A note on Ofcom's proposed ALF tax adjustment

This note sets out our review and analysis of Ofcom's proposed tax adjustment to the Annual Licence Fee (ALF) for 900 MHz and 1800 MHz spectrum. We believe that Ofcom has not considered the differences in financing arrangements under the ALF and lump sum approaches and that, once this is incorporated, a small downwards tax adjustment should be made to the ALF.

Overview and context

In October 2013 Ofcom issued a consultation regarding its approach for deriving the Annual Licence Fee (ALF) with respect to radio spectrum in the 900 MHz and 1800 MHz bands. This was in response to the Government Direction, issued in December 2010, which specifically requires Ofcom to ensure that these rates reflect "full market value" (and where Ofcom was specifically required to have regard to the sums paid at the 4G Auction).

In order to set the ALF, Ofcom first had to estimate the 'lump sum' market value for spectrum and then convert this into an ALF amount. In converting the lump sum into annual amounts, Ofcom has sought to ensure that the present value of the stream of ALF payments is equal to the market value of the lump sum. The underlying economics principle of this is that, assuming capital market efficiency (and assuming competitive purchasing and leasing markets) one would normally expect the net present value (NPV) of asset ownership to be equivalent to that of asset leasing. This principle is well established in the academic economics and finance literature, where Miller and Upton (1976)[1] provide a comprehensive description of the relevant issues. These are further

[1] *'Leasing, buying, and the cost of capital services.' Miller and Upton, Journal of Finance 31, 761-786 (1976).*

considered by Schall (1974)[2] and Smith and Wakeman (1985).[3] As set out further subsequently, we believe that a key issue in ensuring value equivalence is to recognise that under both an ALF and lump sum approach, spectrum is an asset for which the financing costs must be borne by the MNOs (licensees). The only difference is that under the ALF approach, financing is provided by Government, whereas under a lump sum approach, the MNO (licensee) would need to raise *external finance.*

From a practical perspective, in order to convert the estimated 'lump sum' market value for spectrum into an ALF, Ofcom has had to consider: (i) what the appropriate cost of capital should be; (ii) whether it should be set in real or nominal terms; and (iii) whether it should be set on a pre or post-tax basis. Regarding this, in the Consultation Ofcom is proposing to:

- Set the cost of capital based on that used for the current charge controls for mobile call termination (MCT) – updated to reflect changes to corporation tax since those MCT controls were made.
- To set the cost of capital on a real, post-tax basis, reflecting Ofcom's view that bidders at the 4G Auction are likely to have formed their valuations based on expected returns *after tax.*

"A post-tax approach to determining the ALF is appropriate, as this reflects the fact that firms ultimately need to pay a share of their profits in taxation (in addition to remunerating debt and equity holders)."

We believe that a post-tax approach to determining the ALF is appropriate, as this reflects the fact that firms ultimately need to pay a share of their profits in taxation (in addition to remunerating debt and equity holders). However, were one to adopt a post-tax approach, a complication *may* arise in that differing tax treatments of 'lump sum' assets and annual licence payments could mean that the present value of the ALF (post-tax) would not be equal to the market value of the lump sum (unless one were to explicitly adjust for those differing tax treatments).

In light of these issues, under the First Competition Assessment[4] Ofcom's proposed approach was to apply a *pre-tax WACC.* Here, Ofcom's stated reasoning was that under a post-tax approach, the need to explicitly take account of differing tax treatments made the assessment more complex. However, in the Consultation Ofcom's position is now that because (as stated above) the bidders most certainly valued 4G spectrum from a post-tax perspective, like any other future investment project, it would therefore be correct to similarly adopt a post-tax WACC for setting the ALF; and to address the complication by quantifying the required tax adjustment to achieve value equivalence.

> *"Our underlying rationale for proposing the use of a real pre-tax cost of capital [in the First Competition Assessment] was that, when the likely tax advantage of annual licence fees compared to a lump sum payment was taken into account, using a real pre-tax cost of capital (and ignoring the different tax treatments) gave a similar result to using the real post-tax cost of capital. As this rationale ultimately depended on a calculation using the real post-tax rate, we now consider that it would be more transparent to do the calculation on a post-tax basis, and to make explicit our assumptions on the more favourable tax treatment of annual licence fees compared to a lump sum payment."*[5]

We consider that Ofcom's revised approach, which is to be explicit and transparent regarding the assumptions it is making relating to tax treatments, is appropriate. In particular - and as noted above - it properly reflects the fact that a proportion of firm profits will be paid to tax authorities in addition to being distributed to debt and equity investors.

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[2] *'The lease-or-buy and asset acquisition decision.' Schall, Journal of Finance 29, 1203-1214 (1974).*

[3] *'Determinants of corporate leasing policy.' Smith, and Wakeman, Journal of Finance 40, 895-908 (1985).*

[4] *Which Ofcom refers to in relation to: 'Consultation on assessment of future mobile competition and proposals for the award of 800 MHz and 2.6 GHz spectrum and related issues.' Ofcom (22 March 2011).*

[5] *'Annual licence fees for 900 MHz and 1800 MHz spectrum: Consultation.' Ofcom (2013). Para 5.51.*

In the above context, Ofcom has sought to quantify what it considers to be the appropriate upwards tax value adjustment to the ALF. Relatedly, Hutchison Three UK Ltd (Three) asked Economic Insight to examine and review Ofcom's proposed adjustment, and to set out our views as to its appropriateness and robustness from an economics perspective. A separate note, also prepared on behalf of Three, sets out our thoughts specifically in relation to the appropriate approach to determining the WACC for the purpose of setting the ALF.

Ofcom's proposed tax adjustment

As noted above, Ofcom believes that (on a post-tax basis) the NPV of the 'lump sum' and the ALF would not be equivalent. In particular, it believes that ALFs would receive a more favourable tax treatment than a lump sum. Consequently, in order to achieve equivalence in value terms on a post-tax basis, Ofcom argues that the value of the ALF should be adjusted upwards. In the following, we briefly summarise:

- the basis on which Ofcom believes the tax treatment would be more favourable under an annual fee amount; and
- Ofcom's methodology for calculating the adjustment.

Ofcom's rationale for the adjustment

Ofcom's view is that, were the spectrum purchased on a 'lump sum' basis, it would be treated as an intangible asset, recorded on a company's balance sheet; and then amortised on a straight line basis over the period of the licence.[6] Ofcom specifically references the 2002 IFA regime and International Accounting Standards 38 to support this view. Ofcom further states that, were this to be the accounting approach applied, then the impact of the spectrum on a firm's profit and loss account is that the firm's taxable profit would be reduced by the amortisation amount in each year.

In contrast, Ofcom believes that under an ALF approach, the cost of the annual fee would be treated as a revenue expense, and so would appear as a cost in the firm's profit and loss account in each year. Thus, under this approach, the firm's taxable profits would be reduced by an amount exactly equal to the licence fee in each year. Ofcom notes that such an accounting approach is allowable so long as the activity to which the licence relates *"is wholly and exclusively for the purposes of the trade [in question]."*

Ofcom then sets out two factors that explain why, under these two approaches, the NPV of the annual fee would differ from the value of the lump sum value of spectrum on a post-tax basis:

» ***Time value of money.*** Consistent with Ofcom's description of the differing accounting treatments set out above, the regulator notes that the tax impact under the lump sum approach is that taxable profit is lower by the amortisation amount in any given year. Given that this would most likely be on a straight line basis over the 20 year notional licence period, the amortisation charge that would appear in the profit and loss account would be 1/20th of the value of the lump sum. However, by definition, this approach does not reflect the opportunity cost of taxable profit, which by contrast, Ofcom explicitly takes in account in calculating the ALF. The result, according to Ofcom, is that the ALF is greater than the amortisation amount, and thus the reduction in taxable profit is greater under the annual fee than under a lump sum approach.

» ***Inflation.*** Ofcom states that, under the lump sum approach, the amortisation charge in the profit and loss account would be in nominal terms, and would not reflect general inflation. Therefore, in real terms, the value of the amortisation charge would decline over time. Consequently, in real terms, the total value of the amortisation charges would be less than the lump sum value. In comparison, Ofcom's calculation of the annual fee is explicitly set in real terms, and so reflects general inflation.

[6] *Where here straight line refers to dividing the asset value by the number of years over which the assets is expected to be used (Ofcom assumes a 20 notional licence period) so that the amortisation charge in the same in each year.*

Ofcom's methodology for calculating the adjustment

Given the above, Ofcom states that - in using a post-tax WACC to determine the value of the ALF - an explicit adjustment is required in order to ensure that the present value of the post-tax ALF is equivalent to the value of the lump sum. Specifically, Ofcom is of the view that an upwards adjustment of 11% should be applied to the ALF in order to achieve value equivalence. Ofcom's approach to calculating this adjustment is as follows:

» Ofcom has determined the adjustment by developing a spreadsheet model, which calculates the present value of the impact on taxable profits under the two approaches.[7]

» The key assumptions and calculation steps within the spreadsheet model are:

  – Ofcom assumes that under the lump sum approach, the spectrum is fully treated as an intangible asset – and so the taxable profit impact is the associated amortisation charge, based on 1/20th of the lump sum value in each year.
  – Ofcom assumes that under the annual fee approach, the spectrum is fully treated as a revenue expense, and so the taxable profit impact is the associated annual fee amount.
  – Ofcom has used the latest forecasts for the main rate of corporation tax – specifically 23% for 2013/14; 21% for 2014/15 and 20% for 2015/16 (and constant from then on).
  – Ofcom has assumed an inflation rate of 2.5% (defined in RPI terms), and the lump sum is spread over 20 years.
  – Ofcom further assumes that the value in question relates to the 20 year period post auction, and thus the calculation of the NPV is for the period 2013/14 to 2032/33.

» Given the above assumptions, Ofcom's spreadsheet model then 'solves for' the upwards adjustment to the ALF required for the present value of the tax impact to be equal under the 'lump sum' and ALF approach.

Our view of the key economics issues

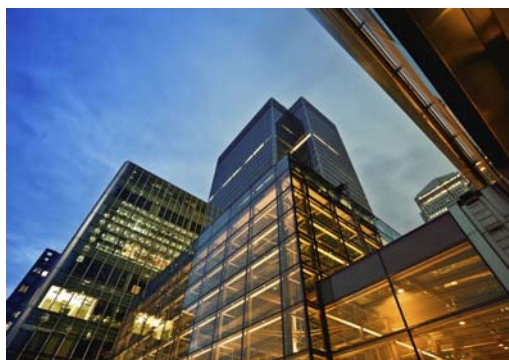
If one accepts Ofcom's characterisation of the differing accounting treatments relating to the ALF and the 'lump sum,' then we agree that the 'in principle' need for an ALF tax adjustment exists. That is to say, absent such an adjustment (and subject to the assumption that the 'lump sum' would be fully treated as an intangible asset and amortised, whereas the ALF would be treated as a revenue expense through the profit and loss account) it is clearly the case that the NPV of the ALF would not necessarily be equal to the value of the lump sum post-tax. Consequently, the principle of value equivalence between asset ownership and leasing would not be met.

However, we consider that Ofcom's characterisation of the accounting treatments may not be complete. In particular, we think that Ofcom may not have fully considered: (i) the fact that under both the ALF and lump sum approaches, spectrum is an economic asset that must be financed; (ii) that critically, the sources of this finance would differ under the two approaches – with Government implicitly financing the ALF, whereas the lump sum would require the MNO to raise external finance (most likely debt, as discussed subsequently); and (iii) that as a consequence of not considering the differences in financing source, Ofcom has failed to factor in the possible debt tax shield that would arise under a lump sum approach.

An additional consideration is whether Ofcom's presumption regarding the differing accounting treatments of the ALF and lump sum approaches would necessarily reflect what firms might do in the real world in all instances. For example, with regard to finance leases (which under IFRS are defined as leases that *"transfer substantially all the risks and rewards incidental to ownership of an asset."*[8]) firms are required to capitalise the value of such leases and report them on their balance sheets, as though they were a fixed asset. In our view, the characteristics of the licences for 900 MHz and 1800 MHz spectrum could be considered to meet a number of the criteria used for defining finance leases. For example, whilst Ofcom has modelled a notional 20 year licence, in

[7] *See alf.xls Excel File, 'Calculation of annual licence fees for 900 MHz and 1800 MHz.' Ofcom (2013).*

[8] *'International Accounting Standard 17: Leases.' IFRS (2012).*



"Under both the ALF and lump sum approaches, spectrum is an asset that must be financed, one way or another."

practice the licences are of an indefinite term, which could be interpreted as conferring the rights and risks of ownership.[9] Furthermore, the joint FASB / IASB project to standardise the future accounting of leases proposes that operating leases should also be capitalised. Clearly, were firms to choose (or be required) to capitalise the ALF, then the accounting treatment could be equivalent to that of a lump sum approach. This is because in both instances there might typically be a financing/interest charge and a depreciation/amortisation charge reported in the P&L. However, differences in financing, as discussed above, would nonetheless remain and would need to be considered.

The above implies that, in practice, MNOs may have some flexibility as to whether they choose to record any ALFs as a revenue expense, or capitalise the value of those payments. Relatedly, firms may have a range of considerations that they take into account when determining what accounting approach they should adopt. Given this, it could be that Ofcom's characterisation of there being a clear distinction between the accounting treatments of the ALF relative to the lump sum is, to a degree, questionable. The annex to this note contains further details regarding the accounting treatment of leases.

In summary, we consider the key economics issues to be as follows:

- ***Under both the ALF and lump sum approaches, spectrum is an asset that must be financed.*** In an economics sense we consider that – regardless of whether the spectrum value is considered in terms of an annual payment or a lump sum amount – ultimately it should be regarded as an asset to the MNOs (the licensees) which must be financed.

- ***That critically, the key economics difference between the two approaches is that the sources of finance differ between the two.*** Implicitly, under the ALF approach, Government is providing financing as the opportunity cost of capital is itself embedded within the ALF as calculated by Ofcom (i.e. Ofcom is using a notional MNO WACC to convert the lump sum into an ALF). However, under a lump sum approach MNOs would typically need to raise external finance (which, on the basis of equivalence, would most likely be debt) in order to fund the purchase of the spectrum. The impact of these differences in financing source do not appear to have been considered within Ofcom's methodology.

- ***Once differing financing sources are recognised, one must factor in the potential tax shield that would arise under the lump sum approach.*** Once one considers that under a lump sum approach an MNO would need (or may choose) to raise external finance to fund the spectrum purchase, the tax implications of this finance must be included in any comparison of post-tax profits under the ALF and lump sum approaches. In particular, to the extent that corporate debt would be used to finance the lump sum, this would attract a tax shield with respect to the corresponding interest payments. In turn, this would lower taxable profit, reducing cash taxes paid by the firm, thus increasing the firms' total cash flows. Clearly, under an ALF approach in which corporate debt is not raised, this tax shield effect would not arise. Consequently, all else equal, including the impact of the debt tax shield under the lump sum approach would result in a *downwards* adjustment to the ALF to ensure equivalence between the ALF and lump sum approach. Having reviewed Ofcom's Consultation and corresponding ALF spreadsheet, we note that no offsetting tax shield effect has been incorporated within its calculation. We believe that this is an omission from Ofcom's analysis, and so the adjustment calculation should be amended accordingly.

In the following we expand further on the above issues.

[9] *This is not to say that the ALF could be classified as a finance lease per se, rather than it might be considered as being analogous to one.*

The need to explicitly recognise differences in financing sources

In considering the appropriateness – and level – of any potential tax adjustment, we consider it helpful to start from economics theory and first principles. These suggest that (putting tax treatments to one side initially) from the perspective of an MNO (licensee) the 900 MHz and 1800 MHz spectrum would be considered as an economic asset that needs to be financed, with a corresponding liability. Economically, this is true regardless of whether the MNO pays for the spectrum up front in the form of a lump sum payment, or in an annual stream of stream of payments under an ALF approach. In particular, and as illustrated in the diagram below:

» Under a lump sum approach, the spectrum represents a fixed intangible asset that would be reported on the firm's balance sheet, with a matching liability. Here the licensee would most likely need to raise external finance in order to support the purchase of the spectrum.

» Under an ALF approach, operators may have the option as to whether to capitalise and amortise the spectrum licence, like a lump-sum fee, or treat the ALF payment as a recurring revenue expense. In any event, either way, economically the capitalised value of the payments must necessarily be regarded as an asset with a matching liability. Here, however, the financing costs are implicitly embedded within the payments themselves – and so conceptually (and effectively), Government is financing the spectrum asset.

Figure 1: Illustrating the difference in financing sources

Source: Economic Insight

Why differing financing sources matter

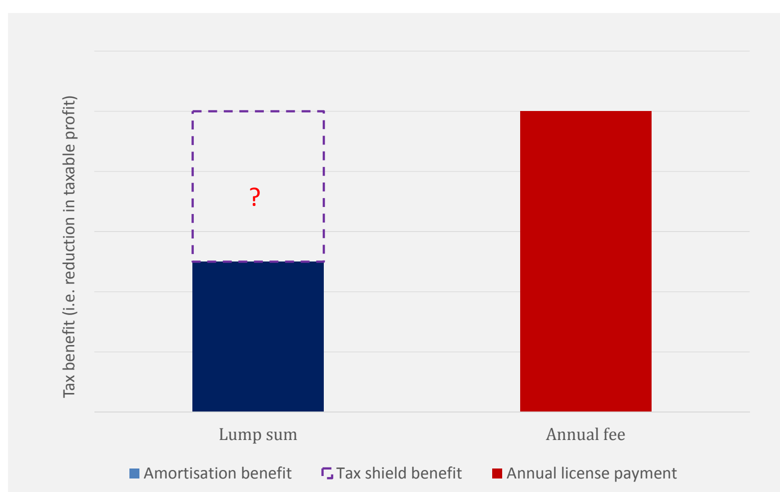
The fact that the present value of the ALF should be equivalent to the lump sum is, of course, non-contentious. Indeed, this is exactly the motivation for Ofcom's concern in the present case: namely that, due to differences in tax treatments, the present value of the ALF may be *lower* than the lump sum post-tax, so necessitating the need for an upward tax adjustment factor being applied to the ALF. This is also consistent with historical and future planned accounting guidelines and principles regarding the treatment of leases. In particular, under UK GAAP and IFRS standards finance leases must be capitalised and recorded on firm balance sheets. In other words, the accounting treatment of leases increasingly recognises the fact that, in many instances, they are an asset in an economic sense.

Of critical importance to the issues under consideration here is that the precise *form* of external finance used will itself in part determine taxable profits and cash flows under the lump sum approach. Consequently, in order to achieve equivalence between the lump sum and the ALF, one must accurately calculate taxable profit to the MNO (licensee) under the two approaches, taking financing sources and costs into account.

In particular, to the extent that under a lump sum approach, the spectrum would be financed through incremental corporate debt, then this would normally attract a tax shield on the corresponding interest payments. This, in turn, would lower taxable profit under the lump sum approach and so would act to offset the difference between the annual licence payments (under an ALF approach) and the amortisation charge (under a lump sum approach). Our review of Ofcom's Consultation and its corresponding ALF spreadsheet suggests that: (i) Ofcom has not apparently given consideration to the potential for the licensee to raise external debt finance to fund the spectrum under the lump sum approach; and so (ii) has not included the benefit the potential debt tax shield, which would accrue under this approach.

The below figure illustrates the difference between our proposed approach (which explicitly takes account of financing sources) and that used by Ofcom. In particular, Ofcom calculates the tax adjustment factor of 11% as being the difference between the reduction in taxable profit due to annual licence payments (the solid red bar below under the annual fee approach) and the amortisation charge that would arise under the lump sum approach (the solid blue bar). The key question, therefore, is what the difference in taxable profit would be under the two approaches once differing financing sources – and their respective tax shield effects – are taken into account, as shown by the dotted purple line.

Figure 2: Illustrating tax benefit under the lump sum and annual fee approach.



Source: Economic Insight

What the appropriate external financing source would be

For reasons set out above, in order to fully evaluate the difference in taxable profits to an MNO (licensee) under the ALF and lump sum approaches, it is essential to consider the *form* of external finance that would be used to fund the purchase of spectrum under a lump sum approach. This is because, to the extent that incremental corporate debt is raised, this could attract a tax shield that needs to be included in any comparative analysis of taxable profit under the two approaches. We think that there are three key considerations in this regard:

- the commercial incentives for raising debt finance;
- the ability of MNOs (licensees) to raise debt finance; and
- the likely cost of any corporate debt that would be raised.

Incentives for raising debt finance

Regarding the commercial incentives for raising incremental corporate debt to finance the lump sum, economic theory provides a range of relevant considerations. The natural starting point

would be Modigliani-Miller (1958)[10], who found that firm value is independent of capital structure absent the presence of taxation, bankruptcy costs, agency costs and information asymmetries. In practice, of course, factors such as taxation do apply, meaning that theories of optimal capital structures have been developed. Of particular relevance to the issues under consideration here is 'pecking order theory,' as proposed by Myers and Maijlu (1984),[11] which states that, due to adverse selection, firms firstly look to retained earnings, then to debt, and then only turn to equity finance in the absence of being able to make use of those sources. The most commonly expressed description of the adverse selection motivation for a pecking order is as follows: *"the key idea is that the owner-manager of the firm knows the true value of the firm's assets and growth opportunities. Outside investors can only guess these values. If the manager offers to sell equity, then the outside investor must ask why the manager is willing to do so. In many cases the manager of an overvalued firm will be happy to sell equity, while the manager of an undervalued firm will not."* Frank and Goyal (2005).[12]

Relating pecking order theory to the operation of mobile networks specifically, we note the following:

» Firstly, that in practice UK MNOs would rarely have sufficient cash to consider the financing of *significant* spectrum acquisition out of reserves, and so would always be reliant on external financing. In practice, this might usually take the form of an intra-group loan or equity but, conceptually, when considering financing from the perspective of a hypothetical *UK* MNO, the financing source is 'external' (evidence regarding corporate debt raising by MNOs is set out subsequently).

» The adverse selection problem that determines why debt may be preferred to equity could be more acute in industries where the external perspective is that internal management may have a particularly strong advantage in understanding the value of assets – which in complex and fast moving industries such as mobile telecoms, may be a consideration.

In addition to the above, wider reasons for generally favouring debt over equity finance – such as taxation– are also applicable to MNOs.

Ability to raise corporate debt

When considering the ability of MNO's to raise corporate debt to fund spectrum acquisition, a key issue is that the opportunity cost embedded with the ALF *could* (in a conceptual sense) be regarded as akin to paying the interest on corporate debt, had the spectrum been purchased as a lump sum. Relatedly, under the ALF approach the opportunity cost is inseparable from the overall payment, and so could be regarded as a 'senior' form of debt (i.e. the MNO has no option to forgo the repayment). The implication of this is that, if existing MNO debt holders believe that the firm would be financeable (and that their debt would not be unduly subordinated) in the event of the MNO having to pay an implicit financing cost under the ALF, then by definition they would also be accepting of the spectrum being entirely debt financed under a lump sum approach.

Notwithstanding the above, one must also address the practical considerations regarding the ability of MNOs (the licensees) to raise such finance. To examine this, in the first instance we calculated:

- the actual gearing levels of the UK MNO parent companies; and
- what the gearing would be if the parent companies 100% debt financed the UK 900 MHz and 1800 MHz spectrum (i.e. it does not show the impact on gearing of capitalising any non-UK spectrum).

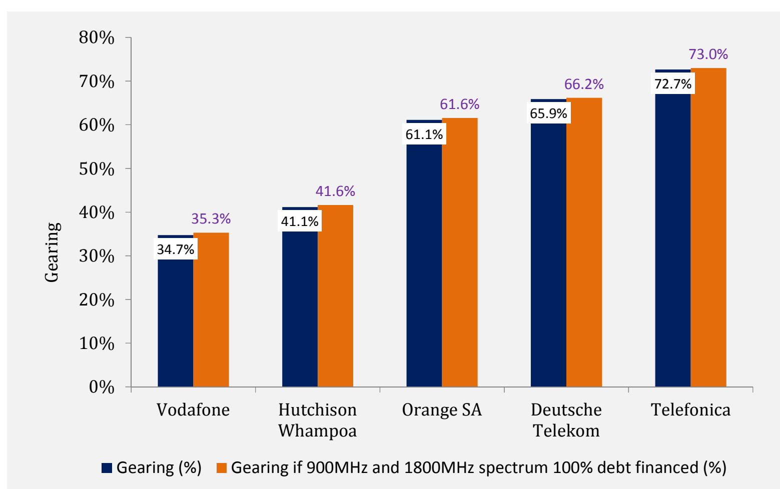
The results of this are shown in the following figure.

[10] 'The Cost of Capital, Corporation Finance and the Theory of Investment.' *American Economic Review 48 (3): 261–297, Modigliani, F.; Miller, M. (1958).*

[11] 'Corporate financing and investment decisions when firms have information investors do not have.' *Journal of Financial Economics, 13, 187-221. Myers, S.C., and N.S. Majluf, (1984).*

[12] *'Trade off and Pecking Order Theories of Debt.' Centre for Corporate Governance Working Paper, Frank and Goyal (2005).*

Figure 3 MNO parent company gearing analysis



Source: Economic Insight analysis of Thomson Reuters and Ofcom data

Importantly, when considering the incentive and ability of MNOs to raise debt finance, it is appropriate to focus on the ultimate parent company as this is – in most instances – the entity against which external corporate debt finance would be raised. Here the key finding of our analysis is that, when assessed at a parent company level, the hypothetical impact of 100% debt financing the 900 MHz and 1800 MHz spectrum acquisitions in the UK would be immaterial to existing gearing levels. Consequently we would suggest that this implies:

- that the debt financing of the spectrum would have no impact on the credit ratings of the parent entities; and
- that the extent of debt required to finance the 900 MHz and 1800 MHz spectrum is so small relative to the overall size of corporate debt raised by the entities, that access to debt finance for this purpose would be straightforward.

Relating to the first of the above points, it is worth noting that – particularly in the current climate – low real interest rates mean that the parent companies are likely to have some headroom on key financial ratios relating to their leverage levels. To illustrate this we compared Vodafone Group's debt/EBITDA ratio (a key metric used by Moody's in its Telecommunications sector ratings) for 2012 against Moody's guidance – and then subsequently re-calculated the ratio assuming that 100% of the 900 MHz and 1800 MHz spectrum were debt financed. The results are shown in the table below.

Table 1: Debt / EBITDA ratio indicators for Vodafone Group PLC

	Vodafone actual 2012 ratio	Vodafone ratio adjusted to include 100% debt finance spectrum	Moody's guidance for Baa rating[13]
Debt/EBITDA	2.4	2.5	2.0x – 2.75x

Source: Economic Insight analysis of Thomson Reuters and Moody's data

The above shows that, based on 2012 data, Vodafone had some headroom against Moody's indicated range for a Baa rating specifically in relation to its debt / EBITDA ratio.[14] It further shows that the impact of 100% debt financing the spectrum would not result in any change to Moody's rating assessment with regard to this ratio.

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[13] *See Moody's rating methodology: 'Global Telecommunications Industry.' Factor 5: Financial Strength table.*

[14] *In practice ratings agencies take a wide range of ratios and metrics into consideration when determining their overall corporate rating. Here we are specifically referring to Moody's guidance that with respect to the debt/EBITDA ratio for telecommunications firms, a ratio of 2.0-2.75 is consistent with a Baa rating.*

"There have been many examples in recent years of telecoms firms using deb t finance explicitly to support spectrum acquisition."

Consistent with both economic theory and the literature, there have been many examples in recent years of telecoms firms using debt finance explicitly to support spectrum acquisition. For example, in May this year Australia Telstra paid $1.3 (Aus) billion for 4G spectrum, which was entirely debt financed.[15] Similarly, in the US, T-Mobile plans to raise $2bn in order to purchase spectrum from a private party.[16] Telekom Austria very recently confirmed that it has paid €1.03 billion for 14 frequency blocks of 4G spectrum and confirmed that it would finance this out of a mixture of existing cash and new debt issuances.[17] More generally, access to debt finance currently appears to be good for large global MNOs – and corporate Groups have been able to raise billions of dollars' worth of debt in 2013. For example, on the 19th of February Vodafone Group issued a senior note worth $700m, and on April 2nd Orange issued a senior note worth $1.0bn.

Taking the above evidence into consideration, our view is that it is appropriate to assume that under a lump sum approach the spectrum would be externally financed through corporate debt; and that, furthermore, this spectrum would be 100% debt financed.

The appropriate cost of debt

For reasons of internal consistency, we consider that the appropriate start point for the cost of debt should be that assumed in the overall cost of capital used to convert the lump sum into the ALF in the first instance (expressed in real terms). In our analysis of the tax adjustment factor, we have initially assumed a real (pre-tax) cost of debt of 3.0%, as per Ofcom's MCT determination.[18] We have separately provided Three with a paper setting out our views regarding the appropriate cost of capital for setting the ALF. In our WACC paper we suggest that an appropriate real (pre-tax) cost of debt is 2.9%. We have also, therefore, calculated the implied tax adjustment using our assumed cost of debt.

The actual tax position of the UK MNOs

We are aware that, in practice, a number of the UK MNOs have made accumulated losses before tax in recent years. For example, both Vodafone UK and Everything Everywhere made losses in 2012 and 2011. Similarly, whilst Hutchison Three UK reported positive taxable profits in 2012, in 2011 and prior years it made tax losses. However, we consider this fact to be irrelevant to the setting of the appropriate ALF tax adjustment, as the associated WACC for the spectrum value conceptually relates to a hypothetically efficient, profit making, notionally geared, firm.

Our analysis of the appropriate ALF tax adjustment

In order to apply the methodology described above, we have developed our own version of Ofcom's ALF spreadsheet. Our analysis is consistent with Ofcom's in most respects, in that, in order to aid the comparability of our results with those of Ofcom, we firstly assume the following:

- all analysis is on a real post-tax basis;
- our assumed corporation tax rates are 23% in 2013/14, 21% in 2014/15 and 20% thereafter;
- our assumed post-tax real WACC is 4.2%;
- our assumed cost of debt is 3.0% (real); and
- our assumed inflation rate is 2.5%.

[15] *Sydney Morning Herald 'Carriers pay $2 billion for spectrum.' 7th May 2013.*

[16] *http://www.ifre.com/us-hy-bonds-t-mobile-launches-us$2bn-bond-for-spectrum-buy/21120425.article*

[17] *Reported by Reuters 'UPDATE 1-Austria raises 2.01 bln euros in 4G telecoms auction.' October 21st 2013.*

[18] *The pre-tax real cost of debt is appropriate for determining the tax shield effect as we are seeking to address the benefit with respect to the impact on profits before tax.*

In relation to the above, it should be noted that these assumptions do not imply that we agree with Ofcom's assessment of the appropriate WACC for determining the ALF – and our views on this are set out in a separate note. We have also therefore calculated the implied tax adjustment that would arise under our assumed WACC parameters. Namely, a 2.9% pre-tax real cost of debt; a 3.8% post-tax real WACC; and an inflation rate of 2.4%.

The key difference between our approach and that applied by Ofcom is that we have explicitly included the benefit of the tax shield under the lump sum approach on the basis that the spectrum would be financed through external corporate debt. As per the discussion set out previously, we consider it reasonable to assume that the spectrum could be 100% debt financed, given the modest impact this would have on overall gearing and the clear commercial benefits that arise from such an approach.

Another key issue is the precise amortisation (and relatedly, debt) profile of the spectrum asset assumed under the lump sum approach. Here Ofcom assumes a straight line amortisation over 20 years, on the following basis:

"Under International Accounting Standards 38:

- *Intangibles are amortised based on the expected pattern of benefits. Where this is not readily identifiable, they are amortised on a straight line basis.*
- *Assets must be impaired where there is evidence to support impairment.*

Based on the accounting rules, we consider it reasonable to assume that the intangible asset to which the lump sum payment arose would be amortised on a straight line basis over the period of the licence. In this situation, the tax deduction in the calculation of profits chargeable to corporation tax would be equal to the amortisation in the accounts."[19]

We have reviewed the notes to the statutory accounts of the UK MNOs and find that current practice is generally to amortise spectrum on a straight line basis over its estimated useful economic life.[20] This, then, is consistent with the assumption that Ofcom has made.

Therefore, we have recalculated the ALF tax adjustment factor to include the debt tax shield effect assuming a straight line amortisation profile. In particular:

» The amortisation profile is based on equal annual payments in each year, where the payment is calculated as the lump sum value divided by the notional licence length assumed by Ofcom (20 years). This is deflated in each year by our assumed inflation index (described previously).

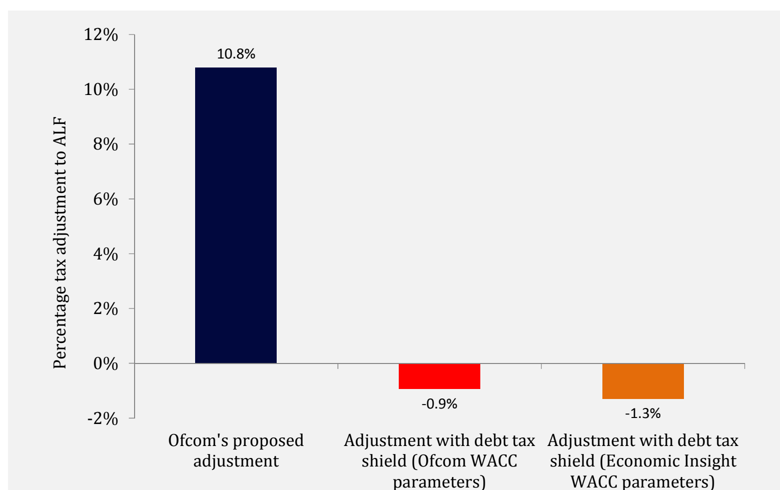
» The debt repayment profile also assumes a constant total nominal repayment amount (i.e. the sum of the principal and the interest payments is equal in nominal terms in each year, but the proportion of the payment that is principal and interest varies), where the debt is repaid at the end of the 20 year notional licence period. Interest payments on the debt are also deflated in each year by the inflation index.

Assuming that the incremental investment is 100% financed through corporate debt (which we consider to be appropriate) the ALF tax adjustment factor would be between -0.9% and -1.3% depending on whether Ofcom's, or our own, proposed WACC parameters are used. This compares to a tax adjustment factor of 11% as estimated by Ofcom, as shown in the following chart.

[19] *'Annual licence fees for 900 MHz and 1800 MHz spectrum: Consultation.' Ofcom (2013). Para 5.58.*

[20] *In particular, Note 1G to Three's 2012 accounts states that capitalised licenses were amortised on a straight line (although with respect to UMTS this has been treated as an indefinitely lived asset since 2011). Note 1 to O2's accounts states: ""UMTS licenses are depreciated or amortised on a straight line basis over their estimate useful lives." Note 1 to EE's accounts states: "value of the spectrum [is]… amortised through the consolidated income statement on a straight-line basis." Finally, Note 1 of Vodafone's accounts indicates that spectrum is: "amortised on a straight line basis over its estimated useful economic life."*

Figure 4 Implied ALF tax adjustment factors



Source: Economic Insight analysis

In relation to the above, the reason why the adjustment is not zero is because, under the lump sum approach, the reduction in taxable profit is (in part) a function of the amortisation amount as recorded in the P&L. This amortisation payment is independent of any assumed cost of capital, and so does not vary in any sense with the relative mix of debt and equity assumed under the lump sum.[21] Therefore, the above analysis indicates that there is a marginal tax benefit to a lump sum approach and, consequently, there should be a *downwards* tax adjustment applied to the ALF to ensure value equivalence.

Conclusions and recommendations

In summary our view is that the appropriate starting point for a consideration of the tax issue is that – regardless of whether it is paid for annually or as a lump sum – spectrum should be considered as an asset, for which MNOs (the licensees) must bear financing costs. Once one starts from this position, it is necessary to consider the differing sources of finance for the liability under the ALF and lump sum approach. In particular, under an ALF approach, financing is implicitly provided by Government, as the opportunity cost is itself embedded within the annual payment made by the MNOs. The corollary of this is that, under a lump sum approach, the MNOs (licensees) would need to raise *external finance* in order to fund the acquisition and would bear the cost of that external finance.

In our view, Ofcom's methodology does not recognise the difference in financing arrangements. This matters because differences in financing can impact the post-tax profits and cash flows of the licensee under the ALF and lump sum approaches, and so must be reflected in any tax adjustment calculation. In particular, under the lump sum approach, we suggest that the licensee would raise external corporate debt to fund the spectrum purchase, reflecting the economic advantages associated with this (such as the tax shield described below, but also the ability to avoid the adverse selection problems associated with equity finance under pecking order theory). The fact that existing debt holders would implicitly allow MNOs to bear financing costs under the ALF approach implies that those same debt holders could equally allow for 100% of the incremental spectrum to be debt financed under a lump sum approach. This view is supported by our analysis of the relevant MNO Group parent companies, which suggests that 100% debt financing of the incremental spectrum would be immaterial to overall leverage and financeability, and so is an appropriate assumption. Any incremental debt raised would attract a tax shield on the corresponding interest payments, which should be included within any comparison of post-tax

[21] *Whereas in contrast, both (i) the tax shied on the interest payments under the lump sum approach; and (ii) the size of the ALF payments under the ALF approach (which also determine the reduction in taxable profits under these approaches) are directly linked to the assumed cost of capital.*

profits and cash flows between the lump sum and ALF approaches. Once the debt tax shield effect is included, we find that the appropriate ALF tax adjustment is between -0.9% and -1.3%.

Annex A: accounting treatment of leases

As set out in the main body of this note, we consider that the appropriate start point for the tax adjustment issue is to recognise that, from an economics perspective, the spectrum should be regarded as an asset (with a corresponding liability) regardless of whether it is paid for annually, or via a lump sun.

Relating to the above, we note that relevant accounting guidelines and principles recognise the need to account for finance leases as though they were fixed assets. Furthermore, the joint FASB / IASB project to standardise the future accounting of leases proposes that operating leases should also be capitalised. In the remainder of this annex we summarise the key points of relevance.

Finance leases

UK GAAP defines a finance lease in the following terms (paragraph 15, SSAP 21):

> *"A finance lease is a lease that transfers substantially all the risks and rewards of ownership of an asset to the lessee. It should be presumed that such a transfer of risks and rewards occurs if at the inception of the lease the present value of the minimum lease payments including any initial payment, amounts to substantially all (normally 90% or more) of the fair value of the leased asset."*

UK GAAP states that where the above conditions are met, then only in "exceptional circumstances" would the payments not be regarded as a finance lease.[22]

Under IFRS accounting standards, finance leases are defined as follows:

"A finance lease is a lease that transfers substantially all the risks and rewards incidental to ownership of an asset. Title may or may not eventually be transferred."

The IFRS standard further sets out a list of criteria that are relevant to the definition:

"Whether a lease is a finance lease or an operating lease depends on the substance of the transaction rather than the form of the contract. Examples of situations that individually or in combination would normally lead to a lease being classified as a finance lease are:

- *a) the lease transfers ownership of the asset to the lessee by the end of the lease term;*
- *b) the lessee has the option to purchase the asset at a price that is expected to be sufficiently lower than the fair value at the date the option becomes exercisable for it to be reasonably certain, at the inception of the lease, that the option will be exercised;*
- *c) the lease term is for the major part of the economic life of the asset even if title is not transferred;*
- *d) at the inception of the lease the present value of the minimum lease payments amounts to at least substantially all of the fair value of the leased asset; and*
- *e) the leased assets are of such a specialised nature that only the lessee can use them without major modifications."*[23]

We have further reviewed the notes to the statutory accounts of the UK MNOs and can confirm that the definition and treatment of finance leases applied in practice by the firms is consistent with the overarching accounting principles and standards set out above.[24]

[22] *'BLM11200 – Lease accounting: lease classification: defining finance leases under UK GAAP.' HMRC (2012).*

[23] *'International Accounting Standard 17: Leases.' IFRS (2012).*

[24] *For example, Note 1(i) to Hutchison Three's 2012 statutory accounts states: "Where the Company has substantially all the risks and rewards of an asset subject to a lease, that lease is treated as a finance lease with the equivalent cost recorded as both a fixed asset and a liability." Similarly, Note 1 to Vodafone's (UK) statutory accounts reads: "Assets acquired under finance leases, which transfer substantially all the rights and obligations of ownership, are accounted for as though purchased outright." The remaining two MNOs also define and treat finance leases in a manner consistent with this.*

Accounting treatment of finance leases

Accounting standards and guidelines also set out how finance leases should be accounted for. Under IFRS the following principles are applied:

"At the commencement of the lease term, lessees shall recognise finance leases as assets and liabilities in their statements of financial position at amounts equal to the fair value of the leased property or, if lower, the present value of the minimum lease payments, each determined at the inception of the lease. The discount rate to be used in calculating the present value of the minimum lease payments is the interest rate implicit in the lease, if this is practicable to determine; if not, the lessee's incremental borrowing rate shall be used. Any initial direct costs of the lessee are added to the amount recognised as an asset.

…A finance lease gives rise to depreciation expense for depreciable assets as well as finance expense for each accounting period. The depreciation policy for depreciable leased assets shall be consistent with that for depreciable assets that are owned."[25]

Whether the ALFs would be regarded as finance leases

In our view, the characteristics of the licences for 900 MHz and 1800 MHz spectrum could be considered to meet a number of the criteria used for defining finance leases. In particular, whilst Ofcom has modelled a notional 20 year licence, in practice the licences are of an indefinite term, which we suggest means that they confer the rights and risks of ownership. Relatedly, whilst there is a revocation clause, the fact that it has been extended to 5 years is again consistent with the licensee to all intents and purposes baring the risks of ownership. This could, for example, be considered as analogous to a mortgage finance provider having the right to reclaim the asset in the event of default.

FASB IASB Joint Project

The IASB and IASB are jointly taking forward a project to standardise the accounting treatment of leases. Currently, a key recommendation of that project is:

"The lessee should recognise lease assets and liabilities for all leases, except those shorter than 12 months. Lease assets and liabilities are initially measured at the present value of the minimum lease payments, and subsequently measured on an amortised cost basis."[26]

The key implication of this is that, going forward, the distinction between finance and operating leases will no longer exist and, in the main, all leases will be treated as though they are an asset, which is consistent with the approach we have set out here.

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[25] *'IFRS Technical Summary: IAS 17 Leases.' IFRS (2012).*

[26] *'Analysis of effects of proposals for lease accounting.' IFRS (2012).*

Further information

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