**Batelco's Cost of Capital**

# Batelco's Cost of Capital

A Consultation document issued by the Telecommunications Regulatory Authority

31 August 2005

The address for responses to this document is:

The Director of Economic Affairs,

Telecommunications Regulatory Authority (TRA)

PO Box 10353, Manama, Kingdom of Bahrain

Alternatively, e-mail responses may be sent to the Authority's e-mail address at consult@tra.org.bh

**The deadline for responses is:**
**5:00 p.m. on 28 September 2005**

**Purpose:** Initial consultation on Batelco's Cost of Capital to be used in subsequent calculations for overall operational costs for the provision of services

TRA البحرين BAHRAIN

هيئة تنظيم الإتصالات
Telecommunications Regulatory Authority

# Batelco's Cost of Capital

**Table of contents**

# Batelco's Cost of Capital

# Batelco's Cost of Capital

## 1 Introduction

### 1.1 PURPOSE

The purpose of this consultation document is to present, for comment, the Telecommunications Regulatory Authority's (TRA's) initial views about the cost of capital for the Bahrain Telecommunications Company (Batelco). This follows an earlier determination, in August 2003, which had set Batelco's cost of capital at 10.75%. As part of this determination the TRA committed itself to a review of the cost of capital within two years of the determination.

This consultation document is the second step in the review following comments received from interested parties in response to an invitation from the TRA to comment upon the TRA's August 2003 determination. Comments were received from two interested parties, i.e., Batelco and MTC (Vodafone) Bahrain. Comments received from these parties have been taken into consideration in the preparation of this consultation document.

### 1.2 FRAMEWORK

At all times, the TRA must have regard to its statutory duties as set out in the Telecommunications Law (Legislative Decree No. 48 of 2002 promulgating the Telecommunications Law, Section 3 (b). In particular, this sets out the objectives of the TRA:

*"1) protect the interests of Subscribers and Users in respect of:*

- the tariffs charged for services;
- *availability and provision of service;*
- *quality of services; and*
- *protection of Personal particulars and privacy of services.*

*2) promote effective and fair competition among new and existing Licensed Operators; and*

*3) ensure, when assessing applications involving provision of Public Telecommunications Services, that any applicant or any Person to whom any such service falls to be provided, shall be able to provide those services."*

In addition to its statutory requirements, the TRA has also taken into account its earlier determination, comments received about that determination (and during the consultation process) and changes that have occurred over the past two years.

### 1.3 COMMENTS

The TRA invites comments on this consultation document from all interested parties.

Comments should be submitted before 5.00 pm on 28 September 2005.

The address for making responses to this document is:

The Director of Economic Affairs
Telecommunications Regulatory Authority
PO Box 10353 Manama, Kingdom of Bahrain

Alternatively, responses may be sent to the TRA for the attention of the Director of Economic Affairs by email to consult@tra.org.bh or by facsimile to +973 17 532 125.

**Unless submissions are marked "confidential", the TRA reserves the right to make all submissions available to the public. If a submission is marked confidential, reasons should be given which the TRA will evaluate. The TRA may publish or refrain from publishing any document or submission, at its sole discretion.**

# 2 The cost of capital

## 2.1 WEIGHTED AVERAGE COST OF CAPITAL

In order to invest in infrastructure Batelco needs access to financial capital. The expected return on this financial capital forms one component of the revenue that Batelco is allowed to recover from customers - this is the cost of capital. The cost of capital consists of the reasonable costs Batelco will incur in raising capital for investment. Batelco can choose whether to raise this capital through the various types of debt or equity finance. Consequently, its overall cost of capital will be determined by the:

- cost of debt;
- cost of equity; and
- proportion of debt and equity used.

The TRA must estimate each of these elements of the cost of capital in order to determine the appropriate cost of capital for Batelco.

The need to incorporate the proportion of debt and equity to derive an overall cost of capital means that the final cost of capital is often referred to as the Weighted Average Cost of Capital (WACC). It can be represented as:

$$WACC = g \times r_d + (1-g) \times r_e$$

Where:

$r_d$ is the cost of debt

$r_e$ is the cost of equity

$g$ is the proportion of finance that is accounted for by debt i.e. $g$ equals (net debt/[net debt + equity]).

The cost of capital can either be expressed in *nominal* terms or *real* terms: the real cost of capital excludes the impact of inflation. This document focuses on the nominal cost of capital. The choice of nominal or real cost of capital depends on how the cost of capital will be applied. A nominal cost of capital should be used in the context of cashflows and asset values that are expressed in nominal terms, whereas a real cost of capital should be applied to real cashflows and real asset values. The TRA intends to apply an estimate of the nominal cost of capital to nominal cashflows and asset values.

In countries with corporate tax regimes there is a distinction between the post-tax and the pre-tax WACC. In Bahrain there is no corporate taxation and therefore there is no difference between the pre-tax WACC and the post-tax WACC.

## Batelco's Cost of Capital

Having established the appropriate definition of the cost of capital as the nominal WACC, the next stage is to consider the methodologies to be used in estimating a suitable range.

### 2.2 COST OF DEBT

The standard approach is to estimate the cost of debt based on data on debt interest rates from the company concerned and from other comparators.

To enable comparisons to be drawn from companies in other countries the cost of debt is expressed as the sum of three parts:

$$r_d = \textit{risk-free rate} + \textit{country risk premium} + \textit{company debt premium}$$

Where:

- the risk-free rate is calculated based on the yields on developed country government bonds;
- the country risk premium is the additional return, over the risk-free rate, demanded by debt investors for investing in the particular country; and
- the company debt premium is the additional premium (on top of the country risk premium) required to invest in the company.

One advantage of this approach is that it draws a distinction between the international risk-free rate and the interest rate at which the Bahraini Government is able to raise finance. The latter can be expressed as the international risk-free rate plus the country risk premium. This distinction is particularly important for the cost of equity (see below) where the approach proposed by the TRA is based on the international risk-free rate.

An alternative approach would be to use evidence on government interest rates in Bahrain. The difficulty with this approach is that the Bahrain debt market is not sufficiently liquid to produce robust estimates. The response to the previous consultation supported the use of an international risk-free rate.

In assessing the overall cost of debt and the company risk premium, the TRA is proposing to rely on evidence from international debt markets (both government and corporate debt markets). These sources of information on the cost of debt are considered to be more reliable than, for example, data on bank loans. International bond markets are liquid, publicly traded markets that can provide up-to-date market information. With this evidence it is easier to make comparisons between debt information on comparator companies.

This approach to the cost of debt is consistent with that used by many network regulators in different countries.

| Consultation<br><br>The TRA invites comments on its proposed approach to calculating the cost of debt. |
|---|

## 2.3 COST OF EQUITY

The most widely used methodology for estimating the cost of equity is the capital asset pricing model (CAPM). In its earlier consultation on the cost of capital, the TRA suggested the use of CAPM and invited comments on alternative approaches (e.g. dividend growth model). Respondents unanimously approved of the use of CAPM and it continues to be the approach favoured by regulators around the world.[1] Consequently, the TRA proposes to continue with its use of CAPM.

The CAPM is used to determine the appropriate cost of equity and is calculated as follows:

$$r_e = r_f + \beta \, x \, (r_m - r_f)$$

Where:

$r_f$ is the risk-free rate;

$\beta$ is the measure of relative risk of the industry; and

$r_m$ is the expected return on the equity market. The difference between the market return and the risk-free rate is known as the equity risk premium (ERP).

## 2.4 GEARING

### 2.4.1 Relationship between gearing and the cost of capital

The relative share of debt in the financing of a firm is given by the gearing level (i.e. gearing = debt / {debt + equity}). A key result in financial

[1] For example, CAPM is used by all UK utility regulators as the primary approach to estimating the cost of equity. It is also the standard approach in Australia, Jamaica, Argentina and many other countries.

theory, the Modigliani-Miller proposition[2], implies that the cost of capital is independent of the level of gearing. Although the required return on debt is generally lower than the required return on equity – any benefit of

Increasing the amount of debt is offset by an increase in the cost of equity as the remaining equity becomes exposed to greater risk.

This is illustrated in Figure 1 which shows that the cost of equity steadily increases as gearing increases. In practice the WACC may vary with gearing for two reasons. First, debt typically has tax advantages compared to equity. Second, the default premium applied to debt increases as gearing increases.

In Bahrain, since there is no corporate tax, the TRA would not expect the WACC to be affected significantly by the level of gearing assumed by the TRA.

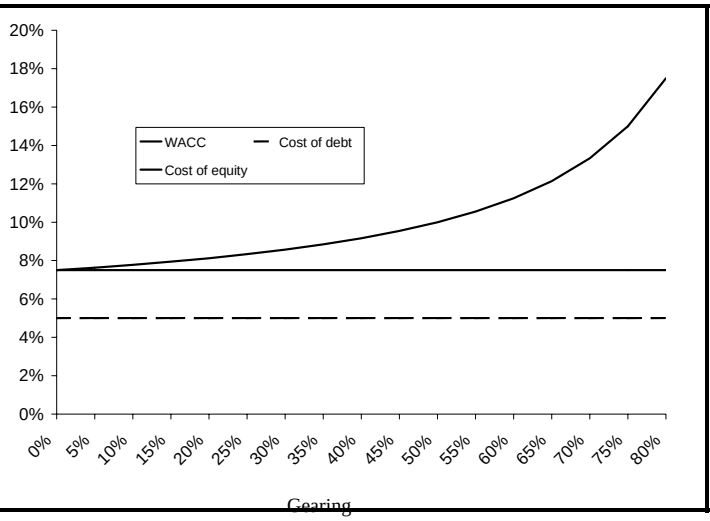


Figure 1: Modigliani-Miller: WACC does not vary with gearing

### 2.4.2 Choice of actual or optimal gearing

Network regulators often calculate the WACC based on a 'notional' level of gearing rather than using the actual gearing levels for the companies or attempting to calculate the true optimum. The objective is to choose a sensible gearing level (i.e. one with minimum distortionary effects) and allow companies to choose their own actual level of gearing given this assumption.

[2] Modigliani F and Miller MH (1958), 'The cost of capital, corporation finance and the theory of investment', *American Economic Review*, Vol 48, June.

This approach has a number of advantages, which explain why it is adopted by other regulators:

- the regulator can identify a range of gearing that is consistent with efficient financing cost – a gearing range that balances the tax advantages of debt with the cost of default risk;
- for industries where there are a number of firms this approach has the advantage of simplicity – it is not necessary for the regulator to collect and analyse detailed information on each company's capital structure; and
- again for industries where there are a number of firms this approach ensures a consistent treatment across companies.

However, in the case of Batelco the arguments for using a 'notional' or 'optimal' level of gearing are less compelling.

- in the absence of a tax advantage of debt, it is not clear that there is an optimal level of gearing; and
- since the TRA is assessing the appropriate WACC for Batelco on its own, the arguments for consistency and simplicity are not relevant.

For these reasons, the TRA proposes to base the gearing assumption on Batelco's actual level of gearing.

### 2.5 SCOPE OF WACC

Another choice that needs to be made is whether to estimate separate WACC for the different business activities undertaken by Batelco.

The main activities undertaken by Batelco are:

- fixed telephony;
- mobile telephony; and
- other services such as internet access.

In the previous consultation document the TRA estimated a company-wide WACC and then disaggregated this into a cost of capital for each business unit. In practice the TRA recognises that investors do not have a choice but to invest in all of Batelco. Therefore, the TRA is considering estimating only a single WACC for the entire company. This is discussed in more detail in Section 4.4 below.

# 3 Estimating the components of WACC

This section estimates the appropriate values of the key components of the WACC:

- risk free rate;
- country risk premium;
- debt premium;
- equity risk premium;
- Beta; and
- gearing.

## 3.1 RISK FREE RATE

The calculation of the cost of debt and the cost of equity both contain the estimate of the risk free rate: the rate at which lenders would provide funds if there were no risk of default.

The risk-free rate is estimated from the yield on government debt from a developed economy with well-established and liquid capital markets. The two main alternatives are the USA and the UK. Table 1 and Figure 2 provide an overview of nominal yields on 10 year government bonds for each country. It is noted there is no equivalent data available in respect of Bahrain.

| | Past 12 months | Past 24 months |
|---|---|---|
| USA government yields | 4.29% | 4.23% |
| UK government yields | 4.73% | 4.76% |

Table 1: Nominal government yields

*Source: Federal Reserve, Bank of England*

Table 1 shows that the nominal risk-free rate has averaged around 4.25% for the USA and 4.75% for the UK, over the past two years. The TRA considers that these values establish an appropriate range for the international risk-free rate, with the UK yields lying towards the top of the range of developed country yields and the US yields being somewhat lower.[3] The fact that the Bahraini Dinar is linked to the US dollar does

[3] Over the same period, government yields in Euro-zone economies have been similar to yields on US government debt.

not mean that only US yields should be used as the benchmark. The approach employed in this analysis (see below) is to use the country credit rating for Bahrain to establish a country specific risk premium which is added to an estimate of the international risk-free rate. Both the UK and the US data provide evidence on the appropriate international risk-free rate.

Consultation

The TRA invites comments on the use of a range of 4.25% to 4.75% as the nominal risk free rate.

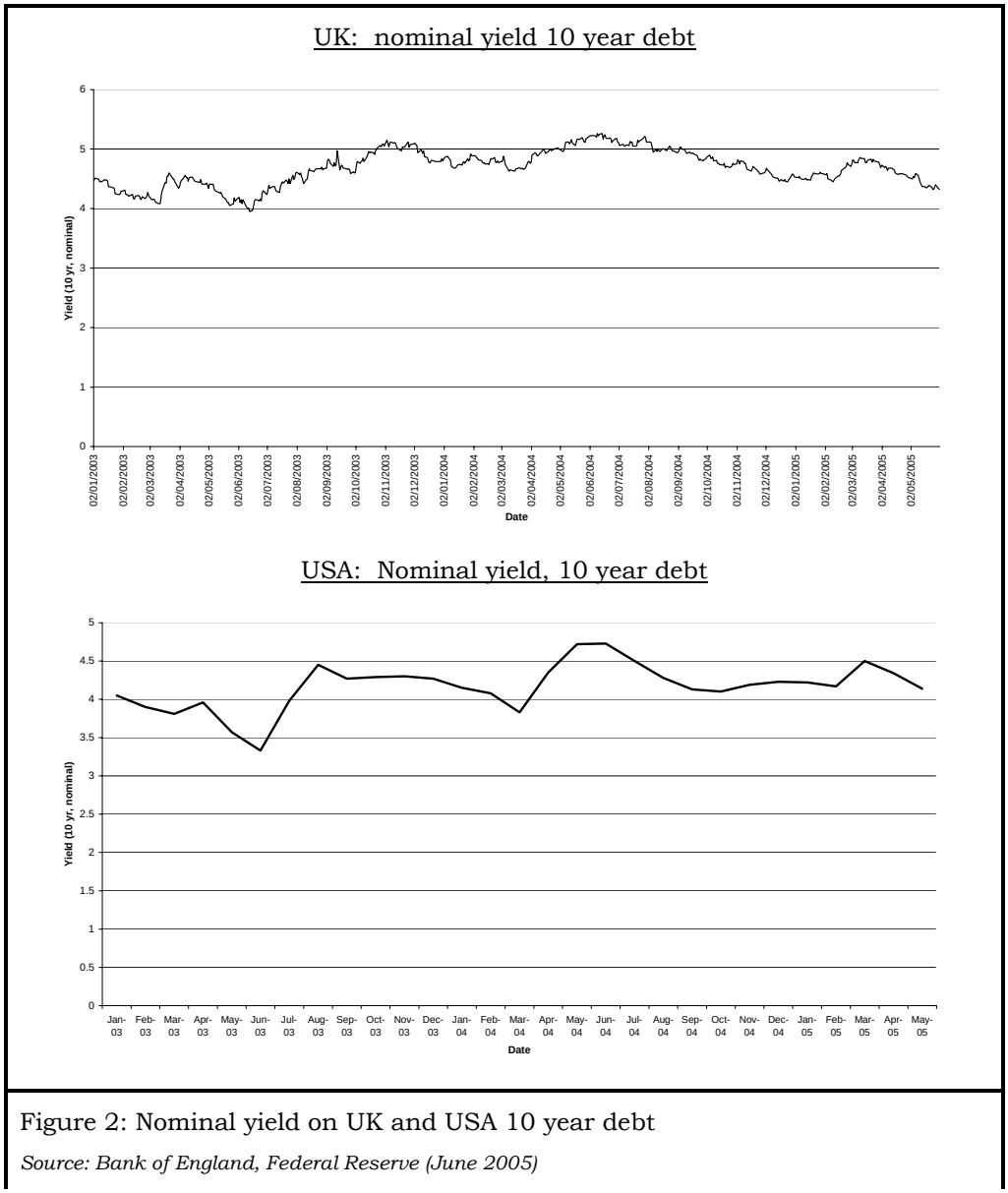


Figure 2: Nominal yield on UK and USA 10 year debt

*Source: Bank of England, Federal Reserve (June 2005)*

## 3.2 COUNTRY RISK PREMIUM

In calculating the appropriate cost of debt for Batelco a country risk premium can be added to the risk free rate to reflect the additional risk to investors of investing in Bahrain.

**Batelco's Cost of Capital**

The risk free rate in Bahrain can be found by examining the credit rating of the country. Bahrain currently has a long-term credit rating of Baa1.[4]

This equates to a default spread of about 1.20%.[5] Consequently, the TRA is minded to add a country risk premium to the cost of debt of between 1.0% and 1.5%.

In the responses to the previous consultation paper, a higher country risk premium was suggested. Since the time of the response the credit rating of Bahrain has improved from Ba1 to Baa1. This is reflected in a lower risk premium.

The responses to the previous consultation also highlighted the importance of ensuring that the estimation of the country risk premium did not result in double counting of certain risks. In particular, the country risk premium should not include allowance for risks that are also captured in the company debt premium.

The TRA has been mindful of these issues and believes that the approach adopted in this consultation does not result in any double counting. The approach taken has been to estimate a country risk premium that reflects only the (moderate) additional risks of investing in Bahrain compared to investing in larger developed economies with liquid financial markets. The estimate of company risk premium (see below) then only reflects the premium required by debt investors to invest in the telecoms sector, based on evidence from larger developed economies.

Consultation

The TRA invites comments on the use of a range of 1.0% to 1.5% as the nominal country risk premium to be applied to the cost of debt.

### 3.3 COMPANY DEBT PREMIUM

The company debt premium is the additional return required by debt investors, on top of the risk-free rate and the country risk premium, to

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4 As reported by 'Damodoran online' on 21st June 2005: http://pages.stern.nyu.edu/~adamodar/ . The data on the credit rating is sourced from Moody's (www.moodys.com).

5 Also reported by 'Damodoran online' on 21st June 2005. This is based on time series data of the default spread for the sovereign credit rating.

invest in the company. The main factors that will determine the cost of debt are:

- the level of gearing of the company (higher gearing will increase the debt premium);
- the liquidity of the debt (smaller, less liquid debt issues will attract a higher premium); and
- the maturity of the debt (longer maturity debt will have a higher premium).

At higher gearing levels the risk of default is increased and the debt premium rises to compensate for the higher risk.

The TRA concluded as part of its earlier consultation process that Batelco would be awarded a credit rating around AA under the Standard & Poor's rating system. This would suggest a debt premium of 80 to 100 basis points.

In its latest consultation paper on the cost of capital for BT, the UK telecoms regulator Ofcom, has estimated the debt premium for BT at 100 basis points.[6] This debt premium has been assessed at a gearing level of 35%, which is significantly higher than the gearing level proposed for Batelco (see below). As a result, a debt premium of 100 basis points represents a clear upper bound on the debt premium for Batelco.

The responses to the previous consultation were broadly consistent with the range for the debt premium proposed here. One response provided data that would support a higher premium based on information on swap rates provided by another company. The TRA is of the view that data on swap rates and associated fees is likely to be determined by the specific circumstances and are therefore not easy to compare from company to another.

In the absence of more up-to-date information on Batelco's debt premium, the TRA is minded to use a debt premium in the range 0.8% to 1.0%.

Consultation

The TRA invites comments on the use of a range of 0.8% to 1.0% as the nominal debt risk premium.

6 http://www.ofcom.org.uk/consult/condocs/cost_capital2/

### 3.4 EQUITY RISK PREMIUM

In the CAPM framework the equity risk premium (ERP) is the additional return that is demanded for holding a perfectly diversified portfolio of all risky assets over holding a completely riskless asset. In practice, when it comes to measurement, the portfolio of risky assets is replaced with a portfolio of equities.

There is a range of alternative evidence available to assess the appropriate ERP for a well-developed and liquid equity market such as the USA or the UK. A recent study by Dimson, Marsh and Staunton[7] has estimated the

ERP for a range of countries over the past 100 years. Their results are summarised in Table 2 below.

In the earlier consultation the TRA based its assessment of the equity risk premium on evidence from international equity markets. The response to the consultation supported this approach. The TRA discussed the Dimson, Marsh and Staunton study and others (e.g., LBS/ABN AMRO who derived a historic premium of 4.9% based on 101 years of data).

| Country | Annual horizon – arithmetic mean | 10 year horizon – arithmetic mean |
|---|---|---|
| Canada | 6.0% | 4.7% |
| France | 7.0% | 5.1% |
| Germany | 9.9% | 8.5% |
| Italy | 8.4% | 5.4% |
| Japan | 10.3% | 7.2% |
| UK | 5.6% | 4.9% |
| USA | 7.0% | 5.0% |
| World | 5.6% | 4.7% |

Table 2: Equity risk premium

*Source: Dimson, Marsh and Staunton, Table 12-2*

In a separate study the same authors have considered whether the historical ERP is a good guide to the prospective ERP. They estimate that

7 Elroy Dimson, Paul Marsh, Mike Staunton, *Triumph of the Optimists: 101 years of Global Investment Returns*, Princeton, NJ: Princeton University Press, 2002.

the prospective ERP for world's major markets would be 5% on an arithmetic mean basis.[8]

The responses to the previous consultation included details on a range of historical estimates of the ERP. In forming a view of the appropriate ERP, the TRA has considered this evidence. Although the TRA considers it is appropriate to look at a wide range of evidence on the ERP, the TRA believes that the analysis by Dimson, Marsh and Staunton represents the most robust assessment of the historical data on equity returns. The Dimson, Marsh and Staunton dataset looks a wider range of countries and is more up-to-date than many of the other studies that have been referred to.

The TRA has also considered evidence on expectations of ERP, based on survey data. Various surveys of ERP expectations have been undertaken. These surveys have covered financial economists, company finance officers and investment analysts. A summary of this evidence is provided below in Table 3. ERP expectations from financial economists and company finance officers tend to be in line with the observed historic data while the expectations from investment analysts and fund managers tend to be lower. In general, the majority of the survey evidence suggests that a value around 5%-6% is appropriate for the ERP, although the evidence from banks and fund managers points to a lower value.

[8] Dimson, E., P. Marsh, and M. Staunton, 2003, Global Evidence on the Equity Risk Premium, *Journal of Applied Corporate Finance*, Vol. 15, No. 4, Fall, pp. 27-38

## Batelco's Cost of Capital

| Evidence | Description | Value for ERP |
|---|---|---|
| Welch, 2000 | Survey of over 100 financial economists - mainly US | 6% |
| Welch, 2001 | Update of survey of financial economists | 5% |
| OXERA | March 2000 survey of ERP used by UK companies | 5% |
| Bruner *et al* (1998) | US survey of corporations and financial analysts | Corporate users favour range 5% - 6% |
| UK financial institutions | Views from investment banks and fund managers since 1997 | Most estimates lie in range 2 - 4% |

Table 3: Expectations for ERP

Sources:

Bruner R, Eades K, Harris R and Higgins R (1998), 'Best practices in estimating the cost of capital: survey and synthesis', *Financial Practice and Education*, Spring / Summer

The OXERA (2000) report and the evidence from UK financial institutions were cited by the UK Competition Commission in the report *Vodafone, O2, Orange and T-Mobile: Reports on references under section 13 of the Telecommunications Act 1984 on the charges made by Vodafone, O2, Orange and T-Mobile for terminating calls from fixed and mobile networks,* (2003, p190).

Welch, I., 2000, 'Views of financial economists on the equity premium and other issues', *Journal of*
*Business* 73 (October): 501-37

Welch I., (2001), *The equity premium consensus forecast revisited*, working paper, Yale School of Management

Taking into account the evidence of historical equity returns and expectations of future returns, the TRA believes that an ERP of 5% for the international ERP is appropriate.

In the earlier consultation the calculation of the risk free rate in the CAPM framework included the country risk premium. After further analysis and taking into account the responses to the consultation, the TRA has decided that it is more appropriate to include the impact of country risk in the ERP rather than the risk free rate.

For a country with a credit rating of Baa1 the appropriate premium to apply to the international ERP is 1.8%.[9] Table 4 shows the calculation of the ERP based on an international ERP of 5%.

| | Value for ERP |
|---|---|
| International ERP | 5.0% |
| Country risk premium | 1.8% |
| **ERP for Bahrain** | **6.8%** |

Table 4: ERP for Bahrain

Consultation

The TRA invites comments on the use of 5% for the international ERP and a country risk premium of 1.8%.

### 3.5 BETA

The appropriate Beta factor for Batelco can be established using comparisons with the observed Beta values of other telecoms companies. In the previous consultation paper, the TRA established a range for the equity Beta of Batelco of 0.85 to 1.25, with a central value of 1.05. At a gearing level of 5% this implies a range for the asset Beta of 0.81 to 1.19, with a central value of 1.0.

This estimate was based on a number of sources of data:

- Beta estimates for worldwide telecoms companies;
- Batelco's Beta estimate against the local market; and
- Barra predicted Beta for Batelco.

The responses to the previous consultations provided additional evidence on the appropriate Beta value. This included further analysis of the Batelco Beta, data on asset Betas for fixed and mobile telecoms

[9] As reported by 'Damodoran online' on 21st June 2005: http://pages.stern.nyu.edu/~adamodar/ .

companies and more data on Barra Betas[10] for other telecoms companies. Taken together this evidence could support a wide range of values for the Beta and did not indicate that the TRA's proposed range for the Beta was inappropriate.

In providing an updated assessment for the Beta, the TRA has taken account of the evidence previously available, together with the latest available information.

Data on asset and equity Betas for a wide range of telecoms companies from around the world are presented in Annex 1. The summary data is presented in Table 5 below. This indicates that the Betas for telecoms companies lie in the range 0.76 to 1.06.

| Region | Sample | Asset Beta |
|---|---|---|
| Europe | 20 | 1.06 |
| Middle East and Asia | 44 | 0.82 |
| Australia, Canada and New Zealand | 4 | 0.95 |
| USA | 28 | 0.76 |

Table 5: Summary of Beta data

*Source: Damodaran Online, June 2005*

A number of different published sources on Betas are available:

- The London Business School quarterly publication *Risk Measurement Service* (RMS) contains estimates of equity Beta by sector. In telecommunications, the estimates range from 1.28 for fixed line telephony to 0.96 for mobile with a sector average of 1.14.
- The most recent assessment of the cost of capital for BT by the UK regulator Ofcom was published in June 2005.[11] This concludes that the appropriate equity Beta for BT's copper access business is

  0.8 to 0.9 (implied asset Beta of 0.55 to 0.6) and for BT's other activities is 1.14 to 1.23 (implied asset Beta of 0.8).

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10 Barra is a risk-management company (www.barra.com) that provides estimates of what are referred to as "fundamental Betas". These predicted Beta estimates are based on company characteristics and risk measures such as financial leverage, operating liability leverage, size, earnings growth, number of analysts and earnings volatility.

11 Ofcom's approach to risk in the assessment of the cost of capital – second consultation in relation to BT's equity Beta, June 2005.

**Batelco's Cost of Capital**

- The most recent estimate of Batelco's Beta is provided by AME*info* who estimate it over a relatively short period of time as 1.90.[12]

The relatively high Beta based on Batelco stock market data is likely to reflect the short time period and recent stock market volatility. It should also be noted that the additional volatility of the Bahrain stock market has been reflected in the country risk premium applied to the ERP. In assessing the Beta value for Batelco, the TRA is proposing to place greater weight on the international evidence on telecoms Betas. This reflects the fact that individual Beta estimates can be subject to significant uncertainty and variation and therefore to produce a robust estimate of the Beta it is appropriate to consider a sample of Beta data on telecoms companies.

The TRA used a value for the asset Beta of 1.0 in its earlier ruling for Batelco as a whole.[13] Given the ranges provided from other sources quoted above, the TRA has no reason to believe that the relative riskiness of the sector has changed much since its earlier decision. The TRA is proposing to use a range for the asset Beta of 0.9 to 1.1.

To calculate the equity Beta the following formula is applied:

*equity Beta = asset Beta / (1-gearing).*

Using a gearing level of 5% (see below), this implies a range for the equity Beta of 0.95 to 1.16.

Consultation

The TRA invites comments on the use of an asset Beta in the range of 0.9 to 1.1.

### 3.6 GEARING

The TRA expects Batelco to remain majority equity funded. At the earlier review of its cost of capital, the TRA considered that some debt financing may be required and postulated a debt/equity ratio of 5:95. Since then Batelco has not issued any debt.

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12 As of 15th June 2005; see http://www.ameinfo.com/financial_markets/UAE/Company_BH0021

13 This was subsequently adjusted to derive a different WACC for separate elements of Batelco's business. This approach is discussed in Section 4.4 below.

## Batelco's Cost of Capital

The TRA is currently minded to set a gearing ratio in-line with Batelco's current level of gearing. Consequently, the TRA is minded to use debt equity ratio of 5:95 for this review period.

Consultation

The TRA invites comments on its proposal to use a gearing of 5%.

# 4 Additional issues

## 4.1 ASYMMETRIC RISK

The earlier consultation process raised some important questions about the nature of the risks involved in using the wrong allowed rate of return. In particular, if the true cost of capital is:

- higher than the allowed rate of return then Batelco has an incentive to under-invest leading to a sub-optimal telecommunications infrastructure; and
- lower than the allowed return then Batelco has an incentive to over-invest leading to a gold-plated telecommunications infrastructure.

The discussion at the previous review focused on the asymmetric nature of the risks of over versus under investment. In particular, historical analogies with other types of infrastructure (e.g., roads, railways) indicates considerable positive externalities from the development of basic infrastructure.[14] The inevitable positive externalities, it is argued, means that the TRA is bound to underestimate the cost of capital. Therefore, an upwards adjustment should be made (e.g., based on one or two standard deviations from the central estimate).

The TRA accepts that there is some uncertainty in the estimation of the cost of capital. However, the TRA believes that the estimated range derived in this consultation is a robust and unbiased estimate of Batelco's cost of capital. Furthermore, it is bound by the statutory framework which requires it to "*protect the interests of Subscribers and Users*" with respect to specific telecommunications services (see Section 1.2).

Furthermore, if major areas of asymmetric risk were identified that could affect Batelco's ability to raise finance on reasonable terms then the TRA would be minded to address these risks directly rather than make arbitrary adjustments to the cost of capital. The TRA also notes that the determination of the cost of capital is expected to be reviewed after two years. This is shorter than most regulatory review periods and substantially reduces the exposure to any asymmetric risk factors.

[14] Positive externalities arise when parties other than the investor benefit from the investment and cannot be (fully) charged for the benefits they derive. For example, railways which charge passengers but cannot recover the benefit of creating thriving economic communities alongside stations and tracks.

Consultation

The TRA invites comments on (i) its approach to asymmetric risk and (ii) whether it should review Batelco's cost of capital after two years or longer, and if longer, how long this should be.

### 4.2 SMALL COMPANY RISK

There is evidence that small companies face a higher cost of capital because of liquidity constraints, fixed costs of trading and other factors. It has been suggested that given Batelco's small size in global terms it is appropriate to add a premium to its cost of equity and debt to reflect these additional costs.

The TRA is currently not proposing to include a small company premium on the cost of capital. The TRA notes that Batelco is larger than most companies that have been awarded a small company premium by a regulator.[15] The TRA would need to see evidence of the extent of additional costs faced by Batelco if a premium were to be included.

Consultation

The TRA invites comments on whether Batelco faces additional financing costs as a result of its size.

### 4.3 CURRENCY RISK

The Bahraini Dinar is tied to the US dollar, consequently the TRA believes that any currency risk is minimal. To the extent that there may be a risk this would be fully captured in the country and debt risk premia already calculated (see Section 2.2). Consequently, the TRA will not add a further, explicit, currency risk to its calculation of the cost of capital.

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15 In 2004 Ofwat, the water regulator in the UK, added a small company premium to the cost of capital of some of the water and sewerage companies. The premia ranged from 0.9% for companies with a value of less than £70m ($120m) to 0.3% for companies with a value between £280m and £700m ($500m and $1,200m). (Ofwat, Future water and sewerage charges 2005-10 - Final Determinations, December 2004.),

Consultation

The TRA invites comments on its proposal not to add any further costs for currency risk.

### 4.4 WACC FOR EACH BUSINESS

In the earlier determination, the TRA differentiated between the cost of capital for different business units within Batelco (access, core network, mobile and ISP). This was undertaken on the basis that it was possible to truly differentiate between the different business units.

Over the past couple of years, Batelco has retained a single integrated structure. This makes it difficult for the TRA to truly distinguish between its different business units, and their relative risk. Furthermore, it is clear that investors can only invest in Batelco as a whole, rather than separate units, and there are no immediate plans that the TRA is aware of to make any changes. Consequently, the TRA is minded to issue a determination for a single cost of capital covering the whole company, without differentiating between its various business units.

Consultation

The TRA invites comments on its proposal to state a single cost of capital for the whole company, without separating out the different (regulated) business units.

# 5 Summary

The analysis suggests a nominal WACC of between 10.5% and 12.4%. The calculation is summarised in Figure 3.

| | Low | Central | High |
|---|---|---|---|
| Risk-free rate | 4.25% | 4.5% | 4.75% |
| Country risk premium | 1.0% | 1.25% | 1.5% |
| Debt risk premium | 0.8% | 0.9% | 1.0% |
| **Cost of debt** | **6.1%** | **6.7%** | **7.3%** |
| | | | |
| | **Low** | **Central** | **High** |
| Risk-free rate | 4.25% | 4.5% | 4.75% |
| Equity risk premium | 6.8% | 6.8% | 6.8% |
| Asset Beta | 0.9 | 1.0 | 1.1 |
| Equity Beta | 0.95 | 1.05 | 1.16 |
| **Cost of equity** | **10.7%** | **11.7%** | **12.6%** |
| Gearing | 5% | 5% | 5% |
| WACC | 10.5% | 11.4% | 12.4% |

Figure 3: Cost of capital (nominal)

Within the range for the nominal WACC of 10.5% to 12.4%, the TRA will decide which one to adopt following this consultation. It may be that following the consultation the nominal WACC listed above may be varied based on the evidence submitted to the TRA.

The TRA invites comments on the proposals in this document. They are summarised below in Table 6.

| |
|---|
| The TRA invites comments on its proposed approach to calculating the cost of debt (section 2.2). |
| The TRA invites comments on the use of a range of 4.25% to 4.75% as the nominal risk free rate (section 3.1). |
| The TRA invites comments on the use of a range of 1.0% to 1.5% as the nominal country risk premium to be applied to the cost of debt (section 0). |
| The TRA invites comments on the use of a range of 0.8% to 1.0% as the nominal debt risk premium (section 0). |
| The TRA invites comments on the use of 5% for the international ERP and a country risk premium of 1.8% (section 0). |

## Batelco's Cost of Capital

| |
|---|
| The TRA invites comments on the use of an asset Beta in the range of 0.9 to 1.1 (section 0). |
| The TRA invites comments on its proposal to use a gearing of 5% (section 3.6). |
| The TRA invites comments on (i) its approach to asymmetric risk and (ii) whether it should review Batelco's cost of capital after two years or longer, and if longer, how long this should be (section 4.1). |
| The TRA invites comments on whether Batelco faces additional financing costs as a result of its size (section 4.2). |
| The TRA invites comments on its proposal not to add any further costs for currency risk (section 4.3). |
| The TRA invites comments on its proposal to state a single cost of capital for the whole company, without separating out the different (regulated) business units (section 4.4). |

Table 6 Issues for comment

# Batelco's Cost of Capital

## Annex 1: Beta estimates for telecoms companies

### Middle East and Asia

| Name | Primary Exchange | Equity Beta | Gearing | Asset Beta |
|---|---|---|---|---|
| *Telecom services* | | | | |
| BHARTI TELEVENTURES | Mumbai | 1.03 | 11% | 0.92 |
| CESKY TELECOM AS | Prague-SPAD | 1.22 | 27% | 0.90 |
| CHINA TELECOM CORP LTD-H | Hong Kong | 1.44 | 30% | 1.01 |
| CHUNGHWA TELECOM CO LTD | Taipei | 0.53 | 0% | 0.53 |
| DIGITAL TELECOM PHILIPPINES | Philippines | 1.38 | 61% | 0.54 |
| EMIRATES TELECOM CORPORATION | Abu Dhabi | 0.90 | 0% | 0.90 |
| GLOBE TELECOM INC | Philippines | 1.22 | 30% | 0.85 |
| HUTCHISON GLOBAL COMMUNICAT | Hong Kong | 1.55 | 3% | 1.51 |
| INDOSAT TBK PT | Jakarta | 1.11 | 25% | 0.83 |
| JASMINE INTL PUBLIC CO LTD | Bangkok | 1.52 | 58% | 0.64 |
| JORDAN TELECOM CORP | Amman | 0.82 | 8% | 0.75 |
| KRTNET CORP | KOSDAQ | 0.58 | 11% | 0.51 |
| LOXLEY PUBLIC COMPANY LTD | Bangkok | 1.36 | 33% | 0.91 |
| MAHANAGAR TELEPHONE NIGAM | Mumbai | 1.11 | 0% | 1.10 |
| NETIA SA | Warsaw | 0.86 | 0% | 0.86 |
| ORASCOM TELECOM HOLDING | Cairo | 1.10 | 15% | 0.93 |
| PAKISTAN TELECOM CO LTD | Karachi | 1.06 | 5% | 1.01 |
| PCCW LTD | Hong Kong | 1.01 | 58% | 0.43 |
| SAUDI TELECOM CO | Saudi Arabia | 0.93 | 0% | 0.93 |
| SHIN CORPORATION PUB CO LTD | Bangkok | 1.10 | 12% | 0.96 |
| SINGAPORE TELECOMMUNICATIONS | Singapore | 0.89 | 19% | 0.71 |
| SOUTHERN TELECOMMUNICATIONS | RTS | 0.66 | 56% | 0.29 |
| TATA TELESERVICES MAHARASHTR | Mumbai | 1.13 | 27% | 0.83 |
| TELEKOM MALAYSIA BHD | Kuala Lumpur | 1.29 | 23% | 0.99 |
| TELEKOMUNIKACJA POLSKA S.A. | Warsaw | 0.92 | 38% | 0.57 |
| TELEKOMUNIKASI TBK PT | Jakarta | 1.24 | 13% | 1.07 |
| TIME DOTCOM BHD | Kuala Lumpur | 1.12 | 0% | 1.12 |
| UNITED COMMUNICATION INDUS | Bangkok | 1.20 | 17% | 1.00 |
| URALSVYAZINFORM | RTS | 0.85 | 21% | 0.67 |
| VIDESH SANCHAR NIGAM LTD | Mumbai | 1.04 | 3% | 1.01 |
| VOLGATELECOM | RTS | 0.76 | 17% | 0.64 |
| *Cellular telecoms* | | | | |
| *ADVANCED INFO SERVICE PCL* | Bangkok | 0.91 | 12% | 0.80 |
| *MOBINIL-EGYPTIAN MOBILE SERV* | Cairo | 0.97 | 11% | 0.86 |
| *CHINA MOBILE HONG KONG LTD* | Hong Kong | 1.38 | 9% | 1.26 |
| TURKCELL ILETISIM HIZMET AS | Istanbul | 1.02 | 5% | 0.96 |
| MTN GROUP LTD | Johannesburg | 0.78 | 5% | 0.74 |
| SK TELECOM | Korea SE | 0.97 | 22% | 0.76 |
| LG TELECOM LTD | KOSDAQ | 0.76 | 52% | 0.36 |
| MAXIS COMMUNICATIONS BHD | Kuala Lumpur | 1.18 | 4% | 1.14 |
| AMERICA MOVIL SA DE CV-SER A | Mexico | 1.28 | 12% | 1.12 |
| TELESP CELULAR PARTICIPACOES | Sao Paulo | 1.00 | 40% | 0.60 |
| CHINA UNITED TELECOMMUNICA-A | Shanghai | 1.08 | 46% | 0.58 |
| MOBILEONE LTD | Singapore | 0.61 | 12% | 0.54 |
| TAIWAN CELLULAR CORP | Taipei | 0.59 | 24% | 0.45 |
| **AVERAGE** | | | | **0.82** |

*Source: Damodaran Online, June 2005*

# Batelco's Cost of Capital

## Europe

| Name | Primary Exchange | Equity Beta | Gearing | Asset Beta |
|---|---|---|---|---|
| *Telecom services* | | | | |
| CABLE & WIRELESS PLC | London | 0.91 | 24% | 0.69 |
| COLT TELECOM GROUP PLC | London | 2.05 | 59% | 0.85 |
| FASTWEB | Milan NM | 1.69 | 29% | 1.20 |
| KINGSTON COMM(HULL) PLC | London | 0.87 | 24% | 0.66 |
| PIPEX COMMUNICATIONS PLC | London | 0.78 | 12% | 0.69 |
| QSC AG | Frankfurt | 1.16 | 0% | 1.16 |
| SONAECOM SGPS SA | EN Lisbon | 1.80 | 33% | 1.20 |
| TELE2 AB -B SHS | Stockholm | 1.31 | 17% | 1.09 |
| TELE2 AB -A SHS | Stockholm | 1.20 | 17% | 0.99 |
| TELEGATE AG | Xetra | 0.84 | 2% | 0.83 |
| TELENOR ASA | Oslo | 1.33 | 20% | 1.06 |
| TELIASONERA AB | Stockholm | 1.42 | 14% | 1.22 |
| THUS GROUP PLC | London | 2.21 | 23% | 1.71 |
| TISCALI SPA | Milan NM | 1.95 | 39% | 1.19 |
| *Cellular telecoms* | | | | |
| COSMOTE MOBILE TELECOMMUNICA | Athens | 0.82 | 6% | 0.77 |
| MMO2 PLC | London | 1.38 | 11% | 1.22 |
| MOBISTAR SA | EN Brussels | 0.92 | 9% | 0.83 |
| TELEFONICA MOVILES SA | | 1.35 | 2% | 1.32 |
| TIM SPA | Milan | 1.31 | 1% | 1.29 |
| VODAFONE GROUP PLC | London | 1.38 | 14% | 1.19 |
| **AVERAGE** | | | | **1.06** |

## Australia, Canada and New Zealand

| Name | Primary Exchange | Equity Beta | Gearing | Asset Beta |
|---|---|---|---|---|
| *Telecom services* | | | | |
| BCE INC | Toronto | 0.74 | 34% | 0.49 |
| TELECOM CORP OF NEW ZEALAND | NZX | 1.28 | 25% | 0.96 |
| TELUS CORP | Toronto | 1.05 | 35% | 0.68 |
| *Cellular telecoms* | | | | |
| TELESYSTEM INTL WIRELESS INC | Toronto | 2.34 | 28% | 1.69 |
| **AVERAGE** | | | | **0.95** |

*Source: Damodaran Online, June 2005*

## Batelco's Cost of Capital

### USA

| Name | Equity Beta | Gearing | Asset Beta |
|---|---|---|---|
| Aliant Inc | 0.65 | 22% | 0.51 |
| ALLTEL Corp. | 1.00 | 25% | 0.75 |
| Amer. Tower 'A' | 2.00 | 45% | 1.09 |
| AT&T Corp. | 1.25 | 48% | 0.65 |
| BellSouth Corp. | 1.00 | 23% | 0.77 |
| CenturyTel Inc. | 1.10 | 41% | 0.65 |
| Cincinnati Bell | 1.65 | 69% | 0.52 |
| Citizens Communic. | 1.00 | 48% | 0.52 |
| Commonwealth Tel. | 0.80 | 28% | 0.58 |
| Crown Castle Int'l | 1.80 | 48% | 0.93 |
| Dycom Inds. | 1.15 | 1% | 1.14 |
| Hellenic Telecom Org. SA (OTE) | 0.60 | 48% | 0.31 |
| IDT Corp. | 0.95 | 4% | 0.91 |
| Level 3 Communic. | 1.55 | 69% | 0.47 |
| Manitoba Telecom Services Inc | 0.55 | 15% | 0.47 |
| Millicom Intl Cellular S A | 1.95 | 46% | 1.05 |
| Mobile Telesystems OJSC | 1.00 | 1% | 0.99 |
| Nextel Communic. 'A' | 1.75 | 23% | 1.34 |
| Qwest Communic. | 1.70 | 68% | 0.54 |
| SBC Communications | 1.05 | 17% | 0.87 |
| Sprint Corp. | 1.05 | 34% | 0.69 |
| Telephone & Data | 1.05 | 46% | 0.57 |
| Telstra Corporation Ltd | 0.65 | 13% | 0.57 |
| U.S. Cellular | 1.10 | 25% | 0.83 |
| Verizon Communic. | 1.00 | 29% | 0.71 |
| Vimpel | 1.10 | 11% | 0.98 |
| West Corp. | 1.00 | 8% | 0.92 |
| Western Wireless 'A' | 1.40 | 43% | 0.79 |
| **AVERAGE** | | | **0.76** |

*Source: Damodaran Online, June 2005*