Margin Squeeze Tests and Bundling

Economic Considerations on Regulation of Access to VULA with Triple-Play Bundles

Prepared for

BSkyB

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Date: 27 January 2014

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1. SUMMARY AND OVERVIEW

Last July Ofcom published a Consultation Document on "*Fixed access market reviews: wholesale local access, wholesale fixed analogue, exchange lines, ISDN2 and ISDN30*". In this document Ofcom concluded, among other things, that BT has Significant Market Power (SMP) in the market for "the supply of copper loop-based, cable-based and fibre-based wholesale local access at a fixed location in the UK excluding the Hull Area" and proposed to maintain BT's obligation to provide wholesale access to its "superfast broadband" ("SFBB") services via the Virtual Unbundled Local Access ("VULA") product. This included a proposal for a specifically designed margin squeeze test to be applied to BT's VULA product.

Ofcom argued that the standard for this test should be more stringent than the one which would apply under competition law because of the need to nurture competition in the supply of SFBB services – a market that is deemed to be in a critical stage of development. The Consultation Document put forward proposals for the guiding principles that should inform this modified test (paras 11.413ff).

In its response to the Consultation Document, BT – which currently offers its BT Sports channels in effect bundled for free to its SFBB customers – has argued that a margin squeeze test should not be applied to "triple play" offerings (like its products which include BT Sport), essentially because Ofcom's review had not explicitly considered pay TV and it had not shown that "triple play" bundles should be subject to SMP regulation.

Sky has argued in its submission that the cost of additional content which is provided to subscribers as part of a bundle together with SFBB – such as BT's sports channels, distributed together with BT's SFBB products – should be included in the margin squeeze test, and has proposed several ways in which these costs could be estimated.

This brief note focuses specifically on the question of how a margin squeeze test should be correctly applied to prevent exclusionary behaviour on the part of a firm with significant market power in the supply of a critical input to bundles including SSFB. We explain that a margin squeeze test that applied only to stand-alone SFBB offers (as BT is essentially arguing for) would render the test ineffective. It is straightforward to show analytically that applying a "one product" margin squeeze test to a situation with bundling would permit the vertically integrated firm to adopt various "workarounds" in the form of bundled offers thereby undermining the purpose of the regulation. The analytical exposition which supports the argument is based on simple and straightforward economic intuition, which cannot be controversial.

Effective regulation of access to the necessary input can therefore only be achieved through a test (or a series of tests) that would apply not only to standalone offers of the product that includes the essential input, but would extend to all offerings (bundles) including the product (broadband) that relies on the input for which the vertically integrated firm has been found to have significant market power.

2. OFCOM'S OBJECTIVE: PREVENTING FORECLOSURE BY TESTING FOR MARGIN SQUEEZE IN AN *EX ANTE* REGULATORY CONTEXT

In its July 2013 Consultation Document,[1] Ofcom set out various considerations as to how a margin squeeze test should be applied to verify that conditions of access to BT's VULA were not exclusionary for other operators.

In its response to the Consultation Document,[2] BT argued that "triple play" offers (telephone, broadband and TV) should be *excluded* from a margin squeeze test on SFBB altogether:

> *BT contends that it would indeed be wrong for Ofcom to apply the proposed margin squeeze analysis to "triple play" offerings given that Ofcom's market review has not considered pay TV specifically and it would therefore not be appropriate to apply a margin squeeze test to "triple play" offerings when it has not been properly established that SMP regulation is appropriate across "triple play" bundles in the first place.*[3]

This brief note focuses specifically on the latter argument, i.e. BT's claim that bundles including SSFB should be excluded altogether from a margin squeeze test. We explain how this argument is flawed as a matter of logic and economic analysis.

To start with, the goal of the proposed margin squeeze test is to ensure that competition is not hampered *in accessing consumer demand for SFBB services.* It is thus irrelevant that Ofcom has "not considered" explicitly in its review the market to which products *bundled with SFBB* belong, since such markets – or market segments – are an integral component of the overall demand for retail SFBB services. Thus while the Consultation Document only refers to BT Sport in the context of potential required adjustments to the EEO standard, the correct conceptual approach is not specific to BT Sport (and therefore does not require the market review to extend to BT Sport).

Secondly and critically, as the rest of this note shows, carving out bundles containing SSFB from the performance of the test, and limiting the test only to stand-alone products which make use of the VULA input, would enable BT to evade the test. These considerations are obvious as a matter of economics, and Ofcom should not be distracted from correctly applying economic logic by irrelevant arguments about the need to show market power in other components of the bundle before applying the margin squeeze test.

3. USING BUNDLING TO EVADE A SINGLE-PRODUCT MARGIN SQUEEZE TEST

Let us first introduce some notation that we will use throughout this short paper. We begin with BT's own operations, as schematically summarised in Figure 1**.** In this

1 "*Fixed access market reviews: wholesale local access, wholesale fixed analogue, exchange lines, ISDN2 and ISDN30*".

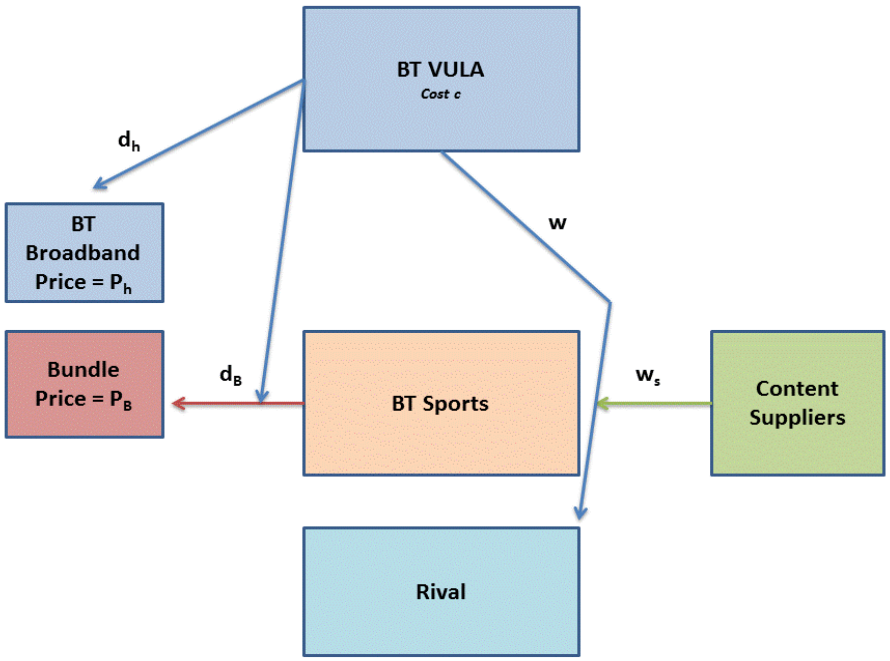
2 BT Response to the Consultation Document, 30 September 2013 ("BT Response").

3 BT Response, para. 301, p.68.

paper we assume that all costs can be expressed in terms of a given "charge per customer". We therefore abstract from the question of how actual variable and fixed costs might be combined to actually calculate such relevant per unit costs.

As illustrated in Figure 1, for simplicity we assume there are only two products: super-fast broadband (SFBB) and sports channels (SC). The cost of distributing SFBB is d_H and the cost of distributing SC is d_s. We assume that the only input required to "produce" SFBB is the regulated input for which the vertically integrated firm's rivals pay a per unit wholesale price *w*, and that this input is produced by the vertically integrated firm at a unit cost of *c*. Finally, we assume that the per unit cost of sourcing the inputs required to produce (not distribute) SC is w_S. The vertically integrated firm can choose its marketing mix. Each of the two products can be sold individually for prices P_H and P_S, respectively. The two goods can also be offered as a bundle for a price P_B.

Figure 1: General Set Up and Notation



3.1. A simple framework

As a benchmark, let us first consider the case where BT does not offer a bundle. The only way for consumers to purchase BT's SFBB services is therefore to pay P_H. That price therefore represents the relevant competitive constraint faced by other firms that also wish to compete for SFBB customers.

Define the per-unit price at which other firms can access BT's essential broadband input as *w*. The purpose of a margin squeeze test is of course to ensure that an equally efficient operator offering a SFBB product could compete with BT. This means that a rival operator with BT's SFBB retail cost, who paid the wholesale price that BT charges for its essential input should be viable when competing with BT's SFBB retail price, i.e.:

$$P_H - d_H - w \geq 0 \qquad (1)$$

Now consider the case where BT is offering its SFBB customers free access to its BT Sports channels, i.e., it is offering a pure bundle of SFBB and BT Sports. It is now the price of the bundle P_B that represents the effective competitive constraint faced by BT's rivals. However applying condition (1) to the bundle price would fail to achieve the policy objective. Assuming that sports channels are valued at V by consumers,[4] a SFBB rival with the same retail costs as BT could only survive by charging a price p such that

$$p = P_B - V$$

This means that the actual profits of the rival would be

$$P_B - V - d_H - w \geq 0$$

which is clearly not implied by equation (1) with $P_H = P_B$.

What this illustrates is that by allowing its SFBB customers to have access to its sports channels "for free" (i.e. as part of the SFBB bundle), *BT would be able to evade any margin squeeze test designed to check whether a single product can be profitably sold by an EEO*.

The intuition behind this conclusion is as follows. When applying a margin squeeze test to a particular product, the "retail price" that is relevant for the test is the price actually faced by consumers. This is not a "list price", but the effective retail price paid, once all special offers and other discounts have been applied. Offering a valuable "add on" such as sports channels for free to SFBB customers is nothing but a "special offer" or "rebate in kind". It is little different to, for example, providing a set of customers with a £15 Marks and Spencer voucher each month. A vertically integrated firm would not be allowed to evade a margin squeeze test in such a manner, i.e. by reducing its *de facto* retail price via ex-post rebates. *By the same token, BT should not be allowed to avoid a margin squeeze test by reducing its de facto retail price via rebates "in kind" (e.g., free access to BT Sports channels) which in practice would have the same effect as a "cheque in the post" for the single product case.* Whether or not BT also has significant market power in the provision of Sports channels is completely irrelevant to this argument.

3.2. Some illustrative examples

The different ways in which bundling can be used to evade the intended effect of a margin squeeze test if it were not applied to bundles can be further illustrated by a couple of examples. We consider a very simple setting. There are two groups of consumers. The first group cares mostly about SFBB. Each consumer in that group is willing to pay up to 10 (say) for SFBB, but is only willing to pay up to 2 for sport channels. The second group cares about both goods, willing to pay 10 for each of the two products. Notice that this last assumption implies that the preferences of this group of consumers for the two products are independent: they do not value the products more if they can get them together.

4 For simplicity of exposition, here and in the following section on pure bundling we assume that all consumers have the same valuation V for the add-on. Similar arguments apply to the case of heterogeneous consumer tastes as long as the number of consumers with below-cost values for add-on is negligible.

As a point of reference, let us assume that we could observe the cost *c* and impose access to the broadband input at cost, i.e. *w* = *c*. In this case, the market equilibrium would have stand-alone SFBB priced at $P_H = c + d_H$ and the bundle offered at $P_B = c + d_B + w_S$. If $P_B - P_H = d_B - d_H + w_s < 2$, then all consumers purchase the bundle. Otherwise, consumers from group 1 only purchase SFBB and consumers from group 2 buy the bundle.

We now assume that, because we cannot observe *c*, we want to regulate access to the necessary broadband input through a margin squeeze test. We are going to show that relying on a one-product test would fail to ensure that an equally efficient rival could profitably access the market. We distinguish between two scenarios. In the first case, we assume that the rival of the vertically integrated firm can only offer stand-alone SFBB. In the second scenario we envisage a rival which is not only as efficient as the incumbent in offering SFBB, but is also equally efficient in supplying a sports/SFBB bundle.

3.2.1. The case of a SFBB-only rival

Let us assume first that all consumers belong to the first group (which values SFBB up to 10, and SC up to 2), and that bundling was not allowed. In such a case, a one-product margin squeeze test would require that the vertically integrated firm's own distribution margin covers the wholesale price that it charged for the necessary input, i.e. that $P_H - d_H \geq w$. Thus, for example, the vertically integrated firm could charge a retail price for SFBB equal to the consumer's reservation price, 10, and set its wholesale price at $10 - d_H$. Such an offering could be matched by another firm with the same distribution cost and could be undercut by a more efficient distributor.

We now allow the vertically integrated firm to offer a bundle if it wishes to. It could set a price of 11.99 for the bundle, and a price of 11.90 for SFBB alone. This would ensure that all consumers would prefer the bundle to the stand-alone offer.

In order to pass the one-product margin squeeze test, the vertically integrated firm only needs to ensure that its wholesale price is such that $11.9 - d_H \geq w$. This means that the vertically integrated firm can now charge a higher wholesale price to its rival than in the absence of bundling, and still pass the margin squeeze test. How well does the rival fare under such conditions? If it is exactly as efficient as the vertically integrated firm, it can only match the 11.9 offering for stand-alone SFBB; but we know that this offer will now be rejected by all consumers in favour of the bundle offered by the vertically integrated incumbent. Thus the use of bundling makes it possible to exclude an equally efficient rival even though the one-product margin squeeze test is passed.

Let us now imagine that the rival is *more* efficient than the incumbent, in the sense that it has SFBB distribution costs that are lower than those of the incumbent by an amount *a.* The vertically integrated firm sells the bundle at price $P_B \leq 12$. To make sure that consumers prefer the bundle to stand-alone SFBB, the price of SFBB must be larger than $P_B - 2 = 10$.

Let us also assume that the vertically integrated firm would not be allowed to set a stand-alone price that is higher than the bundle price, i.e. that $P_H \leq P_B$. Hence we have: $P_B - 2 < P_H \leq P_B$. In order to pass the one-product margin squeeze test, we must also have $P_H - d_H \geq w$.

If it wants to exclude its single product rival, the best that the incumbent can do is to set w such that this test is just satisfied, i.e. $w = P_H - d_h$. Since this maximum

wholesale price is increasing in P_H, and an increase in P_H also allows the vertically integrated firm to divert consumers to the bundle more easily, it makes sense for this firm to choose the highest possible value for P_H, i.e. $P_H = 12$.

We can now determine under what conditions such a strategy would actually keep the rival out of the market.

The rival's profit margin if it matches the value that consumers get out of the bundle is

$$P_B - 2 - w - (d_H - a) = P_B - 2 - (12 - d_H) - (d_H - a) = (P_B - 12) + (a - 2)$$

where 2 is the additional value that consumers attribute to the sports channels and a is the efficiency advantage of the rival. We see that, as long as a < 2, the vertically integrated firm can charge the maximum bundle price that would attract consumers and still exclude the equally efficient one-product rival.

This simple analysis clearly illustrates how *bundling allows the incumbent to circumvent a one-product test (and still set the maximum possible retail price), as long as the cost advantage of the entrant is smaller than the additional value that consumers attach to the provision of the sports channels*.

3.2.2. The case of a rival offering SFBB and a SFBB/sports channel bundle

We have just explained that, in order to successfully regulate a SFBB-only firm's access to a necessary broadband input, it is necessary to go beyond a SFBB-only margin squeeze test. We now show that a single-product margin squeeze test is also ineffective when it comes to providing access to a firm that is *also* able to offer a SFBB-sports channel bundle.

Remember that the unit cost of obtaining the content for the sports channels is w_S and define the unit cost of distributing the bundle as $d_B \geq d_H$. We now assume that there are N_1 consumers in the first group (those with willingness to pay 10 for SFBB and 2 for sports) and N_2 consumers in the second group (those who value SFBB at 10 and sport channels at 10). How can the vertically integrated firm foreclose its rival?

Consider the following strategy: the stand-alone SFBB price is set at the "willingness to pay" of consumers in group 1, i.e. $P_H = 10$. The wholesale price for the necessary input is set so as to just clear the SFBB-only margin squeeze test, i.e. $w = 10 - d_H$. Facing these conditions, an equally efficient competitor can attract the first group of consumers but makes no profit on these sales.

Let us now look at the demand from consumers in group 2. Given that the vertically-integrated firm charges $P_B < 20$, consumers in group 2 buy the bundle rather than the stand-alone SFBB. At that price, the profit margin that the rival firm can make on its own bundle is

$$P_B^R - d_B - w_S - w = P_B^R - d_B - w_s - (10 - d_H) = [P_B^R - 10] - [d_B - d_H] - w_S,$$

where P_B^R is the bundle price set by the rival firm. $[P_B - 10]$ is the marginal price of the sports channels included in the bundle. If the vertically integrated firm decides to charge $P_B - 10 = w_S + [d_B - d_H]$, then the rival firm can at best match this bundling price, share in the sales to the second group of consumers and break even. However if the vertically integrated firm charges a marginal sport channels price *slightly below* this benchmark then *it can exclude the rival from making any sale to the second group of consumers, even though the rival can provide such a bundle as efficiently and even*

though the behaviour of the vertically integrated firm is constrained by a (single-product) margin squeeze test.

While exclusion from serving this second segment of demand would not be much of a concern if it is of relatively small size (i.e. N_2 is much smaller than N_1), it of course becomes highly relevant if a significant part of the demand for SFBB comes from consumers who also place significant value on sports channels.

As a final permutation, the vertically integrated firm facing an equally efficient rival who can also offer a bundle would also be able to choose a strategy that meets the single product margin squeeze test and exclude the rival *from both segments of the market.*

To see this, assume that $w_s = 3, d_H = 2, d_B = 3$. The vertically integrated firm charges a retail price for SFBB equal to $P_H = 10$ and sets its wholesale price for the necessary input equal to $w = 10 - d_H = 8$ This leaves the consumer of group 1 with zero surplus, so these consumers will prefer the bundle as long as the bundle price is lower than the consumers' valuation of the bundle, i.e. as long as $P_B < 10 + 2 = 12$. Assume $P_B = 1.99$. What is then the profit margin of the entrant on the bundle if it matches the incumbent's price? It is equal to $11.99 - d_B - w_S - w = -2.01$. By following this strategy, the vertically integrated firm gets all sales from both consumer groups and makes a profit margin on each sale equal to $11.99 - d_B - w_S - c = 5.99$.

Thus, as long as the cost of producing the necessary input is lower than 5.99, *the vertically integrated firm can find a strategy that simultaneously (a) satisfies the one-product margin squeeze test, (b) excludes an equally efficient rival from both segments of the market, and (c) produces positive profits.*

Again these examples well illustrate the general proposition that limiting the performance of the margin squeeze test to stand-alone products offered by the vertically integrated firm– and not extending it to the bundle – provides the vertically integrated firm with the ability to evade the test through a bundling strategy.

In all of the examples presented above, the vertically-integrated firm was able to use the fact that potential SFBB customers also place some value on sports channels to either artificially lower the price of SFBB through a gift in kind or to divert demand to the SFFB-sports channels bundle to which no margin squeeze limitations applied. The importance of such "evasion" mechanisms depends on the proportion of SFBB customers who actually value sports channels: if the number of consumers for whom sports channels is of no value at all is large, then the strategies outlined above would only prevent an EEO from accessing a small portion of potential customers and the resultant competitive damage might well be negligible. On the other hand, the exclusion mechanisms describe are effective as soon as SFFB consumers put *some* value on sports channels. However small that value is, the strategies described would make it possible to exclude an EEO. The magnitude of the SFBB's consumers' valuation of sports channels only affects the vertically-integrated firm's ability to exclude *more* efficient competitors.

3.3. Some relevant precedents

Regulators dealing with margin squeeze in a bundled environment with reference to telecoms have long recognised that it is necessary to include bundles that include the

key input within the scope of margin squeeze tests.[5] Indeed, it appears that this point is so self-evident that there is rarely any significant questioning of whether or not the test should include downstream bundles – including on the part of those subject to such tests.

For instance in March 2009 the ERG issued a *Report on the Discussion on the application of margin squeeze tests to bundles*. The relevant paragraphs 34 and 35 are reproduced below:

> *"34. Where retail bundles are offered by a vertically integrated firm with SMP in the wholesale market, NRAs may have to apply the bundling regulatory provisions set out by the Universal Service Directive and/or a MS assessment (test) at the wholesale level. Where this is the case NRAs, at the same time, may want to assess whether to impose an obligation not to unduly bundle and may want to check whether an equally/reasonably efficient operator in the downstream market would be able to replicate the bundled offer of the SMP operator.*
>
> *35. Checking for replicability may involve NRAs conducting profitability tests for the bundle to verify if the bundle retail price covers the costs of acquiring the wholesale inputs necessary for the provision of the bundle plus any other relevant costs. In carrying out this exercise, it is likely that NRAs would need information on input prices, downstream prices, efficient downstream costs and appropriate margins of downstream competitors."*

While the ERG does not elaborate on what other costs may be relevant, it clearly indicates that a proper test should go beyond measuring the retail margin of the single-product offering.

For a more recent specific application, on 8 February 2013 ComReg published its Decision on *Price Regulation of Bundled Offers – Further specification of certain price control obligations in Market 1 and Market 4*. Among other aspects, ComReg concluded that unregulated products bundled with regulated products should contribute to the costs in the margin squeeze test according to their long-run incremental costs (LRIC):

> *"For unregulated services in a bundle (irrespective of whether the bundle is sold / offered within or outside the LEA), ComReg maintains the view that such services must cover their own LRIC." (para. 5.67)*

We further note that ComReg's document does not reflect any controversy about the need to include the costs of bundled unregulated products in the margin squeeze test – the debate between ComReg and various respondents to its previous consultation documents on this was merely on the appropriate cost standard (e.g., LRIC or avoidable average cost). This suggests the point was seen as so obvious that it did not need to be debated, and it is clear that ComReg believes that appropriate regulation requires that the test should include bundled offerings. .

5 We note that Ofcom also recognised such a need in the context of pay TV when introducing the wholesale must offer (WMO) charge control.

4. CONCLUSION

The fundamental question addressed in this short paper has been whether a margin squeeze test that applies only to stand-alone SFBB offers is likely to be successful in preventing exclusionary behaviour on the part of a firm with significant market power in relation to a critical broadband input.

Straightforward economic analysis and logic shows unambiguously that this is not the case. BT's offer of sports channels "for free" to SFBB customers (i.e. bundled with its SFBB product) would undermine the purpose of the proposed policy, if the test was not applied to the bundle. More generally, a single-product test cannot be expected to ensure that equally efficient rivals can profitably access the market demand for SFBB services. The proposition that, in the presence of bundling, it is necessary to include bundled offers themselves in some form of test is clear and uncontroversial, and indeed well recognised in the practice of telecoms regulators.