

Leased Line Charge Control

RE-ALLOCATION OF COMMON COSTS

Ofcom's proposals for the next Leased Line Charge Control are set out in the consultation issued in July 2012. The cost modelling includes a re-allocation of fixed and common costs from TISBO to Ethernet services to take account of the shift in demand from TISBO to Ethernet. TalkTalk believe that this re-allocation will artificially inflate the forecast costs of Ethernet services and hence allow BT to set prices higher than justified and are seeking an analysis to support its submission to Ofcom in this area.

Summary

The methodology proposed in the Consultation Document to re-allocate a proportion of fixed and common costs from TISBO services to Ethernet services in the year appears to be fundamentally flawed in two respects:

1. it takes no account of changes in the demand for Ethernet services when determining the re-allocation of fixed and common cost between TISBO and Ethernet services;
2. it takes no account of the relative usages of fixed and common resources for TISBO and Ethernet services when determining the re-allocation of costs.

As a result the allocation of costs is likely to over-state the costs of the more efficient Ethernet services and understate the costs of the less efficient TISBO services.

A more accurate model would calculate forecast the recovery of costs with a high fixed and common cost component by forecasting the allocation of costs on the basis of a combination of demand usage factors. This is similar to the approach adopted by Ofcom in the cost model used to derive the charges controls for local loop unbundling (LLU) and wholesale line rental (WLR).

Background

Proposals on reallocation

Ofcom forecasts costs for each leased line service, starting from FAC base year cost estimates. For each basket, the charge control is set based upon the sum of the forecast costs for all of the services in the final year of the charge control. Ofcom propose to adjust these basket costs by reallocating £101 million of costs from the TISBO basket to the Ethernet basket, consisting of £46 million in capital costs and £55 million in operating costs.

The charge control is set such that the expected revenues under the cap equal the expected volumes, reallocating costs from the TISBO basket to the Ethernet basket. The reallocation has the effect of requiring lower charges for the TISBO services and allowing higher charges for the Ethernet services compared to baskets set based on the unadjusted cost data. The effect on the charge control is shown in Table 1 below.

Table 1. Impact on charge controls of reallocation

	TISBO	Ethernet
Before re-allocation	RPI+18.75%	RPI-17.50%
After re-allocation	RPI+3.25%	RPI-12.00%

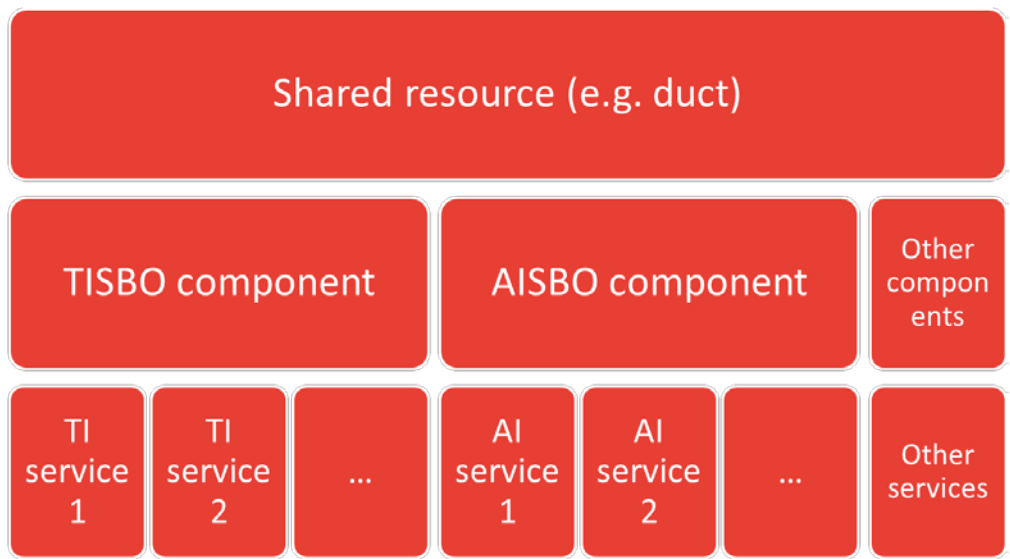
Source: Ofcom Consultation Document

Rationale for the re-allocation

The Ofcom leased line modelling attempts to forecast FAC based costs for leased line services from base year FAC estimates. The basic modelling calculates the costs of network components by projecting forwards base year costs using a combination of cost/asset volume elasticities (CVE/AVE) and demand growth to which efficiency assumptions are applied. These network component costs are then allocated to services using usage factors.

The LLCC approach effectively assumes changes in the cost of network components are solely due to changes in marginal costs, as demand for the services that used these components increases and decreases. However the network components defined in the RFS are built up from underlying common resources such as duct and buildings which have significant fixed and common costs is illustrated in **Figure 1**.

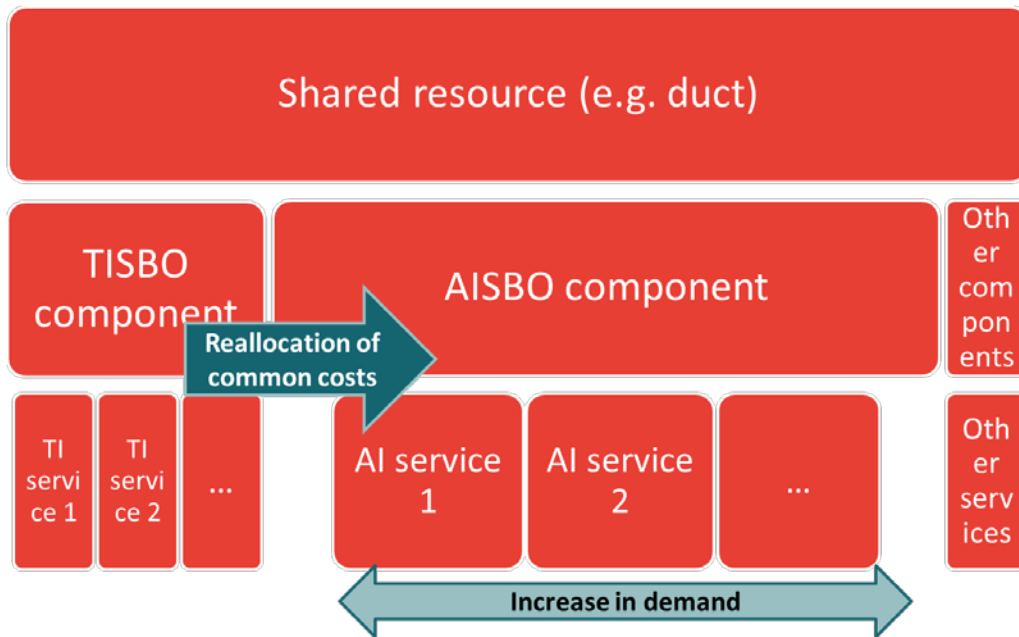
Figure 1. Illustration of FAC cost hierarchy



Source: Frontier Economics

Over time the FAC costs of the network components are driven both by changes in demand for these components and also by changes in the allocation of the underlying shared resources between network components. If the rate of demand growth differs in groups of services associated with different components, that share underlying fixed and common costs such as duct, then the CVE/AVE based forecasts of the costs of these components will be inaccurate.

For example if two components share a common resource, such as duct, and there is high demand growth for services that use one component and demand for services that use the other component is falling, then there will be a reallocation over time of fixed and common costs from the network component with falling demand to the network component with increasing demand. This is illustrated in **Figure 2**, below.

Figure 2. Changes in allocation of common costs due to relative changes in demand

Source: Frontier Economics

This interdependency between the costs of a component and demand for services which use other components means that the purely CVE based forecasting methodology, which takes only account of the demand for services that use each component, may produce inaccurate results. The forecasting of cost components, and hence the services that use these components, should take account of relative growth rates in demand for all services that use the underlying shared resources.

In the LLCC modelling this flaw in the underlying methodology is particularly acute due to:

- the fact that the RFS defines largely separate cost components for Ethernet and TISBO services even though there is a high degree of underlying cost commonality (e.g. buildings, duct and cable); and
- there are large differentials in forecast growth rates for Ethernet and TISBO services.

This flaw in the model was identified by Analysys in its report on the model in 2008 who suggested an approach to adjust the results.

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Ofcom's adjustment methodology

Previous charge control

Analysys proposal

Analysys reviewed the LLCC costing model as part of the 2008 consultation process and recommended an approach based on estimating the marginal costs of services and then allocating fixed and common costs in proportion to these marginal costs. Such an approach would seem to produce results broadly equivalent to a LRIC+EPMU approach.

2009 Ofcom approach

Ofcom did not implement the methodology as suggested by Analysys but instead implemented a simplified approach which (according to Ofcom) was in keeping with the spirit of the Analysys approach. The Ofcom approach consisted of:

- Estimating fixed and common costs for separately for capital charges and opex, based on AVEs and CVEs;
- Re-allocating the fixed and common costs between Ethernet and TISBO services.

The first stage should be relatively straightforward as the proportion of fixed and common costs can be estimated as one minus the AVE/CVE.

The re-allocation of costs was based on the relative changes in AI and TI service volumes over time. It is not clear how these relative changes in volumes were measured and how this was then used to calculate the re-adjustment.

Current proposals

In the 2012 consultation a similar approach to that used in 2009 was proposed, with a modification to the approach for capital charges.

Separate approaches have been proposed for capital charges and for operational expenditure. It is not clear whether a similar approach has also been adopted for Capital Employed.

Capital costs

Capital cost associates with cable, duct, land and buildings are assumed to have a high fixed and common cost component, shared between TISBO and Ethernet services.

For those cost categories, two sets of cost forecasts are calculated for TISBO services:

- Projecting forwards costs to 2015/16 based on AVEs and efficiency assumption as used generally in setting the charge control.
- Projecting costs in 2015/16 by assuming unit costs are fixed in real terms allocated for each TISBO services¹.

The second approach is used to set the charge control for the TISBO services. The difference between the (higher) result based on AVEs and this second approach being allocated to the Ethernet services.

This approach is 'revenue neutral' in that the total costs projected for the combination of the TISBO/Ethernet services in 2015/16 is equal to the costs based on the 'standard' AVE based approach.

Operational costs

The approach used for operational expenditure is more complex as it is more difficult to identify those costs categories that are largely fixed and common. Instead an estimate of the proportion of operational expenditure that is 'non-marginal', i.e. fixed and common, is made.

The approach taken is:

- The costs for TISBO services are forecast for 2015/16 by projecting forwards costs based on CVEs and efficiency assumption as used generally in setting the charge control.
- This total cost is divided into marginal and non-marginal costs based on the relevant CVE estimates²;
- The costs allocated to the TISBO services basket are determined to be:
 - All of the marginal costs;
 - A proportion of non-marginal costs with the proportion determine as the demand in 2015/16 (expressed as number of circuits) as a proportion of demand in the base year.

The remainder of the non-marginal costs are allocated to Ethernet services.

Flaws in 2012 approach

There are a number of potential flaws in the proposed approach.

¹ This is equivalent to an AVE of 1 with no efficiency gain

² The AVEs are assumed to be an estimate of the proportion of costs that are marginal, with the remaining costs assumed to be fixed and common

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The assumption that TISBO unit capital costs are stable is unrealistic

For TISBO services the approach effectively substitutes the methodology for projecting capital costs based on AVE/CVEs by an arbitrary assumption – that TISBO unit costs for the underlying costs categories should be fixed over time at the base year levels. Intuitively where demand is falling it would be reasonable to expect unit costs to rise over time due to dis-economies of scale and reductions in utilisation.

There does not seem to have been any empirical evidence to support this assumption, for example that within the RFS the respective costs allocated to TISBO services have remained constant.

BT's argument that some AVEs and CVEs are lower when demand is falling than when demand is growing suggests that unit costs for these services should increase with falling demand. For example BT argued that the floor space required for certain elements of equipment would remain the same as demand fell³ based on empirical evidence. This seems reasonable as falling demand is likely to lead to lower utilisation of existing equipment in the short to medium term, rather than reduced equipment dimensioning. Utilisation of shared resources such as duct and accommodation by TISBO services would not be expected to fall as rapidly as demand, leading to increases in unit costs.

Methodology assumes that there is a common pool of costs across TISBO and Ethernet alone

The Ofcom methodology calculates a reduction in the recovery of fixed and common costs from TISBO services and attributes all of this reduction in the recovery of fixed and common costs to Ethernet.

It is reasonable to assume that as the volume of TISBO services decreases, the level of fixed and common costs recovered from these services under FAC based prices will decrease. However this does not necessarily mean that the recovery of fixed and common costs from Ethernet will increase by the corresponding amount.

A number of the underlying assets and activities, for example duct and accommodation, are not specific to leased line services but are shared over almost the full range of communications services provided by BT. Thus reductions in the cost of these assets and activities recovered from TISBO service could be recovered across all of the other services using these assets and activities, not just Ethernet services.

³ Paragraph A5.129 of the Annexes to the LLCC Consultation

The methodology takes no account of changes in demand for Ethernet services

The interdependency between recovery of common costs across services means that the recovery for any given services or group of services, is dependent on relative changes in demand over time.

Unlike the suggested Analysys methodology, the proposed methodology does not take account of any changes in demand for Ethernet services, but only changes in demand for TISBO services. Clearly the FAC allocation of fixed and common costs between the two groups of services is dependent on the demand for both sets of services.

While there will be some direct substitution of TISBO services by Ethernet services, there is no reason to assume that all reductions in TISBO services will be directly offset by increases in Ethernet services.

To take an extreme case, if demand for Ethernet services were falling at the same rate as demand for TISBO services, a reasonable assumption would be that proportion of fixed and common costs recovered by TISBO services would remain unchanged. However the proposed methodology would still result in a re-allocation of fixed and common costs from TISBO to Ethernet, as no account is taken of changes in Ethernet service demand.

The methodology takes no account of the relative usage by TISBO and Ethernet services

FAC methodologies use relative usage by different services and components (e.g. routing factors, power usages of different types of equipment, etc.) to allocate both variable and fixed and common costs together. Any allocation of fixed and common costs which attempts to proxy FAC forecasts should also take account of relative usage if it is to be accurate. Unlike the methodology suggested by Analysys, the proposed methodology takes no account of the relative usage of resources by TISBO and Ethernet services.

For example, it is reasonable to expect that Ethernet services, being based on more modern technology, will make more efficient use of shared resources such as floor space, power, duct and fibre. Thus a reduction TISBO due to direct substitution by equivalent Ethernet services is likely to result in a reduction in the overall usage of resources rather than a transfer of resources from TISBO to Ethernet. As a result the proportion of fixed and common costs recovered from TISBO services would not fall as quickly as demand for TISBO services was falling.

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Empirical evidence

We have examined the data and cost allocations presented in BT's Regulatory Financial Statements (RFS) in order to provide evidence as to whether the implicit assumptions underlying Ofcom's methodology hold.

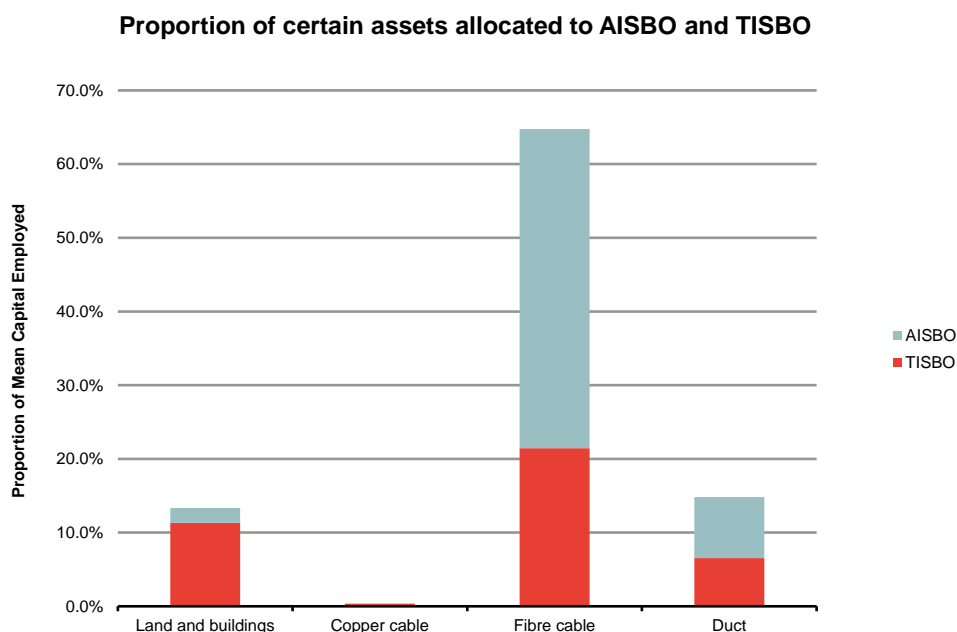
Wider cost pools

The implicit assumption on the 'reallocation' of common costs from TISBO is that there is a pool of fixed and common costs shared between these two groups of services but not shared with other services.

Analysis of data from the RFS, where Ethernet services are included in the 'AISBO' market, shows that the assumption may be reasonable for some assets and activities where a high proportion of costs are recovered between these two services, for example for fibre. For such cost categories it is reasonable to expect that reductions in the proportion of fixed and common costs recovered from TISBO will be offset by increases in fixed and common costs from Ethernet.

However for other assets and activities services, for example accommodation and lands and building, only a small proportion of total costs are recovered from TISBO and AISBO services. If a smaller proportion of fixed and common costs are recovered from TISBO services then it is not clear that an equivalently greater proportion should be recovered from Ethernet services.

Figure 3 below shows the percentage of fixed and common costs for certain cost categories recovered from AISBO and TISBO services.

Figure 3. Proportion of assets allocated to Leased Lines

Source: BT 2012 RFS

In some cases the lack of granularity presented in the RFS may distort this analysis. For example it may be that a core duct is used predominantly for leased line services and as such this forms a common cost pool within the wider duct category.

Intensity of use differs between TISBO and Ethernet

Due to technological advances the relative usages of different inputs may differ between TISBO and Ethernet services. For example AISBO services appear to make much less use of accommodation than TISBO with only £21 million of Accommodation operating costs being allocated to AISBO in 2011/12 compared to £78 million for TISBO services, even though AISBO revenues exceeds TISBO revenues (and AISBO total bandwidth far exceeds TISBO total bandwidth).

Even if all TISBO demand migrated to Ethernet, it does not seem likely that the accommodation costs currently allocated to TISBO would be recovered from Ethernet.

A more extreme case is copper cable where currently no costs are recovered from Ethernet services. As a result any fixed costs related to copper which are no longer recovered from TISBO services as demand falls should not be recovered from Ethernet services.

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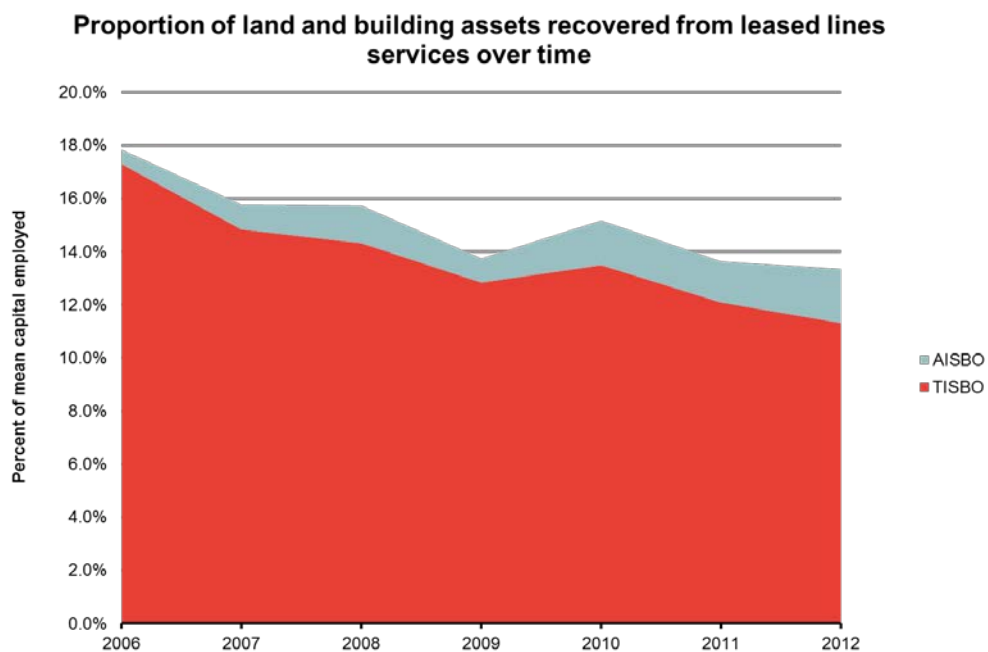
Impact on recovery of fixed and common costs over time

The Ofcom model, including the re-allocation of fixed and common costs, attempts to forecast the FAC allocation of costs.

It is helpful to look at the past time series of data drawn from the RFS to see whether the implicit assumption in the current proposal holds, that there will be a re-allocation of costs from TISBO to Ethernet.

Figure 4 below show that for land and buildings there has not been a direct reallocation of common costs from TISBO to AISBO as demand for TISBO has decreased. Instead the overall proportion of costs allocated to leased line services has reduced, as common costs are allocated to other non-leased line services.

Figure 4. Allocation of land and building costs over time



Source: BT RFS 2007-2012

Conclusions

The data from the RFS suggests that the conditions needed to be met for the Ofcom methodology to provide a reasonable forecast of FAC service costs are not met, in particular:

- Some of the underlying common resources are shared across a wider range of services than TISBO and Ethernet and hence a reduction in

common cost recovery from TISBO services does not automatically lead to an increase in recovery from Ethernet services;

- Ethernet services make much lower usage of some resources than TISBO services and hence a reduction in usage by TISBO services due to falling demand will not result in an equivalent increase in resource by Ethernet services due to substitution.

The results of these two effects can be seen in the time series analysis of the 'land and building' costs recovered from Leased Line services, with the reduction in the proportion of costs recovered from TISBO as demand has declined not being directly matched by an offsetting increase in recovery from Ethernet.

Efficiency considerations

In the consultation, Ofcom has set out reasons why an FAC based approach provides a reasonable balance between the different efficiency considerations it needs to take into account. To the extent that the re-allocation methodology it has proposed results in forecasts which depart from FAC, the methodology will be sub-optimal.

There are a number of reasons why allocating an excessive proportion of fixed and common costs to Ethernet services may result in reductions in efficiency:

- To the degree that demand for innovative end user applications dependent on Ethernet may be more elastic than the remaining users of legacy TISBO services, increasing the common costs recovered from Ethernet services may reduce overall demand;
- Increasing the cost of Ethernet services may reduce the rate of migration from TISBO services and thus delay the productive efficiency gains possible by retiring the legacy TISBO equipment;
- By increasing the cost of Ethernet services used in conjunction with LLU to provide downstream services to end users, potential benefits brought by vigorous competition based on deeper infrastructure competition may be foregone; and
- By increasing the prices of Ethernet services more than necessary to ensure overall cost recovery, there is a risk of inefficient investment in competing infrastructure.

Alternative methodology

A similar cost allocation approach to that used in allocating fixed and common costs within the LLU/WLR charge could be applied in this case, i.e. once total costs have been forecast to allocate them across the relevant services using a

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combination of usage factors and forecast demand. The usage factors could be based on those used in BT's FAC system underlying the RFS in order to ensure consistency.

Such an approach should more accurately proxy forecasts of FAC services costs by taking account of both:

- the relative movements in the volumes of all services when allocating common costs rather than the absolute changes for one service; and
- the relative usage of the underlying shared resources through usage factors.

To the extent that Ofcom's proposed approach over-estimates the movement in common costs recovery from TISBO services to Ethernet services as demand declines, this alternative approach may result in a more efficient outcome for the reasons outlined above.

Testing the chosen methodology

Whichever methodology is used, it should be a relatively simple exercise to test the accuracy of any re-allocation methodology by comparing the projection for 2011/12 under a given methodology to the actual costs (adjusted for inflation and efficiency) reported in the 2011/12 Regulatory Financial Statements. Given the relatively large reduction in TISBO services between these two years, this should be a relatively robust test of whether the methodology accurately predicts changes in the recovery of fixed and common costs.