



The relationship between BT profitability and charge controls

A REPORT PREPARED FOR VODAFONE

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Executive Summary

In 2013 Frontier Economics was engaged by Vodafone to assess the level of BT's profitability in regulated markets. This analysis indicated that returns were consistently over the level corresponding to the determined cost of capital for BT. Extending this analysis for a further year shows that the level of returns for regulated markets continues to be well above the determined WACC in 2013/14. This means that, in markets that Ofcom regulates, if BT had earned returns consistent with an efficient benchmark, it would have earned £11.3bn in the period 2005/06 – 2013/14. In fact over the period analysed profits were £16.7bn, £5.5bn higher than this level¹.

This report seeks to understand the causes of these excess returns and the extent to which these have occurred in markets where Ofcom has implemented charge controls. As charge controls attempt to constrain BT's ability to generate supra-normal returns it would be reasonable to expect the resulting returns in these markets to be close to the estimates of WACC used as inputs to those controls over the long run.

Setting forward looking CPI-X charge controls is inherently challenging. This is because regulators are required to forecast costs and demand for a number of years into the future. The evidence shows that the existing framework for charge controls has functioned effectively in some telecoms markets. In particular, where the future level of costs and demand can be forecast with reasonable accuracy and where other stakeholders have been able to fully engage in the setting of charge controls. In these markets, the resulting returns are close to the determined cost of capital. In such markets CPI-X type controls have provided a good balance between Ofcom's objectives in terms of allocative, productive and dynamic efficiency.

However in other markets there has been significant variation in returns and returns have tended to be above the determined cost of capital. In markets such as the Business Connectivity Market it is challenging to produce forecasts for a number of years into the future. As a result the information asymmetry between BT and other stakeholders is particularly acute. In these markets there is a risk that BT will be able to leverage the information asymmetry in order to increase its expected returns above the determined cost of capital.

Ofcom can minimise forecast errors and mitigate the information asymmetry by ensuring that the process to set the charge controls is as transparent as possible. A full ex post evaluation of outcomes can help ensure that the process in future charge controls is as robust as possible. However in some markets a high level of

¹ Figures do not sum due to rounding.

uncertainty is inherent. In these cases, Ofcom can alter the design of the charge controls by including some form of error correction mechanisms to make them more robust to the inevitable forecast errors. This would also retain the incentive benefits of a 'glide path'. This could result in prices which better reflect the underlying costs over time, increasing allocative efficiency while limiting the potential reduction in the incentive effects.

Ofcom relies on BT's fully allocated cost (FAC) methodology which underlies BT's regulatory financial statements (RFS) to determine how fixed and common costs should be recovered across the different regulated markets. Inconsistencies in setting prices against this benchmark can result in potential over-recovery of joint and common costs. This can be for different reasons.

- There are inconsistencies introduced over time in BT's FAC methodology as the allocations are subject to continual revisions by BT and there is a degree of judgement in the allocation methodology used. Ofcom has recognised that this can lead to charge controls in aggregate (i.e. across a number of services) being set above costs. Recently, Ofcom has set recently charge controls for different markets using the same base year, to ensure consistency. For future regulation, Ofcom has consulted on the BT's regulatory cost accounting framework and is planning to put in place measures to reduce the risks that subjectivity in cost allocations leads to adverse regulatory outcomes.
- Furthermore Ofcom has in some cases set charge controls to allow prices for specific products to be set above FAC for competition/demand side reasons. However, this has not been offset with prices below FAC and this has led to an over-recovery of costs.

To address the issues identified above this report makes recommendations for Ofcom in three broad areas:

1. To increase the transparency of the charge control setting process to reduce the information asymmetry;
2. Where there is high uncertainty over the future evolutions of costs, to put in place mechanisms when setting charge controls to prevent excessive variations in returns; and
3. To ensure cost allocations used to set charge controls are consistent between markets and over time

Our recommendations recognise the inherent difficulties that Ofcom faces in setting charge controls, and offer practical and proportionate ways to mitigate the potential for systematic over-recovery of costs.

1 BT profitability and charge controls

Frontier Economics was engaged by Vodafone to consider whether there was evidence that BT was systematically making returns in excess of its benchmark cost of capital in markets in which BT has significant market power (SMP). If so, Frontier has been asked to consider the implications for Ofcom's future price regulation.

The structure of this document as follows.

- Section 1 sets out the context to this report on the relationship between BT profitability and Ofcom's objectives and approach to charge controls
- Section 2 assesses how should Ofcom could overcome the information asymmetry
- Section 3 outlines how Ofcom could modify its approach to setting charge controls in the face of uncertainty; and
- Section 4 provides recommendations for ensuring correct cost recovery across markets

1.1 Introduction

Frontier's previous report published in November 2013² analysed the returns that BT had made in markets where Ofcom regulates it. In this section we update our analysis and consider the relationship between Ofcom's regulatory objectives and outcomes in markets subject to regulation.

The rest of this section is set out as follows.

- In Section 1.2 we provide an update of our analysis of the profitability of BT's regulated businesses.
- In Section 1.3, we consider Ofcom's sometimes competing objectives when setting charge controls and identifies the potential reasons which can lead regulated prices to be in excess of costs.
- In Section 1.4, we explain how allowing prices overall to be set systematically above costs is inefficient and leads to welfare losses.

² See: Frontier Economics (2013) The Profitability of BT's Regulated Services

1.2 Outcomes in BT's regulated markets

As we explained in our previous report to Vodafone, BT has systematically made high returns in the markets where Ofcom regulates it.

Under the EU framework, Ofcom can impose ex ante regulation on operators which have been found to have SMP in defined relevant markets. In a number of markets where BT operates, Ofcom has found that BT has SMP. As a result Ofcom has imposed a number of ex ante remedies including price regulation³ and requirements to produce accounting information on the services within these markets.

The accounting information is published as part of BT's Regulatory Financial Statements (RFS).⁴ We have defined the scope of BT's regulated services to be those services in markets where BT has been designated to have SMP and for which BT is required to publish information in the RFS. The RFS are published on an annual basis and are primarily intended to provide transparency to its stakeholders (including Ofcom and BT's customers). The RFS are also intended to provide confidence that BT is complying with its SMP obligations (including cost orientation and non-discrimination obligations).

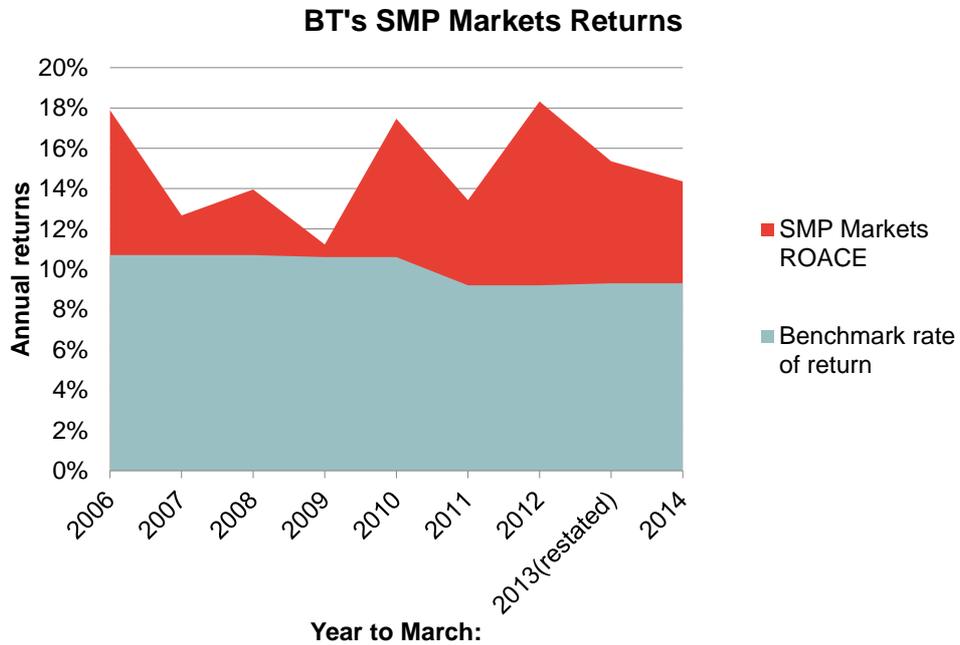
Charge controls are set by Ofcom such that prices are expected to converge to costs, including to a return on average capital employed (ROACE) equal to the determined cost of capital. Periodically Ofcom determines the appropriate cost of capital for given charge controls as a weighted average cost of capital (WACC). This cost of capital therefore provides a good benchmark of the return that BT's shareholders require.

Our previous report found that BT has made returns in excess of regulated rates of return totalling £4.9bn over the period 2005/6 to 2012/13 across markets which Ofcom had concluded that BT held market power. As can be seen in **Figure 1** below we have updated that analysis to take account of the most recent year and now find that the returns in excess of the benchmark level have increased to £5.5bn over the period 2005/6 to 2013/14.

³ In addition to a number of other regulatory obligations such as requirements to provide access, publish reference offers or to notify technical information.

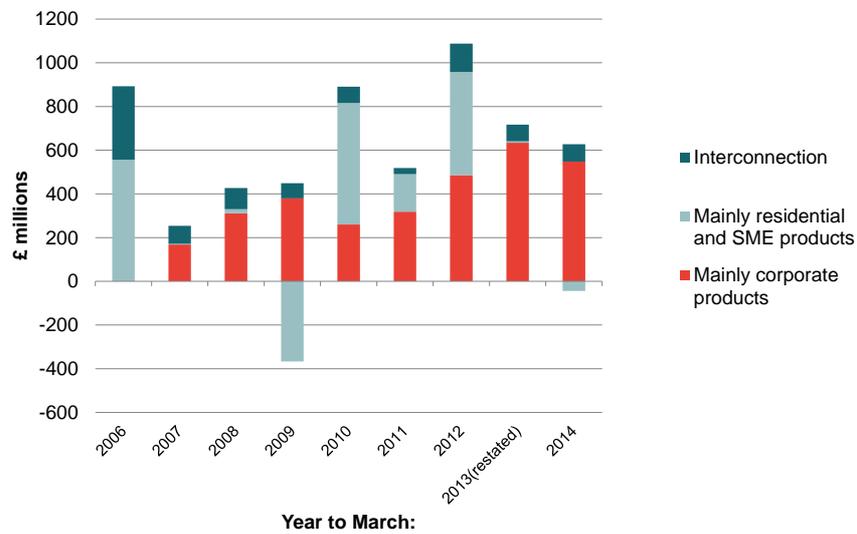
⁴ See: <http://www.btplc.com/thegroup/RegulatoryandPublicaffairs/Financialstatements/index.htm>

Figure 1. BT's regulatory return on capital compared to the benchmark rate (year to March)



Source: BT RFS , Frontier analysis

It is worth noting that the degree of excess returns tends to vary across different charge controls. As set out in [Figure 2](#) below, analysis of returns by customer group shows that more excess returns tend to be earned on products used by business customers, particularly in recent years. Where Ofcom regulates more commoditised high volume products, (such as consumer focused WLR and LLU products), returns tend to be closer to the benchmark. Where Ofcom regulates a market containing a number of heterogeneous products which all partially recover common costs (such as products in BCMR markets), then returns tend to be above the benchmark rate.

Figure 2. BT “excess” returns above the benchmark rate by customer

Source: BT RFS , Frontier analysis

1.3 Ofcom’s objectives when regulating BT

This section assesses Ofcom’s objectives when regulating BT and explains some of the circumstances where prices can be set above costs.

Industries based on a unique network infrastructure such as fixed telecommunications tend to suffer from longstanding and entrenched market failure which requires price regulation. High barriers to entry, and significant economies of scale and scope mean that an incumbent firm is able to exploit market power. Successive market reviews have found that BT has SMP in some of the markets in which it operates. This signifies that in the absence of regulation, BT could set prices above costs. This would be to the detriment of consumers and would inhibit entry and prevent competition. Ofcom imposes price regulation which attempts to prevent BT exercising this market power.

In addition price controls in telecommunications have to deal with complicating factors compared to some other sectors:

- **Economies of scope** mean that networks produce multiple services as outputs for different customers segments;
- There is scope for **downstream competition** leading to a need to set wholesale prices and for market power to vary across markets; and
- **Rapidly evolving technologies and demand** mean firms need to be incentivised to invest in a dynamic market.

BT profitability and charge controls

The combination of multiple products, some competitive markets and a changing and dynamic competitive landscape means that, unlike the charge controls placed on regulated utilities⁵, it is not possible to implement a single over-arching price control covering the majority of a telecoms firm's output.

Ofcom imposes a suite of regulatory remedies to protect consumers and foster competition. Ofcom's objectives when applying the regulatory framework was set out in the Strategic Review of Telecommunications (TSR)⁶ and have subsequently been relied upon to set policy. Ofcom has summarised its objectives with respect to the regulation of Openreach as follows:

- *“Promote efficient, sustainable competition in the delivery of both broadband and traditional voice services;*
- *Prevent excessive charging and the abuse of SMP by Openreach;*
- *Provide regulatory certainty for both Openreach and its customers;*
- *Ensure that the delivery of the regulated services is sustainable, in that the prevailing prices provide Openreach with the opportunity to recover all of its relevant costs (where efficiently incurred), including the cost of capital”.*⁷

The EU framework allows for remedies, including price controls, of access services and for service costing. This is necessary to set prices for a multi-product firm. In implementing the charge controls, Ofcom's approach is to balance different efficiency goals.

Allocative efficiency: there is a rebuttable presumption that prices overall are consistent with forecast ‘costs’ at the end of the charge control. Ofcom does this by presuming that charge controls should be designed to cap prices to converge to BT's fully allocated cost (FAC) by the end of the charge control period. This means that at the end of the control, each product or service should recover: the incremental costs of providing that service; plus an allocation of the costs which are common to that service and other services. If all prices were equal to FAC, then the regulated firm would only recover its costs.

Productive efficiency: in some circumstances Ofcom sets charge controls which allow prices to vary around BT's FAC in order to promote productive or dynamic efficiency. Ofcom recognises that allowing prices to depart from FAC can promote productive efficiency and this can lead to welfare

⁵ Indeed prior to the full liberalisation of telecommunications markets, the retail price control imposed on BT covered a larger proportion of BT's output.

⁶ Ofcom (2005) Final statements on the Strategic Review of Telecommunications, and undertakings in lieu of a reference under the Enterprise Act 2002

⁷ See for example: Ofcom (2009) A New Pricing Framework for Openreach consultation paragraph 2.14.

benefits. In some cases, Ofcom ensures that its adjustments to prices to favour productive efficiency are designed so as not to impair allocative efficiency⁸. In other cases, Ofcom deliberately sets prices to enable BT to favour productive efficiency at the expense of dynamic efficiency. There are a number of different instances where Ofcom either makes an upward adjustment to prices (compared to prices set with reference to CCA FAC), or allows the regulated firm to set prices above CCA FAC. Two examples are provided below.

- Ofcom uses a glide path which aims to allow prices to converge to costs over the course of the control (rather than at each point in time). Ofcom has a deliberate policy of not adjusting any variance between prices until the end of a subsequent charge control (up to six years following a divergence between prices and costs). This provides BT with an incentive to be productively efficient and minimise its cost base. It therefore allows prices to move above costs where BT improves efficiency at a greater rate than forecast (and conversely allows prices to be below FAC if BT does not meet efficiency targets).
- If BT has already fully depreciated a large proportion of a given asset, and setting prices based on the CCA value of the asset would lead to productive inefficiency, then Ofcom will make an upward adjustment to prices (compared to prices set with reference to CCA FAC) to ensure dynamic efficiency. This ensures that buyers of the service face the appropriate price signals to ensure they make build or buy decisions which are not distorted by current capital charges being below a long run steady state level.

Dynamic efficiency: Ofcom sometimes practices a policy of forbearance allowing prices to be potentially set above FAC to enable dynamic efficiency by encouraging investment in new services. This reflects asymmetries in potential outcomes. That is, if there is no investment, this would lead to a significantly worse outcome for consumers in the longer run than a counterfactual of investment where prices may exceed FAC and hence consumption is lower in the short run.

Other price cost divergences would have adverse impacts on efficiency where the loss in allocative efficiency is not offset by any gain elsewhere. These divergences can result from information asymmetry between the regulated firm and the regulator or to problems implementing charge controls in the case of quality. These are explored further below.

- **Systematic forecast error bias.** In some cases, forecast errors in setting a charge control can enable a regulated firm to earn excessive returns while

still technically complying with a control. Where errors are unbiased, then *on average*, prices will not diverge from costs to any material degree. Sometimes they may be above costs, sometimes below costs. However, if the regulated firm has the ability and incentive to provide information such that the regulator's forecasts were biased in favour of regulated firm, then it may be able to systematically over-recover costs. In markets where products are largely homogeneous and to a degree commoditised, scope for forecast error is greatly reduced. In markets with a series of heterogeneous products where demand is dynamic, then forecast errors are more likely and the information asymmetry becomes more pronounced.

- **Price caps not capturing quality degradations.** By reducing quality, a regulated operator may be able to reduce costs faster than forecast. However, a reduction in quality is equivalent to an increase in prices, but may not be identified as such in a charge control. Where a regulated firm sets prices above costs by deliberately reducing quality, then it may also be able to set prices above actual costs. However, this is clearly inefficient: Output is lower and costs are higher than the allocatively efficient outcome, and there are no offsetting productive efficiency gains.
- **Non-compliance with charge controls.** In some cases where a regulated firm has set prices which are found to be non-compliant with its cost orientation obligations then there is usually a mechanism to recover the overcharge.
- **Expiry of charge controls.** Where a charge control expires before a new control is in place then BT is free to set any price (subject to ex post remedies for excessive pricing). In order to provide certainty, BT agrees with Ofcom to provide a voluntary commitment for a period until a new control is in place. In these circumstances prices can drift above costs. However, BT has a strong incentive to propose commitments which are favourable to it compared to the case of where it were charge controlled.
- **The design of the control.** The control may be designed in such a way that prices of individual services may be above or below FAC, but that in aggregate revenues reflect costs (basket controls). However, basket controls also have another feature that can enable BT to over recover costs. In particular, sometime the monitoring of compliance with the control is based on "prior year volume weights" rather than weights based on volumes within the period of the price control. In some circumstances this can mean that BT is able to systematically set prices above costs, by varying the prices within the basket.

1.4 Allowing prices overall to be set consistently above costs is inefficient

As noted above, there are reasons to allow individual prices to depart from costs, with short term losses in allocative efficiency being offset by benefits through increases in productive efficiency and dynamic efficiency. However, in neither case is there a need for prices overall to be above costs for a sustained period of time.

In the case of the incentive effects of charge controls, these incentive effects result from the fact that the level of prices is fixed in the medium term. The absolute level at which the price is set at should have little, if any, effect on the incentives to reduce costs and hence increase profits. As such charge controls which are set such that the expected level of returns equal the benchmark rate would achieve this objective.

While Ofcom may reasonably choose to allow individual prices to be set above (fully allocated) costs for dynamic efficiency reasons, for example to encourage investment in a particular market, this could be achieved without raising the overall level of prices by setting other prices below (fully allocated) costs which would increase allocative efficiency⁹.

This report sets out recommendations which would allow Ofcom to set future charge controls in such a way as to prevent BT consistently being able to set prices above cost.

⁹ As long as the prices exceeded incremental costs.

2 Overcoming the information asymmetry

In regulating prices of services offered by BT, Ofcom faces an information constraint which is common to all regulators: there is a strong information asymmetry between the NRA and the regulated firm. This section considers:

- Why the information asymmetry arises;
- How BT can exploit the information asymmetry;
- What Ofcom does to mitigate the information asymmetry; and
- How other sector regulators mitigate the information asymmetry.

The following section then sets out some practical and proportionate recommendations to help mitigate the information asymmetry.

2.1 Ofcom faces a strong information asymmetry

The challenges facing a regulator wishing to regulate prices are well known and not unique to the telecoms sector. While regulators can use formal powers to require stakeholders to provide truthful information, there will always be limits to the objectivity and completeness of information supplied. We explain below why Ofcom is subject to this information asymmetry.

2.1.1 BT's incentives

BT has strong incentives not to fully reveal its costs, forecasts, plans and assumptions where these might lead Ofcom to lower prices in a charge control. When responding to Ofcom information requests, BT has an incentive to present information in a way that will lead Ofcom to set higher prices, within the scope of request. This could mean submitting additional, unrequested, information where this is helpful to BT and submitting minimal, strictly compliant information in other areas.

There is no incentive for BT to fully disclose information as there is no clawback for outperformance of the controls, and the penalties applied to BT for not revealing full information may be difficult to enforce where information disclosure meets the letter of the request. The appeal of a charge control does not apply retrospectively, and it would be difficult to argue for damages for over-charging for charge controlled services.

2.1.2 BT is well resourced

The outcome of any given charge control could influence the income that BT could generate by many millions of pounds. Therefore it will clearly have a strong

incentive to allocate resources (whether internally or on expert consultancy) to ensure that it is best able to make its case.

On the other hand, regulators face difficult resourcing decisions in balancing their different administrative priorities. For example, the regulator might have a much smaller budget (and therefore professional team) to allocate to a charge control project, than the regulated firm for whom potentially millions of pounds could be at stake.

This can lead to regulatory "capture" where BT "helps" Ofcom by providing information and models to set the charge control which enable BT to bias the result. There are a number of examples where charge control decisions were based on models created by BT. For example, the charge controls for LLU and WLR prior to 2014 were based on a complex BT model (the 'Oak' model) initially submitted by BT to show that wholesale prices were below cost. Ofcom therefore relied extensively on BT in developing the model structure and the underlying assumptions.

2.1.3 BT has a greater understanding of its cost base than Ofcom

It is self-evident that the regulated firm will have a much greater understanding of its cost base than the regulator. This knowledge enables it to ensure that where there is any judgement on what information can be presented to the regulator, it will ensure that only information that positively helps it will be presented or highlighted.

One argument in favour of sectoral regulators is that they enable a greater degree of knowledge of the industry. However, this does not fully address the asymmetry as certain knowledge is only available to those actively designing, operating and maintaining networks.

2.1.4 There is significant scope for regulatory judgement

Many charge control assumptions might require a degree of judgement, this can provide Ofcom with significant latitude (and incentive) to submit assumptions in a way which are difficult to challenge by stakeholders. As BT has access to more potential evidence than other stakeholders this may lead to Ofcom implicitly making decisions which favour BT.

2.2 BT can influence regulation by not revealing information

2.2.1 Not providing information

Ofcom can make formal (section 135) requests to BT for information. However, there are a number of reasons that such a process, even when backed with

Overcoming the information asymmetry

punitive outcomes for non-compliance does not lead to full disclosure. First, while Ofcom can request information, it cannot formally request knowledge or BT's honest informed opinions.

Second, formal requests must, by their nature, be for information that Ofcom knows or believes BT holds. BT has an incentive to interpret information requests literally, not providing supplemental information which would be of use to Ofcom, unless this is in BT's interest or specifically requested by Ofcom.

One example which illustrates the difficulty in requesting information could be in relation to the level of faults and the resources required for fault repair for BT's copper access network. Following concerns raised by stakeholders Ofcom wished to investigate reasons for apparent changes in BT's fault rates and costs associated with rectifying and repairing faults.

In response to an information request from Ofcom, BT reported that it had lost data for a period and was unable to supply Ofcom with a consistent time series of fault rates, even though the information on changes in the level of faults over time had previously been reported by BT to investors.

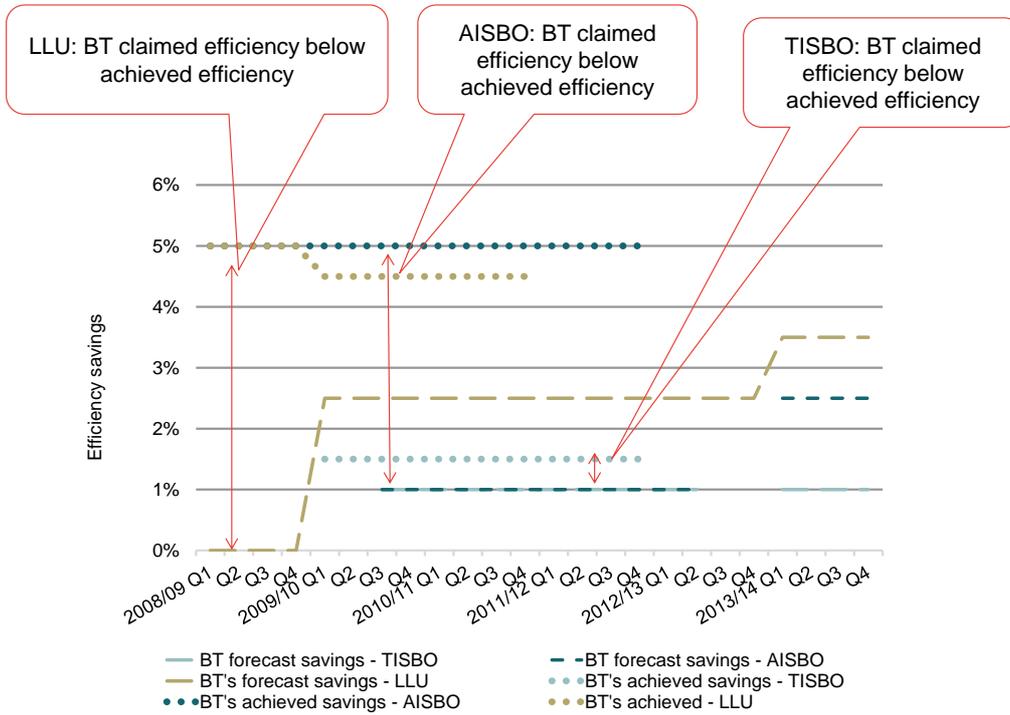
In responding to a request for information on the resources required to repairing faults to different service levels, BT provided a complex model ("Resource Simulation Model") which lacked transparency and was not made available for stakeholders to interrogate.

2.2.2 Not fully revealing forecasts, plans or assumptions – e.g. volume forecasts or efficiency assumptions

In some cases BT has a strong incentive not to reveal its plans. For example if BT believes that it could achieve up to 5% efficiency savings per year and states this to Ofcom, then Ofcom will set prices that reflect BT's efficiency forecasts. This would mean that BT would not receive the benefit of the efficiency savings.

We have also examined data provided by BT on its scope for future efficiency savings with those actually achieved in LLU and leased lines markets ([Figure 3](#)). Given that Ofcom relies on BT to provide data such information is an important input into Ofcom's assumptions on efficiency. In all cases we found that BT's forecast of efficiency was below the level that it actually achieved.

Figure 3. BT claimed efficiency compared with actual efficiency



Source: BT RFS, Frontier analysis.

Note: Data relates to financial years.

2.3 Ofcom’s approach to overcome the information asymmetry

Ofcom is able to use a number of approaches to overcome the information asymmetry. While these approaches go some way to mitigating the information asymmetry, they do not fully mitigate the asymmetry problem.

2.3.1 Formal powers

Ofcom can require Openreach to provide information which is truthful and factually correct. Failure to comply with an Ofcom notice of a request for information can result in either financial penalties or a fine.¹⁰ However, in many cases, formal powers can still provide BT with significant latitude on how to respond to a request. Where the request relates to forecasts, future costs, or

¹⁰ See Ofcom (2005) Information gathering under section 145 of the Communications Act 2003 and section 13B of the Wireless Telegraphy Act 1949; Information gathering under section 145 of the Communications Act 2003 and section 13B of the Wireless Telegraphy Act 1949

plans, it may be relatively easy for BT not fully provide Ofcom with its truthful position while still answering Ofcom's request for information.

2.3.2 Audited data (RFS)

In assessing costs, Ofcom uses data which has been independently audited and is thus a robust and transparent basis for regulation of wholesale charges¹¹. However, as set out below, it is possible to influence the RFS while still remaining consistent with auditing rules and guidelines.

2.3.3 Third party analysis

Ofcom sometimes commissions third party analysis to supplement analysis provided by stakeholders or itself. However, often third parties have a similar informational problem to the regulator. Furthermore, third party analysis can receive less stakeholder review as it may rely on confidential material from parties other than BT.

2.3.4 Stakeholder information

Interested stakeholders have some limited scope to provide information and interrogate Ofcom's assumptions and data. During a charge control, stakeholders can comment on information published by Ofcom. However, often there are significant parts of the assumptions which are redacted for confidentiality reasons. This limits the scope for stakeholders to review and challenge the assumptions and information proposed by the regulator.

2.4 Approach in other sectors

In other regulated sectors, the information asymmetry is known. Where possible, regulators attempt to incentivise regulated firms to provide truthful and full disclosure. In sectors such as water or energy, Ofwat and Ofgem respectively provide incentives for firms to submit truthful business plans.

In Ofwat's case, each water company will submit its proposed business plan including forecasts and assumptions. Ofwat will determine the best quality plans to be "enhanced" which enables it to benefit from additional financial incentives.¹²

¹¹ See Ofcom (2012) for example Charge control review for LLU and WLR services Draft statement paragraph 3.6.

¹² See for example: Ofwat (2013) setting prices in 2014 – company business plans A summary briefing note for stakeholders
http://www.ofwat.gov.uk/pricereview/pr14/prs_web201304busplansumm.pdf

Likewise, Ofgem uses an information quality incentive (IQI) when gathering information to support its regulatory submissions. This provides motivation for companies to spend the time and resources necessary to produce high-quality and well-justified business plans; and a financial deterrent against the submission of inflated expenditure forecasts. Under the IQI firms are rewarded when they submit forecasts which are consistent with the regulator's assessment.

After submission of the business plans, all items of spend are then assessed in detail, and if necessary challenged, on a line by line basis.

Both Ofwat's and Ofgem's specific approaches to tackling the information asymmetry might be considered to be specific to both those industries. That is because in both cases, there range and scope of products and services supplied are less complex than in telecoms markets. Also, there are a range of comparator benchmarks within the UK from which the regulator can learn. Effectively, there is a degree of competition between the firms providing the information to the regulator. This provides the regulator with a greater degree of cost transparency and thus mitigates the information asymmetry problem.

Nonetheless, the use of incentive mechanisms to incentivise fuller and more truthful disclosure of costs and forecasts could be considered by Ofcom. Section 2.6 below sets out our recommendations in this regard.

2.5 Ofcom focuses limited administrative resources in conducting charge controls

There are a number of features which affect the quality of the charge controls. Ofcom has finite resources to allocate to a charge control project. It must balance its administrative priorities. In the context of setting its workload, there are some aspects of its workload over which it has relatively little control (for example, it can devote significant resources to defending appeals). The lack of resource can have implications for its approach to charge controls. Some examples are provided below.

- It can miss its own deadlines for completing charge controls before existing controls expire. This means there are long periods where BT is not subject to a charge control in a given SMP market and instead offers voluntary commitments (for example from September 2008 to August 2009 for the business connectivity markets; or 31 March 2011 to 1 April 2012 for LLU and WLR). While such voluntary commitments will constrain BT to some degree, BT is unlikely to enter into any commitment which would result in prices being set below expected cost.
- Charge controls may be iterative rather than strategic. The previous control is taken as the starting point for the next control. This can limit the scope of

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issues to be considered in each control. It can also impose a bias against making significant changes.

- Partly in order to manage internal resources, market reviews and the resulting charge controls are staggered. This can mean however, that inconsistent approaches, models and assumptions are adopted across different controls.

2.5.1 Consultation is vital

In making its decisions, Ofcom needs information from stakeholders on how the markets operates, what are the costs incurred, and what are the implications of different forms of regulation. Therefore, Ofcom consults with stakeholders in a number of ways.

- It generally issues a call for inputs at the start of the process, which provides stakeholders with the opportunity to highlight particular issues that should be considered as part of the control.
- It consults on its significant decisions; these consultations give stakeholders an opportunity to respond to those decisions.
- It consults informally throughout the process.
- Ofcom publishes models with confidential material redacted.

However, multiple short consultations could make it harder for stakeholders to fully engage with the material. Stakeholders are often given limited time to respond (sometimes only six weeks), leaving little time to read and digest the material, commission external analysis if required, gather information, and formulate a response.

The scope for stakeholders to understand data and assumptions used by Ofcom is limited. The models which are used by Ofcom to set prices may not be fully transparent, and the degree of transparency may be inversely related to the complexity of the model, with highly complex models more likely to contain information which is deemed to be confidential. Often stakeholders (or their advisors) are only able to fully interrogate a model if a decision is appealed. This can push the balance of incentives for stakeholders towards appealing decisions (which in turn has implications for Ofcom's internal resources).

Ofcom has, at times, relied on models created by BT, either to set the charge control itself (such as the Oak model used to set LLU prices) or to inform assumptions (such as the modelling of fault repair resources). In these cases, BT has a significant advantage over stakeholders in providing information.

2.5.2 Ex post assessment of previous controls is rare

There is rarely a systematic *ex post* assessment of the performance of charge controls by comparing all of the forecasts and assumptions in the models with the out turn. This means that Ofcom does not start its process considering which of its forecasts and assumptions were accurate and as a result what lessons could be learnt when determining future assumptions and forecasts.

2.6 Conclusions and recommendations

The success of a charge control remedy at meeting regulatory objectives will depend on the ability gather information from the stakeholders. Therefore, a number of changes could facilitate the gathering of data.

2.6.1 Ofcom should take steps to mitigate the information asymmetry

Ofcom should recognise the strong information asymmetry that it operates under. Unlike in the energy or water sectors, Ofcom is not able to rely on multiple operators providing comparable data

Recommendation 1: Ofcom should investigate mechanisms which incentivise BT to provide full and truthful information

Ofcom could consider incentives to motivate BT to provide full and truthful disclosure of its plans on costs, volumes, efficiency and quality. Given the strong information asymmetry that Ofcom operates under, it could consider asymmetric incentives (i.e. penalties) where forecasts are deliberately biased. These could be imposed either *ex post* where forecasts were deliberately biased compared to outturns; or *ex ante*, where regulated firms are incentivised not to submit biased forecasts. Such an approach could, for example, be based on approaches used by other regulators such as Ofgem.

In cases where it appears that BT has deliberately attempted to mislead, (for example by deliberately adjusting cost allocations in its RFS between staggered controls) it should face more punitive incentives.

This would provide Ofcom with a greater degree of certainty over costs when setting a control.

Recommendation 2: Ofcom should increase transparency for stakeholders

One simple, but very effective way to improve the quality of charge controls would be to improve the transparency of decisions. Increasing the transparency of decisions would greatly improve the ability of stakeholders to interrogate the models and assumptions used to make decisions. This would also mitigate the

Overcoming the information asymmetry

resource imbalance between BT and Ofcom's charge control team. Some ways in which the transparency could be improved are listed below.

- Ofcom should invite relevant stakeholders (for example key customers of BT in the relevant market), to scrutinise draft requests for information before they are issued to BT to enable them to make comments and suggestions. This would help mitigate the information asymmetry, by enabling stakeholders to support Ofcom in asking more focused questions or requests for more relevant information.
- There could be a presumption that the information provided by BT to Ofcom could be shared with stakeholders, unless there was a very strong justification otherwise. In particular, where the information relates to a part of the BT business where CPs do not compete, such as the operations and maintenance of the copper access network, it is unclear what commercial advantage other stakeholders could gain from having access to BT information.
- Where information is business sensitive, Ofcom should consider use of confidentiality rings so stakeholders' advisors can interrogate models and assumptions.
- Ofcom should avoid using models provided by BT as primary sources of assumptions or forecast. Where it relies on a model, it should be commissioned or built by Ofcom openly, and consulted on transparently.
- In setting charge controls Ofcom should ensure that its administrative constraints do not impose disproportionate costs. Small changes to the charge control process could make significant improvements in outcomes.

2.6.2 Ofcom should consider how to improve its process

In setting charge controls, Ofcom should ensure that its administrative constraints do not impose disproportionate costs. Small changes to the charge control process could make significant improvements in outcomes.

Recommendation 3: Ofcom should ensure charge controls are completed within the relevant timeframe

Ofcom's three year market review cycle seems reasonable given the relatively rapid pace of change in telecoms markets. However, Ofcom should ensure that sufficient time is given to the charge control. Any delay in implementing the control increases the likelihood that there is a period where no control is in place.

Recommendation 4: Ofcom should ensure that voluntary commitments do not provide scope for BT to systematically over recover costs

Where BT offers commitments when a charge control has expired before a new control is in place, then the new control should correct for any over or under performance. Absent such a commitment there is a strong incentive on BT only to offer commitments which are favourable to it.

This can lead to over recovery of costs compared to the case if a charge control had been implemented within the timeframe. Given Ofcom's tendency to avoid making "P0 adjustments" (i.e. an adjustment to the price of the services at the start of a control) then any resulting divergence of prices and costs can take a long time to unwind.

Therefore, in the case where voluntary commitments are made as a result of the expiry of a control before a new control is in place, Ofcom should made a retrospective adjustment to ensure that the commitments do not allow BT the opportunity to earn excessive returns.

3 Ofcom's approach to setting charge controls

This section considers Ofcom's approach to balancing different objectives when setting charge controls which were described in Section 1.3. The balance between Ofcom's differing objectives will vary between sectors, between different markets in the same sector and over time. The approach taken will reflect the nature of each market to be regulated but also practical issues such as the robustness of the information required to implement the regulation

In general, prices should be set as close as possible to incremental costs (to enable allocative efficiency), but should ensure that BT recovers common costs and a return on capital employed (to ensure continued investment). Setting prices at FAC should meet these constraints, however, Ofcom often relaxes this constraint for individual products.

In setting prices which reflect costs in the context of a three year charge control, Ofcom uses "glide paths" to align prices to projected fully allocated costs at the end of the control. This section:

- Explores Ofcom's reasoning for its approach,
- Considers BT performance against the incentive of a glide path;
- Assesses how BT can 'game' the charge control; and
- Makes some concluding recommendations.

3.1 Ofcom's approach

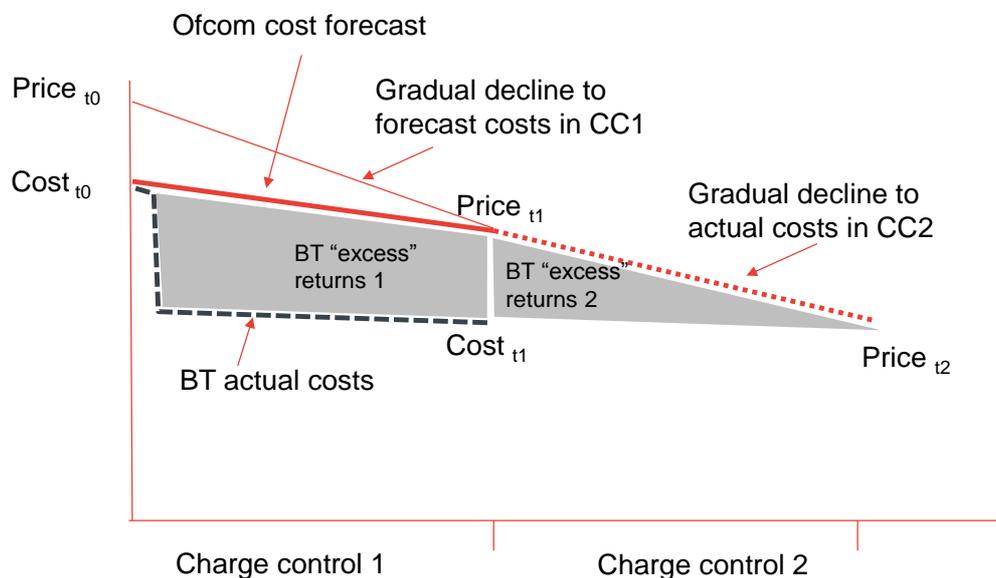
Ofcom's preferred approach to setting prices is to allow prices to gradually converge to its forecast estimate of costs over the course of a three year control. Given a multi-year RPI-X control, it is possible for prices to diverge from costs over the course of the control. In realigning prices to costs, Ofcom chooses to do this over the course of its three year control.

If BT makes more efficiency savings during the control period, Ofcom permits it to keep 100% of the savings for the duration of the control (i.e. the current charge control is not adjusted to take account of the reduced cost base). Then over the subsequent control Ofcom will gradually glide prices to its estimate of fully allocated costs.

This is set out in [Figure 4](#). In the illustrative example, at the start of the control prices are not aligned with costs and Ofcom sets prices should that they converge to costs by the end of the first charge control. If we assume that BT makes efficiency savings just after the start of Charge control 1, it keeps 100% of these savings for the duration charge control 1 ('BT "excess" returns 1'). Then in the

subsequent control, BT continues to keep the benefit of the savings but at a declining rate ('BT "excess" returns 2').

Figure 4. Ofcom's glide path approach to cost savings



Ofcom has used this approach consistently in its charge controls for many years. It rarely chooses to make one off 'p0' adjustments in future controls, and never makes in period adjustments or clawback for over recovery within charge controls. It claims that its approach has a number of advantages.¹³

First, it claims that:

“the main benefit of this approach is that it has greater incentives for efficiency improvement as it allows the firm to retain the benefits of cost reductions made under a previous charge control for longer. One-off adjustments to prices would reduce the effective regulatory lag, and hence the incentives to reduce costs.”

It notes that this incentive is symmetric, in that BT keeps the benefits of an efficiency saving for a longer period (up to six years), but conversely its prices would not reflect cost increases above forecasts for the same period (up to six years).

¹³ Ofcom (2013) LLU WLR charge control paragraph 3.141 – 145.
http://stakeholders.ofcom.org.uk/binaries/consultations/llu-wlr-cc-13/summary/LLU_WLR_CC_2014.pdf

Second, it considers its approach more closely reflects the workings of a competitive market “*in which excess profits tend to be gradually eroded rather than sudden movements in prices.*”

Third, it avoids discontinuities in prices over time which leads to a more stable and predictable investment environment.

3.2 Problems with the glide path approach taken by Ofcom

There are a number of limitations of the approach. Ofcom’s proposed approach would approximate outcomes in competitive markets only if:

- The glide path does not distort the timing of efficiencies;
- Its efficiency assumptions were unbiased;
- Its cost forecasting was unbiased; and
- BT was constrained from reducing costs by reducing quality.

3.2.1 Distortionary effect on timing of efficiencies

Ofcom’s approach provides BT with a very strong incentive to adjust the timing of any efficiency gain. In normal competitive markets, it would be expected that efficiency gains would be constant and gradual. However, Ofcom’s approach incentivises BT to concentrate efficiency savings at the start of a control, and to hold back efficiency savings achievable in the middle or end of a control until the start of the subsequent control (as illustrated in [Figure 4](#)).

3.2.2 Openreach has outperformed Ofcom’s efficiency assumption suggesting that there may be a bias

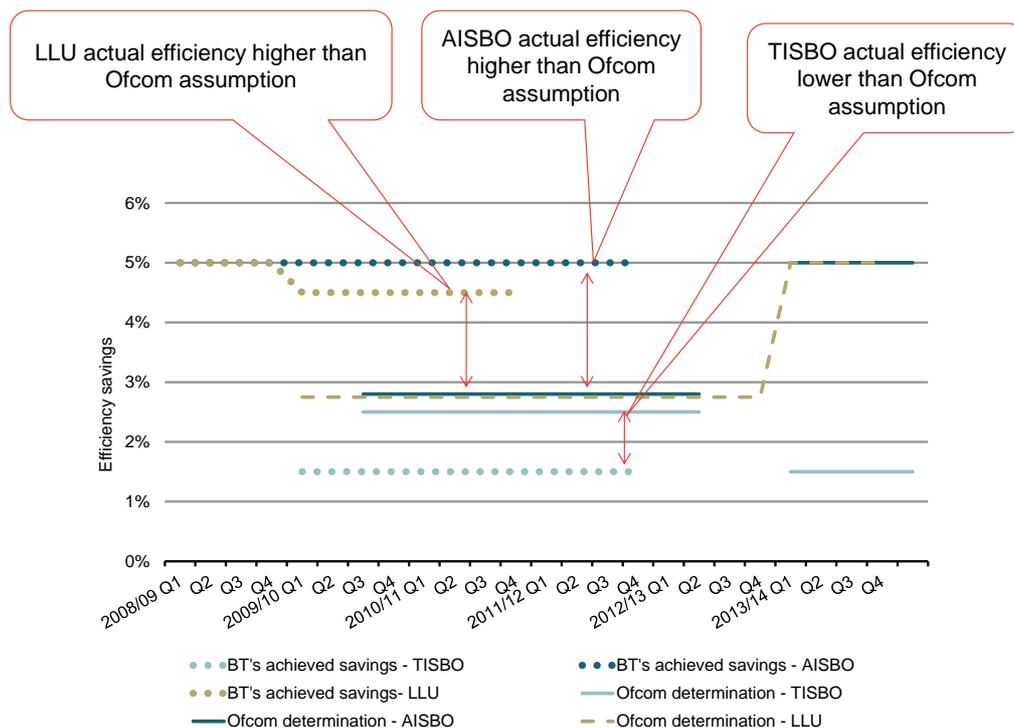
In projecting costs Ofcom makes assumptions about the efficiency gains that could be made if by an efficient firm operating in competitive markets. Assuming BT was no more efficient than a firm operating in efficient markets it would over time be incentivised to reduce its costs to the efficient level. Some years it might achieve more than the efficient level, some years less than the efficient level.

It is clear that there is a significant information asymmetry in the forecasting of efficiency: BT will have a good understanding of its cost base, whereas Ofcom will have less evidence.

We have compared Ofcom’s assessment of BT’s historic efficiency ex post, with the ex ante assumption that Ofcom used in its charge controls for the same period ([Figure 5](#), this differs to Figure 3 which shows the comparison of BT’s own forecasts of efficiency against the levels actually achieved). This analysis suggests that Openreach may have outperformed the efficiency assumptions.

In the case of LLU and AISBO services, in the period 2009 – 2012 Ofcom’s estimate of BT’s historic efficiency was above the assumption used by Ofcom for the same period. Whereas in the case of TISBO services, BT’s historic efficiency was less than Ofcom’s assumption for the period.

Figure 5. Difference between Ofcom efficiency assumption and BT achieved efficiency



Source: BT RFS, Frontier analysis.

Note: Data relates to financial years.

3.2.3 There may be a bias in other assumptions (such as volume or cost allocations)

In setting charge controls, Ofcom makes assumptions on volumes of services, or the allocation of costs to services. Such forecasts are a key input into estimating the costs of services. As a key driver of costs will be the allocation of fixed and common costs across a range of services, the forecast volumes will have a significant impact on the resulting unit costs. Even relatively small divergences in forecast volumes can lead to large differences in the costs that can be recovered from a given charge controlled service.

If the impact of forecast error were symmetric, then the impact on BT’s returns would be zero.

Ofcom’s approach to setting charge controls

However, if BT were able to exploit forecast variation in costs then it is possible that there could be a bias on the impact. However, in the context of the difference between BT and Ofcom, an assumption of symmetric forecast errors may not be reasonable.

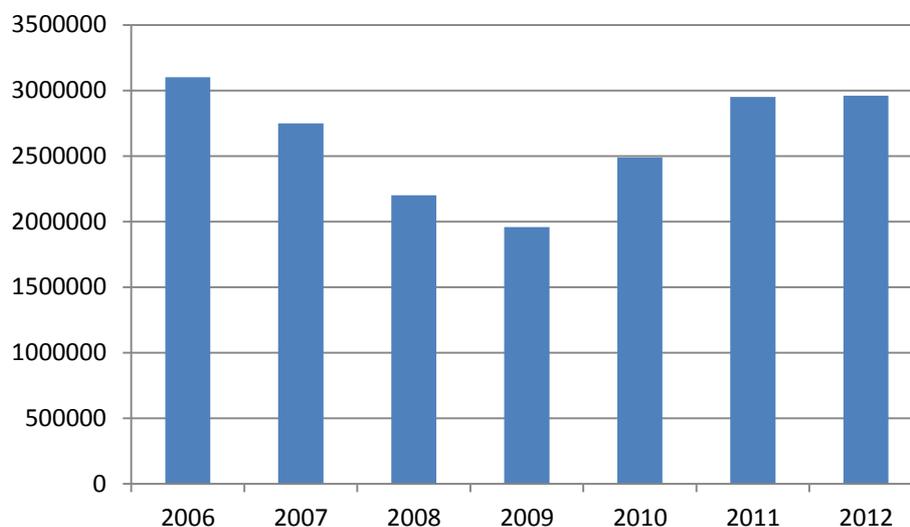
Even where there is not a bias in the volume assumptions (such that differences between forecasts and actual volumes systematically lead to over recovery), it would be perverse to maintain prices which are not reflective of costs for a period of up to six years.

3.2.4 Some unit cost reductions do not reflect “efficiency” but instead reflect reductions in quality

It is clear that where an SMP operator has reduced costs not as a result of being more efficient, but instead as a result of deliberately degrading the quality of the service, then the SMP operator should not keep the benefits of the quality degradation.

This is a standard “principal agent” problem in regulation where the incentives of the regulator and the regulated firm are not aligned. The regulator wishes the firm with SMP to be more efficient while not degrading quality. However, measuring and monitoring quality is a difficult task. The regulated firm with SMP wishes to maximise profits and can achieve this by reducing quality.

Evidence from BT, summarised in [Figure 6](#), suggests that the estimated level of faults on Openreach’s network declined in the period from 2006 to 2009. Then according to data from BT faults on its CGA network **increased by 51% since 2009.**

Figure 6. Openreach CGA faults 2006 – 2012

Notes: 2006 and 2007 data estimated from figure 5.1 of the December consultation. 2008 and 2009 estimated by applying the reported fault reductions to 2007 data. 2010 and 2011 show CGA related faults from table 5.1 of the December consultation.

However, Ofcom’s approach to the glide path rewards BT for degrading the quality of its network by allowing it to keep resulting cost savings for up to six years.

3.3 Long glide paths may not be justified

Ofcom uses a number of justifications in favour of its approach not to make adjustments to prices, where prices are out of line with costs. Ofcom considers that its approach of three yearly charge controls means that:

“Prices can diverge from costs over the life of a price cap if the costs of price-capped services deviate from the trajectory of prices or charges established by the RPI +/- X formula. However, in establishing price caps, regulatory authorities are able to ensure that allocative efficiency objectives are also met through the market review mechanism and periodic setting of new controls. Hence price caps, if set correctly, have built-in safeguards for both dynamic and allocative efficiency.”^{14 15}

Ofcom’s arguments in favour of not ensuring that prices are reflective of costs even at the start of a control are not conclusive. First, Ofcom notes that a gradual return to prices reflect costs competitive markets. For example, Ofcom states

¹⁴ ISDN 30 Condoc 4.43

¹⁵ Further consultation on price controls for wholesale ISDN30 services

that *“the benefit of the glide-path approach, when compared to the introduction of one-off adjustments, is that it approximates more closely the workings of a competitive market in which excess profits are gradually eroded as rivals improve their own efficiency.”*

However, Ofcom’s benchmark of competitive markets relates to markets with a multiplicity of suppliers, and prices varying by small margins. In many cases, as Ofcom recognises, BT has very high market shares of 70% or higher, and is thus able to set prices that are significantly in excess of costs, not marginal variations as in competitive markets. If these SMP markets were made competitive (i.e. with lots of suppliers competing strongly for customers), it is unlikely that prices could take up to six years for excessive margins to be competed away.

Second, Ofcom notes that gradual glide path *“avoids discontinuities in prices and leads to a stable and predictable background against which investment decisions can be taken”*. However, discontinuities in prices are observed in competitive markets as entrants reduce prices to capture market share or consolidate revenues. Discontinuities are not a reason *per se* to avoid setting prices close to costs.

Ofcom considers better investment decisions are made where prices do not closely reflect costs, than where they are in line with costs. If anything, material discrepancies between prices and costs will lead to inefficient investment decisions by competitors to BT.

3.4 Conclusions and recommendations

Prices that are not reflective of costs are allocatively inefficient and could lead to wholesale customers making inefficient choices of inputs. Ofcom’s policy of only requiring gradual adjustments to prices which are out of line with costs should apply only where there are clear productive efficiency arguments in favour of allowing BT to retain excessive returns that are genuinely the result of efficiency savings.

As set out above, Ofcom’s approach to gliding prices to costs over the course of up to six years may not be efficient. First, if there is a bias in the setting of efficiency assumptions (such that BT is able to on average outperform the assumption) then longer glidepaths will tend to exacerbate the inefficiency. Second, divergence of volume forecasts from actual volumes is likely to lead to a greater over or under recovery. If there is a bias in how volume forecasts lead to over or under recovery, then a long glide path could exacerbate over recovery. Also, cost savings made by quality degradations are rewarded and incentivised by a long glide path, whereas the reverse should be the case: BT should be incentivised not to degrade quality just to reduce costs.

There are a number of approaches which could maintain the benefits of a glide path (that BT is incentivised to be more efficient) but would mitigate some of the distortions that arise from BT’s approach.

Recommendation 5: Ofcom should consider explicit error correction mechanisms to ensure prices better proxy a competitive outcome

In the past, even where charge controls were imposed, Ofcom imposed obligations on BT to ensure that every charge is reasonably derived from the costs of provision (“the cost orientation obligation”). This provided an implicit error correction mechanism, by requiring BT to ensure for individual services were not excessive, even if the charge control was not a binding constraint. This condition provided BT’s wholesale customers with a means to dispute prices charged by BT if they were clearly in excess of the prices that would have been set in a competitive market.

Ofcom’s most recent 2013 BCMR statement lifted this obligation. Ofcom concluded that a cost obligation was disproportionate given that it had also implemented a charge control, including sub-caps and sub-baskets. However, if a significant forecast error leads to a significant over-recovery of costs, then it is possible that the prices could comply with the charge control, even if they would not have complied with a cost orientation obligation, i.e. they are clearly excessive.

In circumstances where there is significant uncertainty about exogenous variables which will affect the outturn profitability of the services, for example the rate of take up of new services or of technology migration, Ofcom should consider introducing explicit ‘error correction mechanisms’. These would aim to minimise the effect of forecast error. Well-constructed error correction mechanisms should maintain the incentive effects of CPI-X type charge controls, but ensure prices to not excessively depart from costs. This should lead to an outcome which better proxies a competitive outcome, reducing the risks to both BT and customers.

Recommendation 6: Ofcom should perform ex post analysis of charge control outcomes to understand reasons for over or under performance

Ofcom should perform *ex post* analysis of the causes for prices to have drifted out of line from costs during a control. It is necessary to understand the effectiveness of Ofcom’s regulatory policies. Over or underperformance should be categorised to include at least:

- Efficiency improvements over and above the charge control;
- Forecasting errors (for example volume forecasts, or where costs increase at different rates to the an inflation assumption);
- Reductions in quality; and
- Explicit adjustments to the charge controls to enable other objectives.

Ofcom’s approach to setting charge controls

Recommendation 7: Ofcom should consider “P0” adjustments where forecast error has led prices to be out of line with costs

Where *ex post* analysis shows prices are not in line with costs primarily as a result of forecast error in exogenous variables there is a much stronger case for making a one off adjustment to prices. Where a one off adjustment to prices could lead to a more efficient structure of prices, the presumption should be that at the start of a control, an adjustment is made unless there is clear evidence that there would be strong offsetting inefficiencies. Given the information asymmetry, a threat of “P0” adjustment for forecast error would also disincentivise BT from attempting to game the information gathering process.

Where *ex post* analysis of charge control outturns indicate that there is a systematic bias in the assumptions used by Ofcom which are reliant on information provided by BT, such that BT tends to systematically outperform Ofcom’s efficiency assumption, then Ofcom should consider an asymmetric mechanism to mitigate the effect of the bias. Such a mechanism could mean that BT is only able to retain a proportion of efficiency related excessive returns, but bears all the risk that prices are below costs.

Recommendation 8: Ofcom should impose quality requirements when setting charge controls

BT’s prices under charge controls should be linked (or contingent) on specific levels of quality. While the process of specifying quality and service levels *ex ante* are difficult and subject to change over time, it is necessary input to ensure price regulation is complete. If quality is not controlled, BT can seek to increase effective prices above the level implied by the charge control by reducing quality.

Any controls on the quality of service implemented as part of charge control should be a binding constraint, i.e. it should be sufficiently stringent to incentivise BT to maintain quality rather than allowing BT to increase profits by reducing quality.

4 Cost recovery across markets

4.1 BT has significant joint and common costs

More than 30 years after the first competitor entered the market in 1983 and 18 years after the UK market was fully liberalised, BT continues to have SMP in access markets. This market power stems from control of the underlying network infrastructure, including duct and poles, covering the whole of the UK. This duct network underlies a wide range of different services.

BT's infrastructure has a large fixed cost component. For example, a large proportion of the costs of the duct network are fixed with respect to demand, i.e. the sum of the incremental costs of the services that use the network is less than the total costs of the network. This means there is a significant fixed and common cost. If BT is to fully recover these common costs then they must be recovered across services.

Under the EU framework, access remedies, including charge control, are set on a market by market basis. Even within a single relevant market there may be separate charge controls for different groups of services. The resulting access charge controls should be set on a basis which not only includes the incremental costs of the services within the control but a proportion of fixed and common costs from non-regulated services

In theory, from an allocative efficiency perspective there should be a unique efficient recovery of fixed and common costs across the services that share these costs¹⁶. In practice it is not feasible to estimate what an efficient recovery would be and some more mechanistic approach must be used to attribute fixed and common costs across services.

4.2 BT's fully allocated cost methodology may not be objective

BT produces annual RFS using a FAC methodology. This means that in theory all of BT's costs should be allocated to one or other product. In other words the sum of costs allocated across all services equals BT's total costs.

BT states its FAC methodology reflects costs causality, i.e. it purely reflects supply side factors. In practice, there is no unique allocation cost. This is due to three factors. First, the existence of fixed and common costs, which by definition cannot be allocated on the basis of cost causality. Second, complex

¹⁶ Although such an allocation may not be efficient taking into account other considerations such as dynamic efficiency.

cost causality for some costs which are largely incremental. Third, there is also likely to be a degree of judgment in allocating joint costs which are not truly fixed.

There is a risk that the resulting subjectivity in cost allocations could potentially lead to increased returns for BT if it were to be used in a way which favours BT. For example:

- A tendency to allocate costs to services which are price regulated rather than those which are not regulated;
- Increased allocation of costs to wholesale services used by CPs rather than other wholesale services used by downstream divisions of BT;
- Where revisions to cost allocations are made which change the allocation of costs between markets, to time these revisions to maximise the cost base of markets where the charge control is due for revision; and
- To allocate joint and common costs disproportionately to higher margin services, reflecting demand side factors, such as corporate customers higher willingness to pay.

There is evidence that BT's cost allocations have at times, consciously or unconsciously, been determined in a fashion which could increase BT's returns. Some examples are provided below.

- Changes in cost allocation methodology in 2012/13 increased the allocation of costs to wholesale local access services (the charge controls for which were due to be set) and reduced the allocation to leased line and Ethernet service (for which the charge control had just been set). In that specific case, Ofcom recognised that the change in methodology could lead BT to over recover costs, and used the costs from the year prior to the change in methodology as a basis to set prices (although this required forecasting forward an additional year from the earlier base year).
- Up until 2010, BT did not recognise that Care Level 2 fault repair had a higher cost than Care Level 1 in its audited regulatory accounts, allocating the same fault repair costs to both WLR Basic (delivered under Care Level 1) and WLR Premium (delivered under Care Level 2). However, since then BT has allocated proportionately more costs to services delivered under Care Level 2, including the MPF services used by CPs to deliver voice and broadband lines, compared to WLR Basic, used by BT Retail to deliver voice lines.
- BT allocates corporate costs to all activities and plant groups in the UK in proportion to the associated pay plus a return on assets except for NGA

Cost recovery across markets

assets, where BT has used an allocation key “NGAOHEAD” which aims to prevent the allocation of overheads to NGA assets with these costs being allocated across other Openreach activities. This effectively allocates costs away from non-charge controlled NGA services to other services in Openreach, which are generally regulated.

- BT allocates the costs of ‘Access cards’ for Ethernet Access Direct in proportion to bandwidth (i.e. one hundred times more costs for a 1 Gbps service than a 10 Mbps service) even though the incremental costs of the cards is to a large degree independent of bandwidth.

4.3 Ofcom departs from the RFS in some markets

In practice, if all charge controls were set using a consistent recovery of costs over time and across services, then BT would expect to make the determined return across these services.

However, Ofcom sometimes makes adjustments to the structure of prices to reflect productive efficiency which depart from a consistent approach to cost recovery over time and across services. This is in order to provide downstream customers with the appropriate incentives to either buy inputs supplied by BT or to build their own equivalent equipment.

4.3.1 WLR / ISDN 30 line card adjustment

One example is the use of line cards in WLR or ISDN services.

The cost of the line cards as recorded in the RFS was close to zero as they had been fully depreciated. This implied that BT had already previously recovered the costs of the line cards through regulated prices (assuming they reflected depreciation charges over time).

However, the useful economic life of the asset was longer than had been assumed by Ofcom and BT in the RFS, and hence was still delivering economic value. Had Ofcom set prices of line cards based on the CCA value *“the result would be prices which would not cover the costs of replacing and maintaining ISDN30 equipment on an ongoing basis”*¹⁷. However, on a backward looking basis the prices set using CCA value had already covered the costs of replacing the assets.

Because the depreciation schedule used by BT and Ofcom to value the assets in the RFS did not reflect the economic depreciation of the asset, once they were fully depreciated BT was able to continue to “sweat” the asset. On a forward looking basis, if costs were set at the depreciated CCA value, buyers would be dis-incentivised to move to more efficient substitutes as the regulated price

¹⁷ ISDN 30 Statement

would be below its forward looking economic costs. This may not be productively efficient as alternative mixes of inputs could be used which would be more productively efficient.

Therefore, Ofcom adjusted costs upwards in the RFS to correct for incorrect depreciation assumption in the past. This ensures that the prices reflected the long run incremental costs of providing the service. This adjustment resulted in BT recovering an additional £82m per year.

Importantly, the purpose of the adjustment was to correct over-recovery in the past. Indeed the implication of a depreciation profile that is too steep is that BT's investors have already recovered the capital expenditure once the CCA value of the asset is fully depreciated. In making this adjustment, Ofcom was effectively allowing BT's investors an additional return of capital above the level of the initial investment. If some prices are set above CCA-FAC cost while others are set at CCA-FAC costs this effectively sets overall prices above a level consistent with allocative efficiency

4.4 Recommendations

4.4.1 Control over BT's allocation methodology

The examples given above generally reflect either new or updated allocations that BT has introduced. Given BT's voluminous and opaque public documentation on the underlying cost allocation, it is difficult for stakeholders to identify when new allocations are introduced or existing allocations are changed.

To Ofcom's credit, it has in one case recognised where changes in BT's cost allocation methodologies would manifestly "*lead to a significant over-recovery of costs*"¹⁸. For example, in the 2014 LLU charge control Ofcom found that BT's methodological changes in its 2012/13 RFS would lead it to increase costs by £176m in the WLA and WFAEL markets with only minor offsetting reductions. Ofcom therefore chose to use an earlier year's costs on which to base its prices.

However, such ad hoc responses to changes in BT cost methodologies may only arise where the changes lead to manifestly significant over-recoveries totalling hundreds of millions of pounds. There is a risk that changes which lead to more "modest" levels of over recovery, could go unchecked.

Ofcom is currently consulting more generally on a review of its approach to regulatory financial reporting. In this context, we therefore recommend Ofcom should seek to control the introduction of new and revised allocations in the following ways in order to minimise the risk of over-recovery.

¹⁸ Ofcom (2014) Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30 – Annexes paragraph A22.3

Recommendation 9: Ofcom should examine new and revised cost allocation methodologies to ensure they reflect cost causality

A thorough review of new and revised allocations by Ofcom would provide comfort to other stakeholders that the cost allocations system was objective. The knowledge that any changes would be reviewed by Ofcom could also deter BT from making changes to allocation methodologies which could not be justified objectively.

Recommendation 10: Ofcom should restrict significant revisions to BT's cost allocation to every third year

The market review process and hence the resulting charges controls take place on a rolling three year cycle, i.e. every charge control is reviewed every three years but the charge controls have staggered start dates. The fact that the charge controls do not start in the same year, and hence the base year differs between charge control forecast models, raises the risk that BT will change allocations from year to year to increase the cost base of each set of services in the base year for the corresponding charge control. This would allow BT to effectively recover the same costs in more than one charge control.

One solution to this would be to set all charge controls simultaneously from a single base year. However, this would significantly increase the peak resources required by all stakeholders leading up to the setting of these simultaneous controls, compared to the current approach of a rolling three year cycle.

A more practical approach would be to freeze cost allocations over a complete three year cycle of charge controls, such that all controls with a base year corresponding to this period would be set on a consistent allocation basis. Changes within the three year period would be restricted to changes that are absolutely necessary due to changes within BT or new products.

A more strategic, long term (three year) approach to revising allocations within the RFS would ensure Ofcom and stakeholders would have greater scope to identify, understand and comment on revisions.

4.4.2 Compensating for departures from the RFS

Ofcom reasonably departs from the RFS when regulating prices in particular markets, typically for specific factors related to that market. However, this can result in prices in aggregate being set above costs, leading to a loss in allocative efficiency. It would appear possible to meet Ofcom's objectives in specific markets, while maintaining the returns across all regulated markets close to the cost of capital.

Recommendation 11: Where Ofcom departs from BT's common cost allocations in one market for dynamic efficiency reasons, it should

consider alternative allocations or ad hoc adjustments to ensure that the overall level of prices reflects costs.

An alternative method of setting the same structure of prices, i.e. providing the appropriate build/but decision in the particular market, without increasing the overall level of charges would be to do so through a revised recovery of common cost, for example the recovery of the costs of the local access network

This would need to be done such that:

- Price differentials reflect the LRIC differentials of each product;
- But prices are set such that costs overall are not over recovered (in a given control or over time).

Ofcom's approach to the LLU WLR differential in the 2014 charge control is one example where Ofcom adjusted the differential between prices (i.e. the structure of prices) without enabling BT to over recover costs (i.e. the overall level of prices).

Therefore, when making an upward adjustment to ISDN 30 prices to reflect productive efficiency, Ofcom could simultaneously make a downward adjustment to the common costs of other products. This ensures that Ofcom's upward adjustment (to correct its previous depreciation assumptions) do not enable BT to earn excessive returns across its portfolio of products.

5 Conclusion

This report is intended to highlight alternative strategic options for setting charge controls for BT's regulated services. Our report recognises the difficulties faced when setting charge controls and proposes practical and proportionate recommendations to mitigate the potential for systematic over-recovery of costs.

All regulators operate under three self-evident truths:

- First, there is a great deal of uncertainty in forecasting the future;
- Second, all regulators face an information asymmetry between themselves and the regulated firm; and
- Third the regulated firm has the strong incentive and the ability to influence the outcome of a charge control in its favour.

These difficulties in forecasting, in combination with the information asymmetry should not imply that BT is able to systematically outperform charge controls. However, unless Ofcom mitigates BT's strong incentive to avoid full and truthful disclosure when providing information there is a strong likelihood that BT will continue to systematically over recover costs. Our recommendations are aimed at improving BT's incentives to provide full and open information and at redressing the asymmetry of information (and resources) by maximising transparency and enabling stakeholders to fully interrogate information supplied by BT. This will reduce forecast error when setting prices and lead to prices which are more allocative efficient.

We recognise that some telecoms markets are particularly difficult to forecast as they are more dynamic. Technology changes mean that customers in some markets are continuously migrating to new and different services in response to supply of new products or changes in demand. Where this is the case, even with improved incentives on BT to provide full and truthful information and greater scope for stakeholders to input, it may not be possible to accurately forecast costs and demand with strong degree of confidence. Therefore for these markets we have recommended that:

- Ofcom should consider sharing mechanisms for over recovery;
- Ofcom should ensure that its glide path approach to setting charge controls is only used to incentivise productive efficiency (not to profit from degrading quality for example); and
- Ofcom should use price adjustments in certain circumstances where forecast error has led prices to be out of line with costs.

Adoption of these recommendations would disincentivise BT from gaming controls (for example, by reducing quality), and would incentivise it to provide

fuller and truthful information. This in turn would be more likely to lead to allocatively efficient prices, without compromising BT's incentives to be more efficient.

Finally, we note that traditional RPI-X approaches to regulation create particular problems in telecoms markets compared with other markets. RPI-X charge controls were initially set up with a single price control covering a large proportion of the regulated entity's output, and in other utility sectors charge controls still follow this model. However the market based approach adopted for the EU electronic communications framework means that there are a number of separate charge controls, each covering a proportion of BT's output. To address the concern that BT can influence the outcome of controls by changing its cost attribution methodology we have recommended that Ofcom take a more strategic approach to assessing BT's costs in the future. This will mean that BT does not have the ability to influence the outcome of controls by varying cost methodologies. To address the problem that when attempting to promote an efficiency objective in one market, Ofcom makes price adjustments which effectively reduces allocative efficiency overall. We recommend that when making adjustments to BT's costs to set prices, it should attempt to ensure that this does not lead to over recovery of costs across all markets.

In summary, our recommendations which are summarised below would ensure that overall prices of BT's regulated products are set much closer in line with costs. This will increase allocative efficiency, and therefore economic output, without dampening the productive efficiency incentives of Ofcom's charge control design. It will also efficiently transfer economic welfare from BT, the regulated monopoly, to end users through lower prices.

5.1 Summary of recommendations

We set out below a summary of our recommendations which are set out in this report.

Recommendation 1: Ofcom should investigate mechanisms which incentivise BT to provide full and truthful information

Ofcom could consider incentives to motivate BT to provide full and truthful disclosure of its plans on costs, volumes, efficiency and quality. In cases where it appears that BT has deliberately attempted to mislead, (for example by deliberately adjusting cost allocations in its RFS between staggered controls) it should face more punitive incentives. This would provide Ofcom with a greater degree of certainty over costs when setting a control.

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Recommendation 2: Ofcom should increase transparency for stakeholders

One simple, but very effective way to improve the quality of charge controls would be to improve the transparency of decisions. Increasing the transparency of decisions would greatly improve the ability of stakeholders to interrogate the models and assumptions used to make decisions. This would also mitigate the resource imbalance between BT and Ofcom's charge control team. Some ways in which the transparency could be improved are listed below.

- Ofcom should invite relevant stakeholders (for example key customers of BT in the relevant market), to scrutinise draft requests for information before they are issued to BT to enable them to make comments and suggestions.
- There could be a presumption that the information provided by BT to Ofcom could be shared with stakeholders, unless there was a very strong justification otherwise.
- Where information is business sensitive Ofcom should consider use of confidentiality rings so stakeholders' advisors can interrogate models and assumptions.
- Ofcom should avoid using models provided by BT as primary sources of assumptions or forecast. Where it relies on a model, it should be commissioned or built by Ofcom openly, and consulted on transparently.
- In setting charge controls Ofcom should ensure that its administrative constraints do not impose disproportionate costs. Small changes to the charge control process could make significant improvements in outcomes.

Recommendation 3: Ofcom should ensure charge controls are completed within the relevant timeframe

Ofcom's three year market review cycle seems reasonable given the relatively rapid pace of change in telecoms markets. However, Ofcom should ensure that sufficient time is given to the charge control. Any delay in implementing the control increases the likelihood that there is a period where no control is in place.

Recommendation 4: Ofcom should ensure that voluntary commitments do not provide scope for BT to systematically over recover costs

Where BT offers commitments when a charge control has expired before a new control is in place, then the new control should correct for any over or under performance. Absent such a commitment there is a strong incentive on BT only to offer commitments which are favourable to it.

This can lead to over recovery of costs compared to the case if a charge control had been implemented within the timeframe. Given Ofcom's tendency to avoid making "P0 adjustments" (i.e. an adjustment to the price of the services at the start of a control) then any resulting divergence of prices and costs can take a long time to unwind.

Therefore, in the case where voluntary commitments are made as a result of the expiry of a control before a new control is in place, Ofcom should make a retrospective adjustment to ensure that the commitments do not allow BT the opportunity to earn excessive returns.

Recommendation 5: Ofcom should consider explicit error correction mechanisms to ensure prices better proxy a competitive outcome

In the past, even where charge controls were imposed, Ofcom imposed obligations on BT to ensure that every charge is reasonably derived from the costs of provision ("the cost orientation obligation"). This provided an implicit error correction mechanism, by requiring BT to ensure for individual services were not excessive, even if the charge control was not a binding constraint. This condition provided BT's wholesale customers with a means to dispute prices charged by BT if they were clearly in excess of the prices that would have been set in a competitive market.

Ofcom's most recent 2013 BCMR statement lifted this obligation. Ofcom concluded that a cost obligation was disproportionate given that it had also implemented a charge control, including sub-caps and sub-baskets. However, if a significant forecast error leads to a significant over-recovery of costs, then it is possible that the prices could comply with the charge control, even if they would not have complied with a cost orientation obligation, i.e. they are clearly excessive.

In circumstances where there is significant uncertainty about exogenous variables which will affect the outturn profitability of the services, for example the rate of take up of new services or of technology migration, Ofcom should consider introducing explicit 'error correction mechanisms'. These would aim to minimise the effect of forecast error. Well-constructed error correction mechanisms should maintain the incentive effects of CPI-X type charge controls, but ensure prices to not excessively depart from costs. This should lead to an outcome which better proxies a competitive outcome, reducing the risks to both BT and customers.

Recommendation 6: Ofcom should perform ex post analysis of charge control outcomes to understand reasons for over or under performance

Ofcom should perform ex post analysis of the causes for prices to have drifted out of line from costs during a control. It is necessary to understand the

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effectiveness of Ofcom's regulatory policies. Over or underperformance should be categorised to include at least:

- Efficiency improvements over and above the charge control;
- Forecasting errors (for example volume forecasts, or where costs increase at different rates to the an inflation assumption);
- Reductions in quality; and
- Explicit adjustments to the charge controls to enable other objectives.

Recommendation 7: Ofcom should consider "P0" adjustments where forecast error has led prices to be out of line with costs

Where *ex post* analysis shows prices are not in line with costs primarily as a result of forecast error in exogenous variables there is a much stronger case for making a one off adjustment to prices. Where a one off adjustment to prices could lead to a more efficient structure of prices, the presumption should be that at the start of a control, an adjustment is made unless there is clear evidence that there would be strong offsetting inefficiencies. Given the information asymmetry, a threat of "P0" adjustment for forecast error would also disincentivise BT from attempting to game the information gathering process.

Where *ex post* analysis of charge control out-turns indicate that there is a systematic bias in the assumptions used by Ofcom which are reliant on information provided by BT, such that BT tends to systematically outperform Ofcom's efficiency assumption, then Ofcom should consider an asymmetric mechanism to mitigate the effect of the bias. Such a mechanism could mean that BT is only able to retain a proportion of efficiency related excessive returns, but bears all the risk that prices are below costs.

Recommendation 8: Ofcom should impose quality requirements when setting charge controls

BT's prices under charge controls should be linked (or contingent) on specific levels of quality. While the process of specifying quality and service levels *ex ante* are difficult and subject to change over time, it is necessary input to ensure price regulation is complete. If quality is not controlled, BT can seek to increase effective prices above the level implied by the charge control by reducing quality.

Any controls on the quality of service implemented as part of charge control should be a binding constraint, i.e. it should be sufficiently stringent to incentivise BT to maintain quality rather than allowing BT to increase profits by reducing quality.

Recommendation 9: Ofcom should examine new and revised cost allocation methodologies to ensure they reflect cost causality.

A thorough review of new and revised allocations by Ofcom would provide comfort to other stakeholders that the cost allocations system was objective. The knowledge that any changes would be reviewed by Ofcom could also deter BT from making changes to allocation methodologies which could not be justified objectively.

Recommendation 10: Ofcom should restrict significant revisions to BT's cost allocation to every third year

Ofcom should adopt a more strategic, long term (three year) approach to revising allocations within the RFS would ensure Ofcom and stakeholders would have greater scope to identify, understand and comment on revisions; and would disincentivise BT from making revisions which increase the cost base of each set of services in the base year for the corresponding charge control..

Recommendation 11: Where Ofcom departs from BT's common cost allocations in one market for dynamic efficiency reasons, it should consider alternative allocations or ad hoc adjustments to ensure that the overall level of prices reflects costs.

When making an upward adjustment to prices to reflect productive efficiency, Ofcom should simultaneously make a downward adjustment to the common costs of other products. This ensures that Ofcom's upward adjustment (to correct its previous depreciation assumptions) do not enable BT to earn excessive returns across its portfolio of products.

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