute away from fixed line services.

Historically, telecommunications regulation in the Netherlands has focused on KPN's PSTN. However, following complaints from KPN, the Dutch government is currently considering the most appropriate way of introducing symmetric regulation for cable and PSTN network

62 Following the merger of NTL and Telewest, there is only one cable company in the UK.

operators to ensure that cable operators share their networks with rivals in a similar way to local loop unbundling (LLU).[63] This is in contrast to the UK, where cable operators are not required to offer access to competitors (although NTL does voluntarily offer access – see below).

KPN is planning to switch to an all-IP network before year 2010[64] and has announced that it would use fibre to connect homes on new housing developments. KPN plans to deploy fibre-to-the-cabinet, and is exploring the options for cost reduction from the removal of local exchanges.[65] The investment required for the upgrade of its core and access networks is EUR 1.5 billion.

KPN's move to an all-IP network will lead to the phasing out of main distribution frame (MDF) access to wholesale operators wishing to compete with KPN in the retail market. OPTA states that the obligation on KPN to provide MDF access has been "extremely important" to the existence of competition in the DSL market. At present, DSL providers using KPN's access network have not rolled out their networks any further than the MDF. Therefore, if KPN phases out MDF access, there will be forced migration and it will be necessary for competitors to either invest in their own infrastructure in order to interconnect closer to the end-user or to increase their dependence on KPN by interconnecting less deeply into KPN's network (i.e. to use more of KPN's network).[66] However, rolling out further network is not a viable option at present although OPTA does suggest some ways in which this could be facilitated.[67]

In the United Kingdom, BT remains the main provider of both wholesale and retail broadband access. Wholesale broadband is also available over fixed wireless access (FWA), satellite, BT's unbundled local loops and cable networks. Although cable operators represent an increasing threat to BT's market share, cable networks such as NTL and Telewest (now one company) have limited population coverage – around half of UK households.[68] Nevertheless, as well as providing broadband access to its own customers, NTL also offers access to its network platform on a resale basis to retail competitors such as AOL, Tesco.net and Virgin.Net.[69]

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63 p56 Ofcom International Communications Market Review, November 2006

64 See "KPN is planning to upgrade to all IP network", *Telecom Paper*, 29 November 2005.

65 Ofcom International Communications Market Review, November 2006

66 Part of rival operators' assets may become stranded in this case.

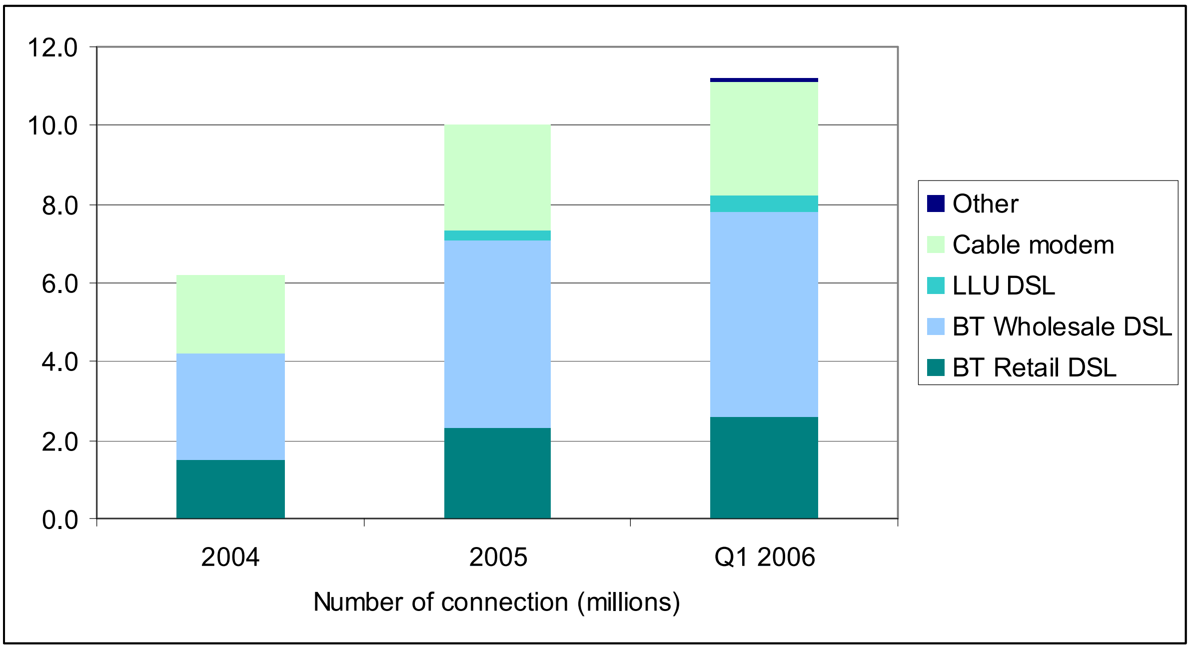
67 "KPN's Next Generation Network: All-IP", Position Paper OPTA/BO/2006/202771, 3 October 2006

68 See ntl's mediacentre online: http://www.ntl.com/mediacentre/thecompany

69 See ntl's mediacentre online: http://www.ntl.com/mediacentre/thecompany/

As Figure 5.2 illustrates, there has been increasing competition in the broadband market from network operators, notably from competitors using BT's Wholesale DSL.

Figure 5.2
Broadband Connections



Source: Ofcom, Market Review 2006, 10 August 2006

BT, Cable and Wireless, Thus and NTL are deploying next generation core networks in the UK.[70] BT's focus is on deploying its all-IP next generation network (21CN). This will enable BT's customers to enjoy access speeds as fast as 24Mb/s.[71] However, in contrast to KPN, BT at present has no current plans to deploy fibre to the home (FTTH) or fibre to the curb (FTTC) on a nationwide basis.[72] In other words, unlike KPN, BT is focussing its investments on its next generation core network with limited investment in its next generation access network. Ofcom outlines some possible reasons why BT has not yet announced large scale plans to invest in a next generation access network (fibre to the home or fibre to the cabinet) including:

- BT has a higher capacity copper access network than most of its European counterparts; and
- the pay TV market over other platforms in the UK is relatively mature and therefore there is likely to be lower demand for IPTV

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70 Source: Ofcom International Communications Market Review, 2006

71 "BT strikes back in broadband markets", 14 November 2006, Tarifica Alert, Issue 485

72 Source: "DigiWorld 2006: BT Rules Out FTTH; ADSL2+ to meet foreseeable needs", Ken Wieland, Telecommunications International, 16 November 2006

- BT may face higher costs in building a next generation access network because of more stringent planning regulations.[73]

While these may be possible explanations for BT's decision to invest in its core network as opposed to NGA networks, Ofcom is concerned that the UK is lagging behind other countries in its investment in this area. As discussed above in Section 4, these concerns have recently led Ofcom to issue a public discussion document in order to consider the various regulatory options for NGA networks and their incentives for investment.

5.2. Applying the UK Approach in the Netherlands

The applicability of the UK approach in the Netherlands will depend on a number of factors including:

- how the rollout of KPN's next generation network will affect the definition of the market;
- how the rollout of KPN's NGN will affect competition in that market, to what extent that market will remain a competitive bottleneck and the effect on competition in related downstream markets (i.e. the need and the role of regulation); and
- the effect regulation or regulatory measures will have on investment incentives.

In addition, the effectiveness of applying a UK approach in the Netherlands will depend upon the incentives that the incumbent (i.e. KPN) would have to implement "real" equality of access, which will depend upon the availability in the Netherlands of credible regulatory threats that underpin this solution in the UK.

5.2.1. Identifying the relevant market(s)

Currently, national regulatory authorities must define their communications markets on the basis of competition law – starting from a list of 18 markets in the EC's 2003 Recommendation on Relevant Markets – and assess whether these markets are characterised by the presence of at least one operator with significant market power (SMP). If the markets are found to be non-competitive, then they are subject to *ex-ante* regulation in order to stimulate competition.

As KPN's proposed plans currently stand, MDF access will be phased out as it rolls out its next generation All-IP access network. This will change the way in which competitors are able to make use of KPN's network and may thereby change the definition of the relevant market. Nevertheless, the current European Regulatory Framework calls for market definitions to be technology neutral (in other words, based on the products and services rather than on the platform over which they are provided). As the European Commission states, "the use of more efficient technology to provide existing regulated services does not alter the

[73] "Regulatory challenges posed by next generation access networks", Ofcom public discussion document, 23 November 2006, Available online: http://www.ofcom.org.uk/research/telecoms/reports/nga/nga.pdf

justification for that regulation; the move to NGN does not provide an opportunity to roll back regulation on existing services if the competitive conditions have not changed."[74]

In addition, if the rollout of new networks permits KPN to offer new products and services that were not available over its PSTN or over other existing networks, then the relevant market may be different and therefore the regulation applied to the PSTN may not be as applicable. In particular, it is possible that these new products and services form an emerging market and therefore should not be subject to the same regulatory obligations as in existing markets.

It will also be important to determine what the relevant substitutes are in these existing and new markets. Next generation access can be provided with various different technologies including: fibre, cable, terrestrial fixed or mobile wireless services, satellite or even further upgrades to existing copper-based networks. For example, competitors could roll out competing platforms (such as fixed wireless access) or use existing ducts and trenches (such as those used by electricity, gas or water). This has happened in France where Illiad announced plans to use sewers in Paris to deploy FTTH.[75]

In the Netherlands, cable networks are becoming closer substitutes to KPN's network as their coverage increases. This is becoming increasingly true now that the five leading cable operators have announced plans to interconnect their IP networks (as discussed in Section 5.1 above). However, while the cable operators' networks provides for infrastructure based competition, the competition that evolves, while sustainable, may not be effective.[76]

As mentioned above, KPN's phased out MDF access will force migration to the new platform and it will be necessary for competitors to either invest in their own infrastructure in order to interconnect closer to the end-user or to increase their dependence on KPN by using more of KPN's network. OPTA notes in its position paper that alternative DSL providers have not continued their efforts to roll out their networks.[77] Thus, the roll-out of KPN's All-IP network is likely to reinforce the existing natural monopoly characteristics of the current copper access network. In this case, the idea that these enduring economic bottlenecks will disappear anytime soon, and thus that regulation can be removed, is misplaced. However, new obligations (such as SDF backhaul that provides access from the street cabinet to the metro core locations) will need to be based on a new market analysis.

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74 Public consultation on a draft European Commission recommendation, Commission staff working document on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and the Council on a common regulatory framework for electronic communication networks and services (second edition), Brussels, 28 June 2006, p16
Available online:
http://europa.eu.int/information_society/policy/ecomm/doc/info_centre/public_consult/review/recommendation_final.pdf

75 "Regulatory challenges posed by next generation access networks", Ofcom public discussion document, 23 November 2006

76 In this case the market configuration in access networks would constitute a duopoly and competition, while sustainable, is unlikely to be very effective.

77 OPTA's Position Paper (PP), KPN's Next Generation Network: All-IP, OPTA/BO/2006/202771, 3 October 2006, page 8.

In its Position Paper on KPN's Next Generation Network (All-IP), OPTA indicated that it intends to re-initiate its market analyses, and in particular Market 11 (unbundled access) and Market 12 (wholesale broadband access). As part of the new market analyses, OPTA will determine "(i) which obligations are appropriate in the current situation where MDF access is still possible; (ii) which obligations are apply during the phase-out process and (iii) which obligations are appropriate given KPN's new network architecture in which MDF access will no longer be possible."[78]

5.2.2. Determining the level of competition in the market and the optimal regulatory approach

The design of regulation will depend on the issues that regulation is required to address. This will depend largely on the degree of competition in the relevant markets and hence the extent to which KPN would be able to leverage its dominance in related downstream markets. Once the relevant market(s) has been appropriately defined, it will be necessary to determine whether the access network remains a competitive bottleneck, in other words, to what extent current and prospective competition is and will be effective. The cable operators' networks may provide effective competition once their IP telephony networks are interconnected. Recent legislation being considered by the Dutch government to regulate access to the cable networks in a similar way to KPN may also help to make the access market more competitive (see Section 5.1).[79] Other substitutes may include new fixed wireless services, satellite, mobile services or other operators' fibre and copper-based networks.

Even if there are few competitors in the access market, KPN's dominance may not warrant as strict regulation if its investment in NGA is contestable. This means that if it is possible for an operator other than the incumbent to make the investment, then there may be some advantages to the market from this competition. However, given KPN's incumbency advantages, and its deployment of its All-IP network is likely to only reinforce these advantages, it is unlikely that KPN's investment in the network is contestable in every geographic area. In addition, KPN enjoys significant economies of scale and sunk costs which can represent a barrier to entry for prospective entrants.

KPN currently has an existing obligation to offer unbundled access to its local loop (ULL Market decision), and OPTA notes that KPN's All-IP will affect alternative DSL providers who currently use MDF access to utilise KPN's copper wire access network and who need this service in order to be able to compete in a number of wholesale and retail markets. In this respect, OPTA's position paper states that "the most direct and appropriate measure that adequately addresses this […] appears to be imposing an obligation on KPN to offer […] SDF backhaul."[80]

Regulation should be designed to create stable and enduring competition. To this end, OPTA would like to see new entrants' dependence on KPN diminish over time. Like Ofcom, OPTA's objective is to promote competition at the deepest level of infrastructure that will be

78 OPTA, PP, page 9.

79 This competitive force is weaker in the UK largely because cable operators do not have as extensive coverage as BT and because access to cable networks is not currently mandated – either on a resale or a more unbundled basis.

80 OPTA Position Paper, page 15.

efficient and sustainable and to reduce regulation where possible. In this respect, OPTA states in its position paper that "obligations that promote infrastructure competition are preferred over those that promote service competition or obligations that protect end-users.[81]

5.2.3. The impact on investment incentives

The role of economic regulation in communications markets is to stimulate competition and to ensure that the most efficient outcome is reached from both a static and dynamic perspective. Dynamic efficiency requires there to be efficient investment in innovation. Therefore, regulation should not unduly distort the investment incentives provided by the market. The incentive to invest in next generation access networks comes partly from the cost savings that may be realised from upgrading the network and partly from incumbent operators' need to find new revenue streams because traditional voice revenues are in decline.

A regulator – because of informational asymmetries – is not as well placed as an operator to know what the most efficient investments would be and when they should be made. In addition, regulation – if not carefully designed – may create uncertainty which can act as a disincentive to investment. Nevertheless, investment decisions (in this case, by competitors) should not be distorted by anti-competitive behaviour (in this case, potentially by KPN or BT).

Like Ofcom, OPTA's objective is to promote competition at the deepest level of infrastructure that will be efficient and sustainable and to reduce regulation where possible. In this respect, OPTA would like that competitors of KPN who are dependent on regulated access prepare for KPN's NGA network so as to ensure that they develop sustainable business cases in which their dependence on KPN disappears over time.[82] However, the sustainable business case for alternative communications providers may be to use more of KPN's network rather than rolling out their own networks to the sub-loop. It is likely that NGA networks will reinforce the existing natural monopoly characteristics of the current copper local loop. Regulation that attempts to promote infrastructure investment to the street cabinet so as to reduce dependence on KPN, and thus roll back regulation, may be encouraging socially wasteful duplicative investments. This needs to be weighted against the need to have to rely more on regulation (with all the associated risks of regulatory failure) if alternative providers rely more on KPN's network.

The extent to which regulation is needed will be determined by the market analysis that OPTA intends to carry out. However, it is important that regulation should be neutral in that it should leave it up to market players to decide whether to roll out to the sub-loop or rely more on KPN's network.

5.2.4. Regulatory powers

While not perfect, many market participants believe that the Chinese walls and arm's length relationship of Openreach with the rest of BT is providing real equality of access. The key factors in achieving this are:

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[81] OPTA, Position Paper, page 9.

[82] OPTA Position Paper, page 5.

- the organisational changes that have been put in place so that Openreach's management has an incentive to provide equal access since its remuneration is based on Openreach's performance and not that of BT;
- an EAB that oversees whether or not Openreach is living up to its obligations; and
- the inevitable threat of a reference to the Competition Commission, and thus possible structural separation, if Ofcom found that real equality of access was still not being achieved.

It is this last point – i.e. the threat of a reference to the Competition Commission – that is a key factor underpinning Openreach's commitment to delivering "real" equality of access.

Ofcom in accepting the Undertakings made it clear that it could still refer BT to the Competition Commission under the Enterprise Act if Ofcom believed that the inherent market structure issues that provide incentives for BT to engage in anti-competitive behaviour were not being resolved. The Competition Commission has the power to implement a structural solution if it finds that competition is not working in a market and that structural issues are the underlying cause of these problems. The threat of vertical separation in the UK is therefore a credible one and is important in providing the incentives for BT and Openreach to implement "real" equality of access. Neither OPTA nor the Nma, outside the context of a merger investigation, have the powers to implement a structural separation on the market.[83]

In the absence of such powers, while the UK approach will help to solve many of the competition problems that exist – i.e. functional separation increases transparency, concentrates regulation on the economic bottlenecks and eases the task of the regulator – it is unlikely to be as effective as in the UK. This is because in the absence of a credible threat, strict "Chinese walls" are difficult to enforce and a vertically integrated incumbent will naturally tend towards non-compliance and will continue to have incentives to "stretch the rules to their limit".

5.3. An Openreach solution for the Netherlands?

While Ofcom's stated objective is to promote competition at the deepest level of infrastructure that will be efficient and sustainable, in practice the UK approach has promoted competition over BT's infrastructure (intra-infra) instead of competition between infrastructures (inter-infra). The main disadvantage of this approach is the possible disincentives this approach has for investments in NGA networks. OPTA in its position paper notes that KPN has an existing obligation to offer unbundled access to its access network, and it is likely that its new market analysis will set out similar obligations concerning KPN's All-IP network. This is also the likely approach that Ofcom will take regarding BT's investments in its 21CN.

However, as noted in Section 5.1 above, one of the main differences between the UK and the Netherlands is the extent of facilities based competition from cable companies, which is

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83 In its workshop held in The Hague on 13 December 2006, OPTA stated that it did not have the powers to implement a structural separation and that the Nma could only implement structural remedies in the context of a merger case.

much more extensive in the Netherlands. In response to this competition from cable companies, KPN is already rolling-out its NGA All-IP network.[84] Therefore, unlike the situation in the UK, the concern that regulatory obligations may disincentivise investment in NGA networks is not an issue in the Netherlands.

In the Netherlands, an Openreach solution would go a long way to solving the competition problems that arise from vertical integration. It would allow OPTA to concentrate its regulation on the areas of economic bottlenecks, thus reducing the area over which strict regulatory oversight is necessary (minimising the extent of regulatory failure), and to roll back regulation (particularly at the retail level) as competition in the market develops. The organisational changes that underpin functional separation are considerably stronger than accounting separation (e.g. as mentioned above, Openreach has its own assets). Thus, anti-competitive practices such as price or margin squeeze become much easier to detect and the need for *ex-ante* regulation is reduced and *ex-post* competition law can be relied upon to address these issues.

The EC is currently revising its 2003 Recommendation on Relevant Markets and is considering removing retail markets from the list of markets where *ex ante* regulation is appropriate.[85] The aim is to focus regulation on the areas of key economic bottlenecks. The EC is also looking into the option of extending the internal market-control that is already exercised by the Commission with regard to market analyses to remedies. In particular, the Commission is considering adding "functional separation" (i.e. an Openreach solution) as a possible remedy under the EU telecom rules.[86]

However, in a recent speech, Commissioner Viviane Reding stated that:[87]

> *"...functional separation, which is a specific form of separation [...], could indeed serve to make competition more effective in a service-based competition environment where infrastructure-based competition is not expected to develop in a reasonable period. It may be a useful remedy in specific cases. It is certainly not a panacea. A cost benefit analysis therefore has to be made on a case by case basis, before such a remedy is imposed."*

In the UK, where infrastructure-based competition is not expected to develop in the near future, functional separation (i.e. Openreach) is clearly a proportional solution. The Netherlands, however, has alternative infrastructure from cable companies. Therefore, before determining whether or not an Openreach solution should be applied in the Netherlands and whether it is a proportional solution to competition problems in the Dutch telecoms market, an analysis of competition in the relevant market would need to be undertaken. In particular,

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[84] In its position paper, OPTA points out that KPN has already installed a considerable part of the fibre network between the street cabinets and the metro core locations

[85] The final decisions are expected to be made sometime in the spring of this year. The EC is also looking into the option of giving national regulatory authorities the possibility of exceptionally adding retail markets to the list of relevant markets if this is justified by national competitive circumstances (see Vivian Reding's speech, "From Service Competition to Infrastructure Competition: the Policy Options Now on the Table", 16 November 2006).

[86] Ibid.

[87] Ibid.

the question of whether or not the cable companies' interconnected IP telephony networks can be relied upon to provide sustainable and effective competition would need to be answered.

If the result of a market analysis found that infrastructure-based competition was not effective and not expected to develop in a reasonable period, then it would be reasonable to apply an Openreach type solution. As discussed above, functional separation would increase transparency and ease the regulatory burden. However, for the reasons discussed in Section 5.2.4, in the absence of a credible regulatory threat of structural separation, this solution is unlikely to be as effective as in the UK.

6. Conclusions

Access by competitors to parts of BT's network where effective competition is not sustainable was a central focus of Ofcom's SRT. While competition has increased in the market, particularly in the provision of services, Ofcom found that in the UK there is limited substitution for fixed telecoms networks and that BT's market position derives from its ownership of the local loop. Therefore, Ofcom found that the case for sector-specific regulation remained and, given the economic bottlenecks that exist in parts of the network, it would be inappropriate for it to forebear from all such regulation.

The UK regulatory approach aims at allowing competition to work where it can and to regulate where needed and in such a way as to minimise the administrative and information costs associated with that regulation. One of Ofcom's stated principles is that of "light touch" regulation that seeks the least intrusive approach that is commensurate to the problems involved. The undertakings implemented by BT in lieu of a reference to the Competition Commission allow Ofcom to focus its regulation on the enduring economic bottlenecks and have resulted in deregulation of those areas where market forces can be left to act as an effective surrogate to regulation.

In spite of initial teething problems, which are to be expected, the UK approach of functional separation of the assets that constitute the enduring economic bottlenecks has to a large extent been working. By focusing on equality of access to parts of the network which are enduring economic bottlenecks, the UK approach provides operators with incentives to invest in those parts of the network where infrastructure-based competition is sustainable. One year after the implementation of the undertakings, Ofcom found that the undertakings have led to increased infrastructure based competition – take-up of LLU and investment by other communications providers has increased significantly – and has resulted in greater choice and better pricing for consumers.

However, the UK is not witnessing the same level of investment in next generation access networks as seen in some other countries like the US, Japan, Korea and the Netherlands. Next generation access assets are likely to be associated with enduring economic bottleneck. This combination of high risks and a possible lack of competition present a particular challenge for Ofcom's approach to regulation. There may be conflicts between encouraging efficient investments by BT, and promoting competition and efficient investments by competitors and Ofcom's approach to regulation in this area is still to be determined. However, the concern as to whether functional separation may disincentivise investment in NGA networks is not an issue in the Netherlands, since KPN has already begun to role out its all IP network.

Another key difference between the UK and Dutch situation is the existence of an extensive alternative infrastructure from cable companies in the Netherlands. The Netherlands therefore has the possibility to leverage this infrastructure-based competition into its regulatory approach. Whether an Openreach solution should be applied in the Netherlands and whether it would be a proportional solution, therefore, needs to be determined on an assessment of competition in the relevant market. The answer to this question will depend upon whether or not infrastructure-based competition from cable companies provides a sustainable and effective competition to KPN's network (or whether in the future it is likely to do so).

If a market assessment found that competition in the market was not effective and not expected to develop in a reasonable period, functional separation could be deemed an appropriate and proportional solution. However, one of the key factors underpinning the effectiveness of this solution in the UK, and providing the incentives for Openreach to implement real equality of access, is the ever present threat of a reference to the Competition Commission and a possible vertical separation. In the absence of such a credible regulatory threat of structural separation, functional separation is unlikely to be as effective as in the UK. Nevertheless, functional separation would have its advantages and would increase transparency, minimise the scope for anti-competitive behaviour and ease the regulatory burden.

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