Final

# Appendix B1 - The Cost of Capital for Openreach

*The note sets out Frontier's analysis of the appropriate cost of capital to be used when setting the proposed price controls set out in the second consultation document.*

## SUMMARY

We continue to believe that the most robust method of estimating Openreach's cost of capital is benchmarking against similarly regulated utility companies as set out in our previous submission. This approach was previously used by Ofcom as an input to setting the cost of capital for the local access network assets (which form the majority of the Openreach operating assets). Our revised range for the cost of capital for Openreach, based on the assumptions set out below and in our submission in response to the first consultation is 6.3% to 7.4%, consistent with a 1% inflation rate over the price control period (equivalent to 8.7% to 9.8% using the 3% inflation assumption used in BT/Ofcom's cost forecast model).

The derivation of a cost of capital for Openreach based on BT Group with a small unsourced and unevidenced differential is wholly inappropriate given the substantially different risk characteristics of other parts of BT. In particular BT's pension fund obligations are likely to lead to the cost of capital for the BT Group as a whole being significantly higher than for the operating assets that make up Openreach. This effect does not appear to have been taken into account by Ofcom.

We support Ofcom's general approach to estimating the cost of capital in order to apply a forward looking price control during the current period of market turmoil, giving greater weight to historic information than current spot prices. However Ofcom do not have appear to have applied this approach consistently to all variables with a number of upwards revisions to the cost of capital that do not appear to be based on concrete evidence of changes in the long term cost of capital.

## OVERALL APPROACH

### Approach to estimating the cost of capital for Openreach assets

In the response to the first consultation, we proposed a methodology for estimating the appropriate cost of capital for the price control by benchmarking directly with respect to other regulated utilities with similar risk profiles. This remains our preferred approach. In the second consultation Ofcom did not adopt this approach but continued to base the estimate of Openreach's cost of capital on BT Group's estimated cost of capital with a small unevidenced adjustment to the beta to take account of the lower level of risk for Openreach with no other adjustments to other parameters (such as gearing).

The European/Independent Regulators Group, of which Ofcom is a member, set out in its Principles of Implementation and Best Practice for WACC

calculation[1] including the appropriate approach to calculating a divisional cost of capital:

"*PIB 11: IRG is of the opinion that every proposed methodology to calculate a divisional WACC has its pro and cons. Therefore, the best approach for NRAs is to compare the results obtained using the different methodologies prior to selecting a final value.*".

In this paper we present further evidence to support the view that estimating the cost of capital directly is more robust, in particular showing that BT Group's cost of capital reflects factors, such as the BT pension fund, which are not relevant when setting the cost of Openreach services.

There may be merit in using information on BT Group's cost of capital as one input in the estimation of Openreach's cost of capital in order to ensure that the resulting implied differential is consistent with the difference in coverage, including non-Openreach operating assets and off balance sheet items such as the pension fund. However in practice, given the difficulty of accurately determining the size of this differential, the cost of capital for BT Group is not a sensible starting point for the estimation process.

In the consultation documents Ofcom implies that they have used inputs in addition to the estimated BT group cost of capital in their estimate of Openreach's cost of capital. For example in the first consultation document modified the equity beta differential compared to that used previously based on the assertion that *'a reduction of 0.2 would result in beta levels disproportionately low when compared with similar network utilities'* with a reference to a section of the 2005 statement. However the section referenced does not include any estimates of the cost of capital for utilities. This lack of transparency in the methodology used by Ofcom makes it difficult to assess fully Ofcom's proposals and suggests that Ofcom's approach does not reflect best practice in terms of procedure and transparency.

## Adjusting for the current market conditions

The current market turmoil means that the current best estimate of the forward looking cost of capital for a given set of assets is likely to vary significantly, depending on the time period covered. In the short term risk premia may be at a historically high level due to uncertainty over the evolution of the economy at a turning point combined with reduced liquidity as financial institutions attempt to de-leverage. In the medium term risk premia are likely to be revert to the mean as the turning point passes and the level of leverage stabilises. We note that Ofcom has rejected using spot rates in setting the forward looking cost of capital and instead have relied on longer term averages.

In addition, and in contrast to other utility regulators, Ofcom (and previously Oftel) carries out modelling on a nominal basis and as such uses a nominal cost of capital as an input. This raises the additional potential problem of taking

[1] IRG-WG RA (07)

account of rapidly changing and uncertain inflation forecasts consistently in the cost modelling and the cost of capital assumptions used in the model.

The price controls will be set as an RPI-X price control aimed at ensuring the prices converge towards a target level of charges estimate for 2012/13. Hence the price control should be set at a level that reflects the best forecasts of the cost of capital for this timeframe, rather than the short term cost of capital. Thus greater weight should be place on historic data than current spot estimates that will be affected by the transitory factors set out above.

Given current market conditions this best estimate of the cost of capital for 2012/13 may differ significantly from estimates for intervening years. Thus the cost of capital used to set the price control may differ from the appropriate cost of capital for Openreach to use for other regulatory decisions. This differs from the previous approach adopted by Oftel and Ofcom where a single cost of capital has been for a wide range of purposes over a period of time.

## Scope

One of the difficulties in commenting on Ofcom's proposals with respect to the cost of capital is the lack of an explicit definition of what cost of capital Ofcom is attempting to estimate. A robust definition needs to include both the scope of the assets for which the cost of capital is being measured and the time period to be covered. This lack of clarity makes it difficult to assess the accuracy of the estimates produced by Ofcom.

In the 2005 decision, Ofcom de-averaged the cost of capital for BT resulting in a lower rate applied to the 'copper access network'. Since this initial decision, Ofcom has itself applied a differential cost of capital for BT in an inconsistent fashion in various regulatory decisions. For example in BT's regulatory financial statements the lower 10.0% cost of capital is applied to a wider range of equipment and activities, which are primarily used to deliver the CRS and Ancillary services. In the Leased Line Charge Control consultation the 'rest of BT' level of WACC taken from the 2nd consultation was used, even though the copper access network is used in part to deliver these services. It is also unclear whether an average cost of capital estimated for the 'rest of BT' is the appropriate cost of capital to set price controls for a subset of these activities.

This inconsistent use of the cost of capital raises the risk of regulated prices overall being set above a central estimate of cost, e.g. the higher return on copper access network used for leased line services not being offset by a lower return when these assets are used for the core rental services.

Our proposed cost of capital covers the services subject to the CRS price control where the combination of the low volatility of demand for access services and the automatic stabilisation effect of utility type price regulation should result in lower asset betas than other operating assets of BT. We have referred to this cost of capital as 'Openreach's' cost of capital in the rest of this document.

Other services subject to price control for example those used to provide regulated leased line services, will benefit from the automatic stabilisation effect of price control and will rely in part on common assets to those CRS price

control, for example the access network. The appropriate cost of capital for setting these price controls is likely to be closer to the cost of capital for Openreach than an implied cost of capital for the "rest of BT".

## UPDATING OUR ESTIMATE OF OPENREACH'S COST OF CAPITAL

This section revises the estimate of the cost of capital for Openreach set out in our previous submission in the light of the additional information in the 2nd consultation document.

### Risk Free Rate

Setting the price control relies on a combination of: the use of an RPI-X price control; a nominal forecast of costs, including assumptions about the future level of inflation; asset valuation based on CCA with Financial Capital Maintenance and; a nominal cost of capital. The level of X in the price control should be relatively insensitive to the assumed level of inflation if consistent assumptions are used for cost inflation (including asset prices) and the cost of capital (implicit in the risk free rate).

Ensuring consistency is relatively straightforward when inflation is both stable and predictable. However current central forecasts of future inflation suggest that inflation will vary considerably over the forecast period and the error ranges attached to inflation forecasts have widened as shown in Figure 1.

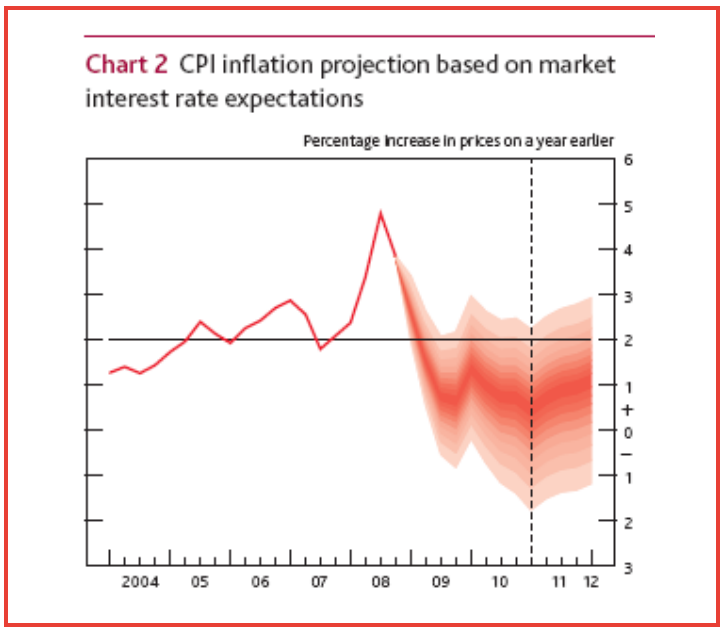


Figure 1: Current inflation forecasts

*Source: Bank of England Inflation Report February 2009*

Given these difficulties, we believe the appropriate approach is to base the cost of capital on an estimate of the real risk free rate. The nominal rate used in the

cost modelling can then be set to be consistent with the inflation rate used in the cost modelling.

Other regulators have in the past typically used a real risk free rates in the range 2.0% to 3.0%. The 2nd consultation document[2] indicated that over the last five years the average real risk free rate for 5 years was 1.9%. Forward yield curves (Figure 2), while potentially affected by technical factors, also indicate relatively low market expectations of real rates. This suggests that a range on the lower end of that previously used by regulators may be appropriate. We propose a range for the real risk free rate of between 2.0% and 2.5%

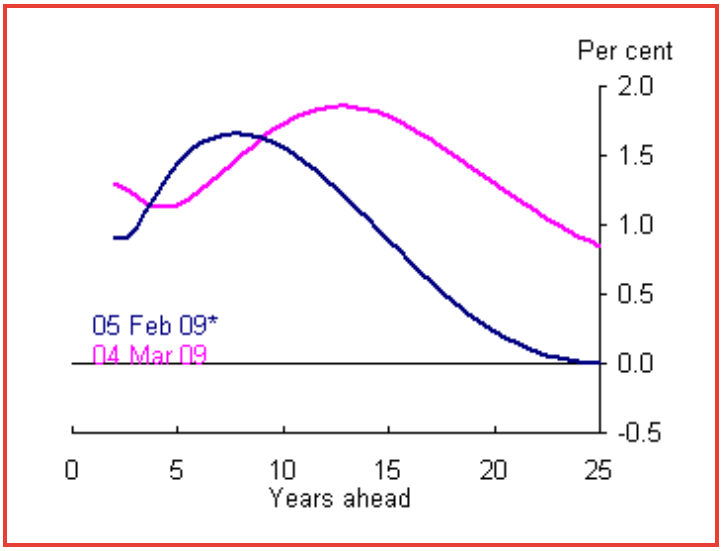


Figure 2: UK instantaneous implied real forward curve

*Source: Bank of England*

While the level of inflation assumed should have limited impact on the level of X, the assumption of 3% inflation used in the second consultation document does not appear credible. Based on Figure 1, an assumption of 1% inflation over the price control period appears a realistic central estimate.

## Equity Risk Premium

Ofcom revised upwards the range for the Equity Risk Premium in the Second Consultation to a range of 4.5% to 5% from the range of 4.5% to 4.75% used in the First Consultation Document. A point estimate of 4.5% within a range 4% to 5% had previously been used by Ofcom in setting the cost of capital for BT and when setting the cost of capital used in the price control of mobile termination rates. 4.5% is also the central estimate used Ofwat and Ofgem within a range of 4% to 5% (with the central estimates used by CC/CAA and FSA somewhat lower).

[2] Figure A12.4:

Ofcom assert that "recent consensus suggests that there has been some upward pressure on the ERP since we last reviewed BT's cost of capital" but have not produced supporting evidence of this shift in the consensus.

The only evidence provided to support this increase in the central estimate of ERP since the previous review is a single reference in the first consultation document to the results of a simple dividend discount model published by the Bank of England. The key assumption underlying this model, that expectations of future dividend growth remain constant, clearly does not hold in the current economic environment. Ofcom also indicate that the ERP could be currently expected to be higher due to the current higher volatility in the capital markets. However there is no evidence that any increase in volatility, and a corresponding increase in the ERP, is permanent.

Other evidence does not support the contention that the best estimate of the ERP has increased. For example updating information on historical risk premia to include 2008 will significantly reduce ex post estimates of the ERP due to the significant negative returns for UK and World equity indices in 2008.

In the absence of any conclusive evidence of a long term increase in the Equity Risk Premium since the previous review we believe the central estimate for the ERP should remain at 4.5%. Ofcom notes its duties under the Communications Act 2003 to promote competition, protect consumers and encourage investment, in setting out its objectives in determining the ERP. These duties have not changed since the previous review of the cost of capital for BT and hence do not in themselves support any change in the central estimate of ERP in the absence of new evidence.

## Openreach equity beta, debt premium and gearing

Given difficulties of determining any changes in the long term values of these variables the current market turmoil we propose to keep our estimates of these variables unchanged from our submission to the first consultation. We would note that these benchmarks are internally consistent with the approach to calculating the risk free rate and the estimate of the ERP set out above.

### *Leverage*

Ofcom's WACC estimates assume a gearing of 35% for both BT Group as a whole and for Openreach. However the optimal level of gearing will be higher for those projects/businesses which are likely to have less volatile cash flows, as the risk of default will be correspondingly lower and hence the trade off between the tax shield effect of debt and the expectation of bankruptcy costs will shift. This assessment should take into account of both systematic risks, also captured in the beta, and unique (diversifiable) risks, e.g. risks associated with competition or substitution.

As noted above the overall risk profile for Openreach is similar to other regulated utilities and other utilities, which have significantly higher levels of debt financing than assumed for BT as a whole, reflecting less volatile cash flows.

Table 1 provides a summary of gearing decisions in recent price reviews by utility regulators.

| | Gearing assumption |
|---|---|
| (Electricity) Distribution Price Control Review 2004 (Ofgem) | 57.50% |
| Gas Distribution Price Control Review 2008 (Ofgem) | 62.50% |
| Transmission Price Control Review 2007 (Ofgem) | 60.00% |
| Periodic Review 2004 (Ofwat) | 55.00% |

Table 1: Recent regulatory decisions on gearing

*Source: Ofgem and Ofwat price reviews*

The gearing ranges from 55% in water distribution to 62.5% in gas distribution. We consider a range of gearing from 50% to 60% as appropriate to reflect the significantly lower risk of Openreach in comparison to the other activities of BT Group. While Ofcom assert in the second consultation document currently markets are 'wary of companies with higher levels of debt' as an argument for maintaining a lower level of gearing for Openreach, they have not provided evidence that this current wariness has affected the optimal gearing level for utility like businesses in the long run.

### *Equity beta*

Table 2 shows recent regulatory decisions on the equity beta by UK utilities regulators with the above gearing assumptions.

| | Equity beta |
|---|---|
| (Electricity) Distribution Price Control Review 2004 (Ofgem) | 1.00 |
| Gas Distribution Price Control Review 2008 (Ofgem) | 1.00 |
| Transmission Price Control Review 2007 (Ofgem) | 0.95 |
| Periodic Review 2004 (Ofwat) | 1.00 |

Table 2: Recent regulatory decisions on equity beta

*Source: Ofgem and Ofwat price reviews*

Estimates of equity betas are by their nature imprecise, due to the large sampling errors attached to estimates calculated over short periods of time and the

likelihood that the underlying beta will have changed over time if a longer sample is used. As such regulators have tended to conservatively estimate that equity betas are one or close to one, as a neutral assumption.

Smithers & Co in a 2006 report for Ofgem[3] estimated betas using a variety of methods for UK regulated utilities. They concluded that a beta close to one, as used by Ofgem in past decisions, is within the confidence interval of their estimates but appears to be generous in comparison to the central points of their estimates.

| | FTAS full sample | FTAS latest rolling sample | MSCI full sample | MSCI latest rolling sample | FTAS Kalman Filter | FTAS Rolling Kalman Filter, latest sample | Sector |
|---|---|---|---|---|---|---|---|
| Scottish Power | 0.7 | 0.7 | 0.3 | 0.3 | 0.5 | 0.5 | Vertically integrated energy company (UK) |
| Scottish & Southern | 0.5 | 0.5 | 0.2 | 0.2 | 0.9 | 0.4 | Vertically integrated energy company (UK) |
| Centrica | 0.7 | 0.9 | 0.3 | 0.5 | 0.7 | 0.7 | Vertically integrated energy company (UK) |
| National Grid | 0.6 | 0.6 | 0.4 | 0.3 | 0.6 | 0.6 | Electricity and gas transmission (UK) |
| United Utilities | 0.6 | 0.5 | 0.3 | 0.3 | 0.7 | 0.4 | Water and energy company (UK) |
| Kelda | 0.3 | 0.3 | 0.2 | 0.2 | 0.9 | 0.4 | Water company (UK) |
| Severn & Trent | 0.5 | 0.4 | 0.2 | 0.3 | 0.7 | 0.4 | Water company (UK) |

Figure 3: Beta estimates for utilities with significant UK operations[4]

*Source: Smithers & Co, Report on the Cost of Capital, 2006*

Figure 3 shows beta estimates drawn from the Smithers & Co reports, with average UK based betas ranging from 0.5 to 0.7 depending on methodology, with average Beta estimated against the MSCI world index of 0.3. It should be noted that these companies generally include both regulated and non-regulated operations and in many cases have Defined Benefit pension scheme obligations which may mean the equivalent level of beta for the regulated operating assets is somewhat lower.

Given that there is increasing evidence that a central estimate of equity beta for utilities is below one, we consider a range between 0.7 and 1.0 to be appropriate, recognising that recent evidence suggests that this may be conservative.

### *Debt Premium*

Table 3 shows utility price review assumptions for the debt premium at the level of gearing as shown in Table 1 above.

[3] Smithers & Co. Ltd.: Report on the Cost of Capital provided to Ofgem. 1 September 2006

[4] The table excludes companies such as Viridian or IPR with limited or no UK operation.

| | Debt margin |
|---|---|
| (Electricity) Distribution Price Control Review 2004 (Ofgem) | 1.35% |
| Gas Distribution Price Control Review 2008 (Ofgem) | 1.05% |
| Transmission Price Control Review 2007 (Ofgem) | 1.25% |
| Periodic Review 2004 (Ofwat) | 0.80%-1.40% |

Table 3: Recent regulatory decisions on debt margin

*Source: Ofgem and Ofwat price reviews*

Ofwat noted that the lower end of its assumed range (0.8%) represented a historically low borrowing cost. We would therefore consider a debt premium of 1% to 1.4%, at the above proposed levels of gearing, as appropriate for the calculation of Openreach's WACC.

## Updated cost of capital

Updating the benchmark cost of capital for Openreach, based on the revised risk free rate and keeping the ERP at 4.5%, but leaving the other assumptions unchanged from our first submission gives a range from 6.3% to 7.4%[5] in nominal terms based on an assumption of 1% inflation. Figure 4 shows Ofcom's WACC estimate and our proposed alternative estimation of the WACC using both the 3% inflation assumption used in the cost modelling and our proposed inflation assumption of 1%.

[5] Assuming that the lower end of the range for beta and debt premium is consistent with the lower estimate of gearing and vice versa

| | Ofcom second consultation range | | CPW proposed range (3% inflation assumption) | | CPW proposed range (1% inflation assumption) | |
|---|---|---|---|---|---|---|
| Inflation assumption | 3.0% | | 3.0% | | 1.0% | |
| *Risk free rate (real)* | *1.1%* | *1.7%* | *2.0%* | *2.5%* | *2.0%* | *2.5%* |
| Risk free rate | 4.1% | 4.8% | 5.1% | 5.6% | 3.0% | 3.5% |
| Equity risk premium | 4.50% | 5.00% | 4.50% | | 4.50% | |
| Equity beta | 0.75 | 0.85 | 0.70 | 1.00 | 0.70 | 1.00 |
| Cost of equity (post tax) | 7.5% | 9.0% | 8.2% | 10.1% | 6.2% | 8.0% |
| Debt premium | 2.0% | 3.0% | 1.0% | 1.4% | 1.0% | 1.4% |
| Cost of debt (pre tax) | 7.0% | 7.5% | 6.1% | 7.0% | 4.0% | 4.9% |
| Corporate tax rate | 28.0% | | 28.0% | | 28.0% | |
| Cost of debt (post tax) | 5.0% | 5.5% | 4.4% | 5.0% | 2.9% | 3.5% |
| Gearing | 35.0% | | 50.0% | 60.0% | 50.0% | 60.0% |
| WACC (post tax) | 6.5% | 7.5% | 6.3% | 7.0% | 4.5% | 5.3% |
| **WACC (pre tax)** | **9.25%** | **10.75%** | **8.7%** | **9.8%** | **6.3%** | **7.4%** |
| *WACC (pre-tax - real)* | *6.1%* | *7.5%* | *5.6%* | *6.6%* | *5.2%* | *6.3%* |

Figure 4: Ofcom's proposed WACC range and alternative WACC ranges (nominal terms except where indicated)

*Source: Ofcom, Frontier calculations*

## THE COST OF CAPITAL FOR OPENREACH COMPARED TO BT GROUP

One of the difficulties in deriving a cost of capital estimate for Openreach from the cost of capital estimated for BT group is the impact of BT's Defined Benefits (DB) pension scheme. BT Group's investors will be compensated from the future free cash flow generated by the business as a whole. Free cash flow will be generated by the operating assets of the business, including Openreach assets, but will also be affected by the funding requirements of BT's pension scheme. Rational investors will take account of the (off balance sheet) assets and liabilities of the pension scheme, and the risks attached to them, when trading BT Group securities – this is reflected by the fact that the pension fund deficit has in the last few years consistently been one of the key issues of concern for investment analysts. A cost of capital estimate for the BT Group based on observations of the behaviour of BT's traded securities will not provide a good estimate of the appropriate cost of capital for the underlying operating assets because of the impact of the pension scheme.

In addition within BT's operating assets, there will be assets whose cash flow is more or less sensitive to systematic risks. Ofcom has recognised that the cash flows generated by assets of Openreach, in particular the local access network, are likely to be less sensitive to systematic risk than other operating assets of BT.

When comparing the cost of capital for BT to that of Openreach, or attempting to estimate the cost of capital of Openreach from that of BT as Ofcom has, we need to take into account both effects:

- The difference between the cost of capital for the Group, including the pension scheme, from that of the operating assets of the Group;

- The difference in risk between the Openreach operating assets and the "rest of BT" operating assets.

We address each of these differentials in turn.

## Difference between the cost of capital for the Group and the cost of capital for the operating assets

In Defined Benefits pension schemes, such as the BT Pension Scheme, the assets and liabilities of the fund are not necessarily closely matched. This can result in pension scheme deficits (or surpluses). Once a deficit is identified the company has a statutory duty to put in place a plan to reduce the deficit by making additional contributions (conversely the fund may be in surplus which can enable companies to reduce their contributions). The BT Pension scheme had a significant deficit when the liabilities of the scheme were last assessed. Movements in asset prices since this assessment suggest that this deficit will have increased.

Ofcom has correctly proposed to exclude pension deficit contributions from the cost base used for setting the price control. However the existence of a company Defined Benefits pension scheme will also impact on the cost of capital for the business as a whole, unrelated to the riskiness of the companies operating assets. When estimating the cost of capital for a set of operating assets from the company's cost of capital, we need to take account of the impact of the pension fund on the company's overall risk profile.

This relationship is complicated due to the separation of the pension fund assets and liabilities from the operations of the business, with pension fund assets and liabilities being off balance sheet. However it is clear that this separation is not complete and that movements in size of the pension fund surplus/deficit have an impact on the enterprise value of BT group (which in part explains why BT is currently trading at a significant discount to net asset value). As such risks related to the pension fund will also have an impact on the risks of the overall group and hence on the beta of the company.

Given the relative magnitude of BT's operating assets and the pension find (see Table 4 below), the impact may be significant.

| | £ millions | |
|---|---|---|
| Pension assets | 39,674 | December 2007 |
| Pension deficit | 3,400 | December 2005 |
| Pension liabilities | 43,074 | Net assets + deficit |
| Equity | 22,914 | Based on BT share price at December 2007 |
| Debt | 10,175 | December 2007 |
| Implied operating assets | 36,489 | Equity + debt + pension deficit |

Table 4: BT Group and Pension Scheme Assets and Liabilities

*Source: BTPS Annual Report, BT Financial Reports, BT share price*

***Beta***

The beta of the BT Group as a whole does not solely reflect the risks associated with the cash flows resulting from the operating assets but are also a function of the risks attached to the pension fund. A recent paper by Jin Li, Robert C. Merton, and Zvi Bodie [6] investigates the impact that pension funds may have on a company's beta and sets out that:

*'The empirical findings in this paper are consistent with the hypothesis that equity risk does reflect the risk of the firm's pension plan despite arcane accounting rules for pensions.'*

Furthermore the paper concludes:

*'Standard procedure uses de-leveraged equity return betas to infer the cost of capital for operating assets. But the de-leveraged betas are not adjusted for the risk of the pension assets and liabilities. Failure to make this adjustment typically biases upward estimates of the discount rate for capital budgeting.'*

This bias will apply to Ofcom's estimate of the asset beta for BT's operating assets, which will in turn lead to an overstatement of the cost of capital for Openreach assets once disaggregated. It will also mean that comparisons of Openreach's asset beta with the overall beta of other companies such as utilities, may be distorted.

While the precise impact of the risk attached to pension fund is difficult to exactly estimate the following simplified example shows that given the relative size of the pension fund to BT's enterprise value the impact could be significant. The example ignores tax shield effects and bankruptcy costs and assumes that there is complete pass through of volatility related to the off balance sheet items to investors. The estimate of beta for the BT Pension Schemed assets is assumed to be 0.4 based on the approximate weighting of equities in the asset base[7], while

6. "Do a Firm's Equity Returns Reflect the Risk of Its Pension Plan?" Journal of Financial Economics 81, no. 1 (July 2006): 1-26

7 BTPS 2007 annual report

the beta for the pension liabilities and for BT's debt has been assumed to be 0.175 (the estimate used by Li, Merton and Bodie in their paper). We have used an estimate of 0.85 for BT's equity beta.

| | beta estimate | weight |
|---|---|---|
| Pension assets | 0.400 | - 39,674 |
| Pension liabilities | 0.175 | 43,074 |
| Equity | 0.850 | 22,914 |
| Debt | 0.175 | 10,175 |
| **Operating assets** | **0.354** | |

Table 5: Estimate of asset beta for BT's operating assets taking account of pension fund assets and liabilities

We can compare the correct operating asset beta to an estimate of the asset beta ignoring the impact of the pension fund, but using the same assumptions otherwise. This results in a significantly higher estimate of asset beta.

| | beta estimate | weight |
|---|---|---|
| Equity | 0.850 | 22,914 |
| Debt | 0.175 | 10,175 |
| **Operating assets** | **0.642** | |

Table 6: Estimate of asset beta for BT's operating assets incorrectly excluding pension fund assets and liabilities

This indicates that the asset beta estimation methodology used by Ofcom, which does not take account of the pension fund, could lead to a significant over-estimation of the beta, and hence cost of capital, for operating assets. For example in the above simplified example shown in Table 5 the appropriate equity beta for the operating assets would be 0.44 (assuming a 31% level of leverage as for the business as a whole) compared with a beta of 0.85 for the traded equity. This difference of 0.41 in equity beta would result in a difference of 1.8% in the pre tax WACC (assuming a 4.5% ERP and 28% tax rate).

### *Debt premium and gearing*

The existence of significant off balance sheet net liabilities, such as BT's current pension deficit, may also impact on the optimal level of gearing and associated debt premia by both increasing the risk of default and reducing the recovery rate on default (as a pension scheme becomes an unsecured creditor under insolvency).

## Differences between the cost of capital for Openreach operating assets and "Rest of BT" operating assets

According to the CAPM, the cost of capital for an asset should reflect the sensitivity of cash flows from that asset to systematic risks, that is those factors that will have an impact on the cash flows of all assets to a greater or lesser extent and thus cannot be reduced through diversification. Macro-economic factors are considered to be the main source of systematic risks.

When considering whether the operating assets that make up Openreach have a different cost of capital from the other operating assets of BT we need to consider whether it is likely to be more or less sensitive to systematic risks. There are two reasons why this may be the case

1. Over the short term, demand for the services that Openreach supplies is significantly less volatile than demand for other BT services, particularly during periods of changes in macro-economic conditions; and
2. Over the longer term the utility-like regulation of Openreach acts as an automatic stabilizer, keeping returns broadly stable.

### *Demand volatility for Openreach Services*

The local access network is Openreach's main asset with revenues sensitive to the overall demand for lines. As many of Openreach's costs are largely fixed in the short run, fluctuations in revenues will result in fluctuations in net cash flow. In the past demand for lines has been less sensitive to economic shocks than demand for other telecommunications services. Figure 5 below shows that growth in the overall number of lines in the UK has been relatively stable over time and continued to grow in the two previous recessions. The lack of growth in lines since 2000 appears to be due to non-systematic factors such as mobile substitution of marginal lines.

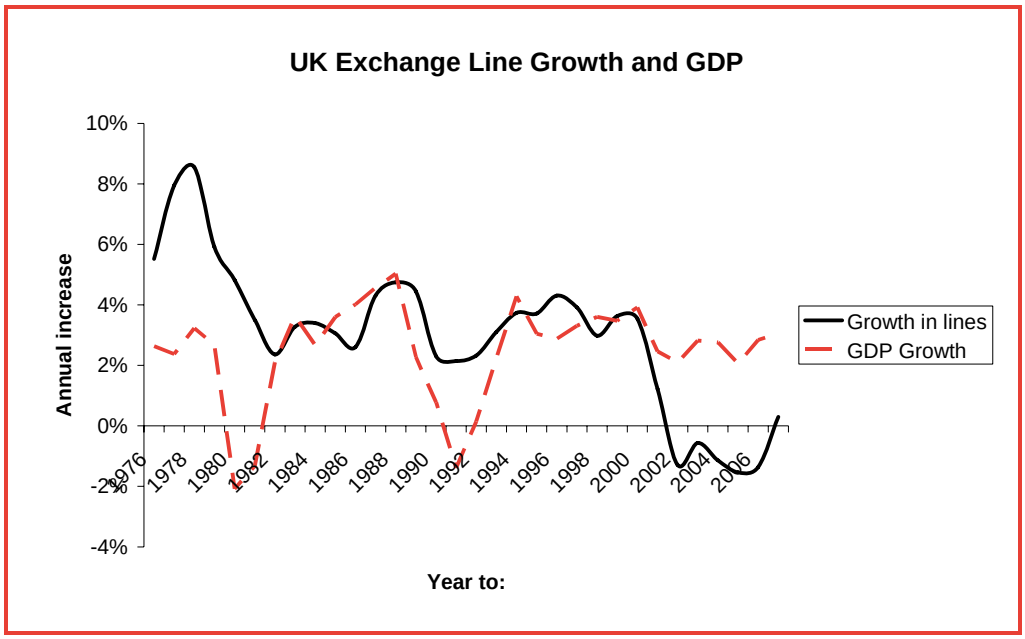


Figure 5: UK Exchange Line Growth

*Source: ITU and Ofcom*

While the current recession has yet to run its course evidence to date suggests that operating cash flows (EBITDA) generated by Openreach have been relatively stable, with the sharp reduction in BT's profitability due to other lines of business.

### *Stabilisation due to Price Regulation*

RPI-X price regulation is intended to ensure that future expected returns are close to the cost of capital. As a positive side effect it is likely to reduce the volatility of returns by setting price controls that aim moving returns towards the cost of capital each time that the price control is reviewed. If the out-turn returns higher or lower than forecast because of systematic factors, when the price control is reviewed prices will be set to take account of these systematic (and hence exogenous) factors. For example, between the first and second consultation documents the deterioration in expected economic environment has led Ofcom to reduce its forecast of the number of BT lines, effectively allowing Openreach to maintain expected returns despite the economic slowdown. This automatic stabiliser means that any systematic factors will only have an impact on BT's returns for a short period between price control reviews. In addition an RPI-X price control may reduce systematic risks related to inflation within price control periods. These two effects will reduce the level of risk attached to the regulated assets.

Other parts of BT without market power (and hence unregulated) are unable to change prices automatically to offset any systematic changes (and in the case of upside surprises would not wish to). Thus regulated assets are likely to have a lower asset beta than the rest of BT, all other things being equal.

## Summary

We have not attempted to quantify accurately the effect of the two factors, given the difficulty of constructing models which fully capture the complexity of the underlying mechanisms. Even where simplified models are used they are be extremely sensitive to input assumptions.

The uncertainty and potential magnitude of the differential due to the pension fund in particular, leads us to conclude that estimating the observed cost of capital for BT group will provide little information on the cost of capital of Openreach's operating assets. As such a more accurate approach is to focus on the cost of capital for utility benchmarks (which in themselves may be affected by pension funds).

The method used to derive the estimate of the differential in cost of capital between Openreach and the BT Group proposed by Ofcom is not explicit. However it appears to be based solely on analysis of differences in the asset betas for the operating assets of Openreach and the other operating assets of BT. The impact of the pension fund on BT's cost of capital is not mentioned in either of the two consultation documents. This suggests that the differential is likely to be understated, leading in turn to the cost of capital for Openreach being overstated.

## COMMENTS ON OFCOM'S ESTIMATED COST OF CAPITAL FOR THE BT GROUP

As noted above we do not believe that the cost of capital for BT should be a primary input when assessing the cost of capital for Openreach, due to the significant differences between the risk profile of Openreach's operating assets and the BT group. However an estimate of BT's cost of capital may provide some additional information when developing a robust estimate.

The approach taken by Ofcom to estimate the variables specific to the BT Group appears inconsistent with its overall approach taken to setting the cost of capital, with significant weight being place on very recent market information. In addition it is unclear whether the estimates of beta and debt premium have been fully normalised to remove the impact of recent changes in BT's gearing. Figure 6 below shows that BT's leverage has increase significantly in the past year mainly due to the fall in BT's share price.

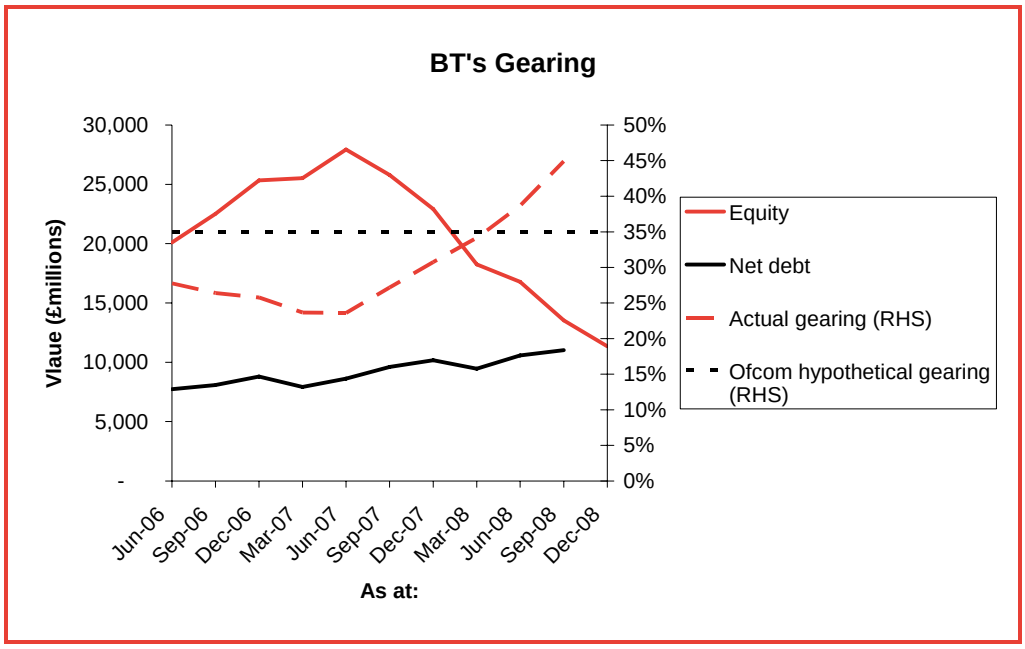


Figure 6: BT's Gearing

*Source: BT Financial Reports/Share Price*

## BT Group Equity beta

Between the first and second consultations, Ofcom increased the range of estimate of BT group beta from 0.8 – 0.9 to 0.85 - 0.95 based on the results of Brattle's revised analysis of the observed level of beta.

This increase (at a constant hypothetical level of gearing) appears to contradict the conclusions in Brattle's report that "this increase in beta [during 2008] probably reflects the much higher level of gearing following the coincident fall in BT's share price". Given this conclusion it is unclear why Ofcom have chosen to increase the proposed equity beta from that first proposed whilst assuming a constant (hypothetical) level of gearing.

## Debt premium

Ofcom have proposed a range for BT's debt premium of 2-3%. This range is significantly above the point estimate of 1% used in the previous review of BT's cost of capital. The range used appears to be unduly influenced by recent market data and to ignore data on the long term cost of debt to BT, who have recently issued debt at levels below this range.

Ofcom itself notes that at the time the 2nd consultation was issued "[t]he current high level of gearing suggests that BT's current debt premium would be higher than at its optimal level". This supports placing greater weight on historic data, when BT's gearing was closer to the hypothetical level assumed by Ofcom.

Ofcom also notes in the second consultation that "*BT's most recent debt issue was on 25th June 2008, when it issued €1bn of 7-year bonds at 155 basis points above the mid-swap*

*rate. This is below the 2 – 3% range […]*". Similarly in the first consultation Ofcom states "*longer term measures of BT's debt premium suggest that 3% may be a temporary high. For example, the premium over the risk-free rate on BT's sterling-denominated 10 year corporate debt issued in June 2007 was around 1.5% at the time of issue* [...]"

Given Ofcom's own comments it is unclear why a range for BT's debt premium has been proposed which excludes the debt premia at which BT has recently issued debt (i.e. 1.5%).