DETERMINATION

Batelco's Cost of Capital

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A Determination issued by the
Telecommunications Regulatory Authority

20 November 2005

Determination 3 of 2005

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

هيئة تنظيم الاتصالات

Telecommunications Regulatory Authority

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PART A – BACKGROUND

1.1 FRAMEWORK

The TRA having regard to its statutory duties as set out in the Telecommunications Law (Legislative Decree No. 48 of 2002 promulgating the Telecommunications Law), its August 2003 Determination, the comments received as a result of the consultation process, and a summary of the latter which is set out in "*Batelco's Cost of Capital: A Report Issued by the TRA on the Consultation",* reference ERU/1105/208 of 20 November 2005 ("Consultation Report"), as well as all relevant changes that have occurred over the past two years, hereby issues this Determination.

1.2 THE DETERMINED COST OF CAPITAL

The TRA determines that a single cost of capital shall apply to all of Batelco's business units, since Batelco has retained a single integrated business structure, thus making it difficult for an outside observer to distinguish between the risks inherent in each of its business units, and for the further reason that, from the perspective of investors, they can only invest in Batelco as a whole, rather than in separate units of the company.

2 The cost of capital

2.1 WEIGHTED AVERAGE COST OF CAPITAL

The TRA is satisfied that, 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 has determined each of these elements of the cost of capital, and the basis for this determination is set out below.

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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, where the real cost of capital excludes the impact of inflation. This Determination refers to the nominal cost of capital, as the TRA shall apply an estimate of the nominal cost of capital to nominal cashflows and nominal asset values.

2.2 COST OF DEBT

The TRA is satisfied that the standard approach should be applied in estimating the cost of debt based on data on debt interest rates from the company concerned and from other comparators.

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.

In assessing the overall cost of debt and the company risk premium, the TRA has used evidence from international 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.

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2.2.1 Risk free rate

The calculation of the cost of debt and the cost of equity both contain the estimate of the risk-free rate, i.e., 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 TRA has focused on two major markets, the USA and the UK, as these are set out in Table 1 below, which provides an overview of nominal yields on 10 year government bonds for each country.

	Past 12 months	Past 24 months
USA government yields	4.21%	4.26%
UK government yields	4.48%	4.72%

Table 1: Nominal government yields

Source: Federal Reserve, Bank of England

Based on the evidence from the UK and the USA, and having looked at evidence from Euro-zone economies and Australia, the TRA is satisfied that the range of 4.25% - 4.75% for the risk-free rate proposed in the consultation was appropriate, and having considered all relevant evidence it has determined the value for the international risk-free rate as **4.5%.**

2.2.2 The country risk premium for the cost of debt (default spread)

In calculating the appropriate cost of debt for Batelco, the TRA considered whether a country risk premium could be added to the risk-free rate in order to reflect the additional risk to investors of investing in Bahrain.

The TRA is satisfied that the risk-free rate in Bahrain, which includes a country risk premium, can be found by examining the credit rating of the country. Bahrain currently has a long-term credit rating of Baa1 as reported by 'Damodaran 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). The evidence suggests that this equates to a default spread in the range of 1.2% to 1.5%, also reported by 'Damodaran Online' on 21st June 2005. This is based on time series data of the default spread for the sovereign credit rating and current data on corporate yields with the same credit rating. This represents an improvement compared to August 2003, when Bahrain attracted a sovereign credit rating of Ba1 – equivalent to a default spread of approximately 2.5%.

Given the current sovereign debt rating for Bahrain of Baa1, the TRA considered and proposed a country risk premium for the cost of debt of 1.0% - 1.5%. Having regard to responses received, the TRA is satisfied that in order to be consistent with the quoted source, "Damodaran

Online", the country risk premium to be included in the cost of debt should be towards the high end of the proposed range, i.e., 1.5%. However, the TRA was not satisfied by the arguments that it is appropriate to set the forward-looking cost of capital on the basis of the more recent evidence.

In determining the country risk premium for the cost of debt, the TRA has also been mindful of the possibility of double counting certain risks. In particular, the TRA does not consider that the country risk premium presented here includes an allowance for risks that are also captured in the company debt premium.

Thus, for the purposes of this determination, the TRA has determined the country risk premium for the cost of debt at 1.5%.

2.2.3 Company debt premium

During the consultation, the TRA had proposed a company debt premium in the range of 0.8% - 1.0% based on an AA credit rating for Batelco (Standard & Poor's).

Having considered all available evidence and the responses to the consultation, and in the absence of further up-to-date information on Batelco's debt premium, the TRA has determined, for the purposes of this determination, a company debt premium of 0.9%.

2.2.4 Summary of determination on the cost of debt

Based on the above, the TRA determines Batelco's overall cost of debt to be 6.9%.

2.3 COST OF EQUITY

The TRA is satisfied that it should employ the most widely used methodology for estimating the cost of equity, which is the capital asset pricing model ("CAPM"). The CAPM is calculated as follows:

$$r_e = r_f + \beta \times (r_m - r_f)$$

Where:

r_f is the risk-free rate;

β 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").

The following sub-sections set out the TRA's determination on each of these factors.

2.3.1 Equity risk premium

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

In the Consultation Document, the TRA proposed an ERP of 5%. This value was based on what the TRA considered as the most robust existing evidence base for calculating the ERP (the Dimson, Marsh and Staunton studies cited in the consultation). The TRA has also been mindful of recent trends in setting the ERP for regulated telecommunications businesses, where the tendency has been to set an ERP of around 5%, as in, for example, Ofcom's final statement on "The Approach to Risk in the Assessment of the Cost of Capital" (Ofcom, August 2005), where Ofcom has set the ERP at 4.5% for BT.

Having considered the points raised by the responses to the Consultation, the TRA is satisfied that a value of **5%** for the international ERP represents the most appropriate level. This is based on a number of factors, but in particular on the range of historical evidence on past equity returns and expectations of future returns (DMS), as well as on recent regulatory decisions in this area which have tended to view 5% as an upper bound on the ERP for the purposes of setting a regulatory cost of capital.

2.3.2 Country risk premium to be included in the ERP for Bahrain

In the Consultation document, the TRA proposed a country risk premium to be included in the ERP for Bahrain of 1.8%. This proposal was based on calculations provided by "Damodaran Online", which indicated a range of 1.8% (based on current yields on corporate debt rated Baa1) to 2.25% (based on historical data on yields on sovereign debt rated Baa1). The value in the Consultation document was based on the evidence from current yields only.

Upon further analysis, the TRA considered that both sources of evidence – current yields on corporate Baa1 debt and historical yields on sovereign Baa1 debt - are relevant to assessing the country risk premium for Bahrain. The TRA also took into account the argument in favour of using the top of the range because the data was based on sovereign yields rather than corporate yields, and the argument in favour of using the bottom of the range because it was based on more recent data. On balance, the TRA was satisfied that it was more appropriate to use the data on sovereign yields to estimate the country risk premium. Thus, for the purposes of this Determination, the TRA determines the country risk premium to be included in the ERP for Bahrain at **2.25%.**

2.3.3 Summary of the ERP for Bahrain

On the basis of the above, the ERP is determined to be equal to **7.25%.**

2.4 BETA

The TRA was satisfied that the appropriate Beta factor for Batelco could be established by using comparisons with the observed Beta values of other telecoms companies. In the Consultation document, the TRA proposed a range for the asset Beta of Batelco of 0.9 – 1.1.

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

- Beta estimates for worldwide telecoms companies;
- Beta estimates set by other telecommunications regulators; and
- Barra predicted Beta for Batelco.

Having considered the responses to the Consultation document which were based on different samples of comparator companies and different approaches for converting from the observed equity Beta to the asset Beta, the TRA can see that there is some evidence to support a lower asset Beta value and some evidence to support a higher asset Beta value. However, on considering all of the available evidence, the TRA is satisfied that the range for the asset Beta of 0.9 – 1.1 is appropriate.

The TRA has recalculated the asset Beta for the sample of firms included in the Consultation document, while taking account of the different approaches for converting the equity Beta into the asset Beta, which depend on assumptions concerning the impact of the tax shield. The recalculations demonstrated that, while there is a difference between the asset Betas depending on the formula that is used, the difference is relatively small and the asset Beta remains within the range of 0.9 – 1.1 proposed by the TRA in the Consultation document.

Thus the evidence on the asset Beta that takes account of the tax shield did not cause the TRA to change the proposed range for the asset Beta of 0.9 – 1.1.

2.5 GEARING

The gearing level of a firm shows the relative share of debt in the financing of the firm, i.e., gearing = debt/(debt + equity). The key conclusion on gearing from the consultation process was that, since there is no corporate tax in Bahrain, the TRA would not expect the WACC to be affected significantly by the level of gearing assumed by the TRA.

The TRA has also decided to use Batelco's actual level of gearing in the WACC, as opposed to a 'notional' or optimal level of gearing. This is because the main motivations for using an optimal gearing level (i.e., consistency across regulated firms and minimising the distortionary effects of gearing on the WACC) do not apply in the case of Batelco.

The TRA expects Batelco to remain majority equity funded. In 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. Consequently, the TRA has decided to use a debt equity ratio of 5:95 (gearing of 5%).

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2.6 ADDITIONAL ISSUES

The TRA also considered the views expressed on the additional issues that are potentially important in setting Batelco's cost of capital, including:

- asymmetric risk;
- small company risk; and
- currency risk.

The TRA has been mindful of the importance of each of these issues in setting the cost of capital, and is satisfied that the determined cost of capital adequately deals with the concerns that have been raised, for the reasons set out in the report on the Consultation.

2.7 SUMMARY OF THE DETERMINED COST OF CAPITAL

The TRA considers the determined range for the nominal weighted average cost of capital for Batelco to be 11.1% to 12.6%, as set out in the table below.

BATELCO'S NOMINAL WACC	Range	
	Low	**High**
Risk-free rate	4.5%	4.5%
Country risk premium	1.2%	1.5%
Debt risk premium	0.8%	1.0%
Cost of debt	**6.5%**	**7.0%**
	Low	**High**
Risk-free rate	4.5%	4.5%
Equity risk premium	7.25%	7.25%
Asset Beta	0.90	1.10
Equity Beta	0.95	1.16
Cost of equity	**11.4%**	**12.9%**
Gearing	5.0%	5.0%
WACC	11.1%	12.6%

Figure 1: Batelco's determined cost of capital range (nominal)

In reaching its final determination of a value for the cost of capital from within this range, the TRA has considered the other aspects of the regulatory regime affecting Batelco. In particular, the TRA has taken account of the current situation facing Batelco with regard to tariffs for call origination services, which appear not to fully reflect costs. This increases the risk faced by Batelco as a result of competition, and it is appropriate that this be mirrored in a higher cost of capital. As a result, the TRA has set the cost of capital on the basis of an asset Beta of 1.05, which is near the top of the proposed range and reflects this specific risk

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factor. The need for this adjustment will be reconsidered at the next review, alongside the other parameters in the cost of capital calculation.

Thus the TRA determines the value for the Nominal Weighted Average Cost of Capital for Batelco to be 12.2%, calculated as set out below.

BATELCO'S NOMINAL WACC	Determination
Risk-free rate	4.5%
Country risk premium	1.5%
Debt risk premium	0.9%
Cost of debt	**6.9%**
Risk-free rate	4.5%
Equity risk premium	7.25%
Asset Beta	1.05
Equity Beta	1.11
Cost of equity	**12.5%**
Gearing	5.0%
WACC	12.2%

Figure 2: Batelco's determined cost of capital (nominal)

The TRA is also satisfied that the nominal cost of capital for Batelco should be reviewed after a two-year period has elapsed from the date of this Determination.

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PART B - DETERMINATION

HAVING REGARD TO THE TELECOMMUNICATIONS LAW, THE AUGUST 2003 DETERMINATION, ALL ADMISSIBLE EVIDENCE AND SUBMISSIONS RECEIVED BY THE TRA, THE TELECOMMUNICATIONS REGULATORY AUTHORITY HEREBY MAKES THE FOLLOWING DETERMINATION:

A) the value for the Nominal Weighted Average Cost of Capital for the Bahrain Telecommunications Company, Batelco, is 12.2%,

B) this Determination shall be reviewed after a two-year period has elapsed from its date of issue,

C) this Determination shall take effect from its date of issue.

For the Telecommunications Regulatory Authority

A. Andreas Avgousti

General Director

20 November 2005