RESPONSE TO TRA'S "Draft Determination of the Cost of Capital"

SUBMISSION

BY

BAHRAIN TELECOMMUNICATIONS COMPANY (BATELCO) BSC

(Batelco)

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Glossary

AM	Arithmetic mean
APT	Arbitrage Pricing Theory
BHD	Bahraini Dinar
Batelco	Bahrain Telecommunication Company B.S.C
BSE	Bahrain Stock Exchange
CAPM	Capital Asset Pricing Model
Company	Batelco
CRP	Country risk premium
DGM	Dividend Growth Model
DMS	Dimson, Marsh and Staunton
Draft Determination	Draft Determination published by the Telecommunications Regulatory Authority on 20 July 2009
EMRP	Equity Market Risk Premium
FFTM	Fama French three-factor model
MSCI	Morgan Stanley Capital Integration
PwC	PricewaterhouseCoopers
RFR	Risk-free rate
TRA	Telecommunications Regulatory Authority
USO	Universal service obligation
Zain	MTC-Vodafone Bahrain B.S.C

Executive Summary

This report outline's Bahrain Telecommunication Company's (Batelco or the Company) response to the Draft Determination published by The Telecommunications Regulatory Authority (TRA) on 20 July 2009 (Draft Determination), which sets out its approach to estimating the cost of capital for the provision of regulated telecommunications services in Bahrain.

The Draft Determination proposes a nominal cost of capital of 9% for both fixed and mobile telecommunications services regulated in Bahrain, being those provided by Batelco and MTC-Vodafone Bahrain (Zain) respectively. This represents a very large reduction of over 25% from the current regulatory cost of capital of 12.2%[1].

TRA's final cost of capital determination is of key significance to Batelco as it determines the allowed required rate of return and is therefore a key input to the prices that Batelco can charge for services supplied in markets in which they are present. This is of particular importance for Batelco given the capital intensive nature of telecoms network provision.

We are firmly of the view that 9% significantly under-estimates the cost of capital of Batelco. We believe TRA's approach to be flawed and inadequate in certain areas. In particular, it overlooks important market features specific to Bahrain and wider considerations, such as the increased volatility in government bonds yields and the fact that 5 and 10 year maturities are significantly below their long term averages.

The table below sets out our overall estimate of the cost of capital for Batelco, as well as TRA's cost of capital estimate as set out in the Draft Determination.

Table 1: Proposed cost of capital for Batelco2

	Batelco's calculations (Low)	Batelco's calculations (High)	TRA's calculations – (Low)	TRA's calculations – (High)
Nominal US risk-free rate (US$)	4.0%	5.0%	-	-
Inflation differential	0.3%	0.3%	-	-
Nominal US risk-free rate (BHD)	4.3%	5.3%	3.5%	3.7%
Country risk premium – Bahrain	2.3%	2.3%	1.5%	1.5%
Nominal Bahrain risk-free rate (BHD)	6.6%	7.6%	4.7%	5.2%
Default Risk	1.7%	1.7%	-	-
Nominal interest rate before - EMRP	8.3%.	9.3%	4.7	5.2
Equity beta	0.65	0.80	0.55	0.70
EMRP	7.0	8.0	5.1%	6.1%
Cost of equity (nominal)	12.85%	15.7%	7.5%	9.5%
Cost of equity – mId point (nominal)	**14.28%**		**9%[3]**	

Source: TRA's Draft Determination and Batelco analysis

We summarise below our recommended approach to calculating the cost of capital for Batelco:

[1] See TRA's determination of 20 November 2005 available at: http://www.tra.org.bh/en/pdf/Batelco_WACC_Determination_final_formattedd.pdf
[2] All figures have been rounded to one decimal place.
[3] TRA has proposed a cost of capital of 9% the TRA's draft determination.

- **Methodology for calculating the cost of equity**: We agree with TRA that the capital asset pricing model (CAPM) is the most appropriate framework for calculating the cost of equity; however we do not consider it appropriate to consider the cost of capital primarily from the perspective of an international investor. In reality, the typical marginal investor in Batelco does not hold a globally diversified portfolio of assets. Further details of Batelco's investors are provided in Section 1.2.

- **Capital structure:** We agree with the zero gearing level assumption proposed by TRA.

- **Risk-free rate (RFR):** There are several important points to be made in relation to TRA's estimate of the RFR:

  i) TRA has used the spot yields on US government bonds to calculate the RFR and uplifted it by 50 basis points (bps) to reflect the view that current spots rates might be artificially low as a result of flight to quality. To avoid making such ad hoc adjustments, utilities and telecom regulators generally take a medium to long term view by examining historical trends. This approach is consistent with the regulatory precedents.

  ii) TRA's choice of US government bond maturity is based on its estimate of the average remaining useful life of Batelco's assets which it calculates using regulatory accounting data. As accounting data is historical and backward looking, asset lives estimated using this approach are generally not in line with the economic useful life and therefore could result in misleading results. Moreover, using the average remaining life suggests that the assets will not be replaced, and only need to be rewarded over their remaining lives. Batelco needs to be incentivised to invest in assets. Therefore in principle maturity should be equal to the entire remaining economic life of assets. From an estimation perspective, another important aspect to consider is the volatility in yields associated with different maturities. Typically, yields on medium to short term maturity bonds (such as 5 years) tend to be more volatile making them less useful for determining an ex-ante RFR.

  iii) Federal Reserve policies that focus on injecting liquidity into the current financial system may have created excessive demand for government bonds which is also likely to result in artificially low yields. This recent *quantitative easing* has complicated the use of yields on US government bonds to calculate the RFR as it has created an excessive demand for bonds, briefly putting more downward pressure on spot yields with 10 year yields dropping by 50 basis points over the period March to July 2009. However, the yields have jumped significantly since then as a result of the Federal Reserve's announced intention to reduce borrowing over the next quarter. This volatility in yields provides further support of our view that more weight should be put on long term averages as opposed to spot rates.

  iv) We also consider taking a longer term view of an expected inflation differential between the two countries to be the most appropriate approach.

  v) Our view is that the US RFR range of 3.2% - 3.7% proposed by TRA is too low for the purposes of this determination. We consider a US RFR range of 4.3% - 5.3% to be more appropriate. The lower end of the range is consistent with the 10 year average on a 5 year US government bond, adjusted for the expected inflation differential between the US and Bahrain. The upper end of the range is consistent with the 10 year average on a 30 year US government bond, adjusted for the expected inflation differential between the US and Bahrain. Our suggested range is also consistent with previous regulatory determinations.

- **Country risk premium (CRP)**: In our view the CRP for Bahrain is 2.3%. This is 50 bps greater than the CRP suggested by TRA[4].

- **Default risk premium (DRP):** for non payment of interest or principal takes into account the probability of default and value lost upon default. There is greater than ever probability of default risk in the current economic market, the bleak forecast by IMF in their Global Financial Stability Report (GFSR), April 2009, suggest that this likely to continue for number of years[5].

- **Equity market risk premium (EMRP):** TRA's EMRP is based on Dimson, Marsh and Staunton's (DMS) 2009 estimate of the worldwide, arithmetic mean EMRP, to which it applies a 50 bps liquidity premium and a 50 bps uplift to reflect the current financial turmoil. TRA assumes that investors hold internationally diversified investment portfolios, and that there is a single world EMRP. We consider this to be inappropriate and unrealistic for the purpose of estimating Batelco's cost of capital, as the typical marginal investor in Batelco is likely to hold a domestic or regional portfolio of assets. We have undertaken an alternative, more appropriate approach to estimating the EMRP. In our approach we first estimate the EMRP for a developed economy. We then apply an uplift to reflect the difference between the EMRP for Bahrain and a developed economy. This uplift accounts for the higher return required by investors in the region as compensation for their exposure to higher volatility of equity market returns.

  An increased risk to cover for the environment in which Batelco operates, for example our fixed costs forms a higher % of the total cost base. Accordingly, profits will show greater fluctuations given the future likely more intensive competition. Furthermore, Batelco have recently invested in new technologies for example NGN and 3G. These investments are substantial and varies from previous investments, hence more inherent risk.

  Based on this analysis, we estimate that the appropriate EMRP for Batelco's cost of capital should be 7.0% to 8.0%.

- **Equity beta:** We agree with TRA that there should be no differential in the betas used for fixed-line and mobile operators. We are strongly of the view that it is not appropriate to assume that the marginal investor in Batelco is an international investor, although we do acknowledge that Batelco's equity betas are likely to be influenced by both local and global factors. On this basis we consider Batelco's equity beta to lie within a range of 0.65 to 0.8. The midpoint of this range is consistent with TRA's proposed midpoint, which has been estimated using data from the perspective of an international investor.

Overall our estimate of the cost of capital for Batelco is in the range of 12.85% to 15.7%, and a point estimate of 14.28%. We have set out our reasoning in the relevant sections of our report below.

[4] Batelco's estimate of the CRP is based on PricewaterhouseCooper's (PwC) Country Risk Model. Further details of the model assumptions and approach can be found in Appendix II.
[5] In the current economic climate this has become even more important than before.

1. Introduction

1.1 Context

On 20 July 2009 the TRA published a Draft Determination setting out its approach to estimating the cost of capital and the evidence used to estimate its view of an appropriate range and point estimate.

The Draft Determination proposes a nominal cost of capital of 9% for both fixed and mobile telecommunications services regulated in Bahrain. These services are represented by Batelco and Zain respectively. A nominal cost of capital of 9% would suggest a significant reduction to the current regulatory nominal cost of capital of 12.2% (and on the previous 2003 WACC determination of 10.75%).

The TRA has invited comments on the consultation document from all interested parties, which we understand will be considered by the TRA in forming its final decision that will be effective for two years from its date of issue[6].

TRA's final cost of capital determination is of key significance to Batelco as it determines the allowed required rate of return and is therefore a key input to the prices that Batelco can charge for services supplied in markets in which they are present. This is particularly so for Batelco given the capital intensive nature of telecoms network provision.

This WACC review is taking place against a background of significant change in the regulatory landscape which will materially affect returns by investors in Batelco. These arise from:

- Detailed implementation of the TRA's Strategic Review conclusions dated 3 June 2008. Local loop unbundling and number portability initial draft proposals have been published but not finalized;
- Deep and far reaching annual reviews of Batelco's regulatory accounting methodology[7] and reference offer price[8] and non-price terms[9];
- TRA's 3 year work plan for 2009-11 covering the period of this WACC review proposed but not published yet;
- Review of universal service scope and funding expected to be published in late 2009/early 2010; and
- No policy relating to the overall regulatory treatment of Next Generation Access networks save for a draft position paper as regards new developments.

[6] PricewaterhouseCoopers LLP has been engaged by Batelco to assist them in forming a response to the Draft Determination.
[7] Batelco's current accounting procedures manual, review of the current accounting separation regulation and NGN costing.
[8] Bitstream port rental charges for 2 mbit/s were reduced by 64% and 67% for residential and business respectively in RAO Order No. 1 dated 24 May 2009. A draft Reference Offer order issued on6 July 2009 if implemented will impose similar significant price reductions for a wide range of access and interconnection products (for example, interconnection links, iplcs, interconnect specific costs)
[9] Conclusions not published yet – see consultation on Batelco's reference offer dated November 2007 for range of changes (process, liability regime and SLAs) likely to be imposed. Additional wholesale remedies also to be introduced at same time: dark fibre provision, international cable landing station access and carrier selection.

Against this fundamental change and uncertainty during the WACC review period, there are specific changes Batelco is aware of affecting returns for fixed and mobile network infrastructure provision, for example:

- Proposed "encouragement" for mast providers to consistently upgrade and develop facilities so as to[10] make adequate capacity and space available to licensees as well as a "requirement" to expediently free up space on mast sites by removing equipment. Capacity and space to be treated as available to other licensees unless reserved for reasonable future use (defined as use within one year only)[11];

- "Open access" requirements for new developments, including proposed duct, bitstream and dark fibre provision;

- Requirement to reserve at least 20% of the usable internal area of a conduit for all new ducts (and existing ducts where the threshold as not been reached) for the future use of other licensed operators entirely at the infrastructure provider's cost[12]; and

- Method and pricing for further access products for international cable landing stations under scrutiny and review at the time of writing.

These actual regulatory developments and the regulatory uncertainty for infrastructure providers in Bahrain should carry significant weight and be borne in mind when carrying out this WACC review.

Specifically, there are several applications of the cost of capital such as:

- An input to the calculation of access, interconnection and wholesale charges;

- An input to the calculation of the cost of the universal service obligation (USO); and

- An input to the preparation of regulatory financial statements and reports.

This report sets out Batelco's response to TRA's Draft Determination on the cost of capital, including:

- An overview of the current financial market conditions;

- An analysis of the regulatory precedents across a selection of regulatory authorities; and

- A description of our methodology and recommendations on individual cost of capital parameters for Batelco along with the rationale for alternative methodologies where appropriate.

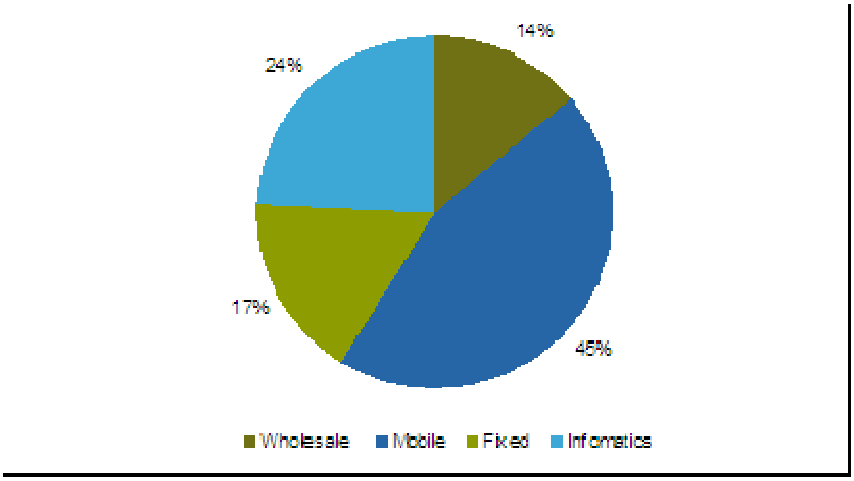
[10] Draft TRA position paper on New Developments dated June 2008 – policy to be imposed through the Telecommunications Technical Office procedures as well as new licence conditions requiring provision of open access. In other words, there are no regulatory holidays for infrastructure providers.
[11] Draft mast sharing regulation dated September 2008 paragraphs 5.1 and 6.1
[12] TRA Guidelines for Telecommunications Fixed Infrastructure dated December 2008 paragraph 1.12

1.2 Background on Batelco

Batelco is an integrated telecommunications company established in 1981. The Company is listed on the Bahrain Stock Exchange (BSE), and as at 11 August 2009, it had a market capitalisation of BHD828 million, or US$2.2 billion, which comprises 14.7% of the BSE All Share Index[13].

As at 2008, the Company had the following segmental split by revenue:

Figure 1: Batelco's business segmentation by revenue



Source: 2008 Annual Accounts

Batelco provides services to both the corporate and consumer markets and has operations in Bahrain, Kuwait, Saudi Arabia, Jordan, Yemen, Egypt and India. 70% of the group's turnover is generated in Bahrain[14].

Batelco's expansion into countries outside Bahrain has primarily been a result of acquiring stakes in businesses operating in these areas.

Batelco's major shareholders include the Government of Bahrain via two investment vehicles, Bahrain Mumtalakat (37%) and Amber Holdings (20%); and two quasi-governmental institutions being the General Organisation for Social Insurance (11%) and the Pension Fund Commission (10%). The portfolios of all of these shareholders are mainly comprised of Bahraini and other Middle Eastern investments[15].

[13] Bloomberg and www.oanda.com
[14] Batelco 2008 Annual Report
[15] Further details of the investments held by Batelco's major shareholders, can be found at http://www.bmhc.bh/company/portfolio.asp (Bahrain Mumtalakat); http://www.gulfbase.com/site/interface/CompanyOwnership.aspx?id=1053&c=157 (The Pension Fund Commission); and http://www.gosi.org.bh (General Organisation for Social Insurance).

1.3 Structure of the report

The remainder of this report is organised as follows:

- Section 2.1 sets out a brief discussion on the potential impact of the recent financial crisis on equity markets;
- Section 2.2 sets out our views on the appropriate framework for calculating the cost of equity for Batelco;
- Section 2.3 sets out our views on an appropriate capital structure for Batelco;
- Section 2.4 sets out our approach to determining an appropriate risk-free rate for Batelco;
- Section 2.5 sets out our approach to determining an appropriate country risk premium for Batelco;
- Section 2.6 sets out our approach to determining an appropriate default risk premium for Batelco;
- Section 2.6 sets out our approach to determining an appropriate equity market risk premium for Batelco;
- Section 2.8 sets out our approach to determining an appropriate equity beta for Batelco; and
- Section 3 sets out our conclusions.

2. Cost of equity

2.1 Equity capital markets – Impact of the financial crisis

Since the onset of the credit crisis, there has been a dramatic decline in share prices combined with an increase in overall stock market volatility in an uncertain economic and financial environment. These developments have raised fundamental questions relating to the underlying cost of equity. In particular, there has been significant debate as to whether falling share prices indicate that the cost of equity has risen, and how the cost of equity should be estimated given the volatile market conditions.

Traditionally, regulators have tended to take a long term view of the cost of equity and have used rigorous methodological frameworks such as the Capital Asset Pricing Model, and the aggregate return on equity approach for estimating the cost of equity. These frameworks use historic data over a long period to estimate the cost of equity. The underlying assumption is that long term historic outcomes provide adequate evidence for long term future expectations. However more recently, given recent market conditions, there have been calls to review this approach and focus more on current market evidence when formulating a view on the forward looking market rate of return required by equity investors. It has been argued that the recent falls in share prices indicate that the cost of equity has increased.

In particular, there have been calls to place more weight on current market evidence and use forward looking frameworks such as the Dividend Growth Model (DGM). The DGM assumes that the current share price of a quoted business is equal to the present value of all future expected dividend payments. Therefore, given the current market share price and future dividend growth rate expectations, the cost of equity implicit in the share price can be determined as follows:

$$Ke = (D0 * (1+g) / P0) + g$$

Where:

Ke is the post-tax cost of equity

D0 is the current dividend

g is the dividend growth rate (assumed to be constant)

P0 is the current share price

In general the main limitation of the DGM is that it relies on an accurate view of the dividend growth forecasts incorporated in share price valuations. This is problematic because there are no generally accepted sources for these. Short term estimates are available from the businesses themselves, or are estimated by equity analysts. Neither source provides clear evidence of the growth assumption underpinning share prices. Perhaps because of this, the DGM is seldom used by regulators as the primary method for estimating the cost of equity, but instead is sometimes used as a check on the cost of equity derived from the CAPM.

The figure below outlines Batelco's share price history in the two years to 31 July 2009, which shows that the Company's share price declined by 25% over that period.

Figure 2: Batelco's share price history from 1 August 2007 to 31 July 2009

Source: Datastream

As shown in the Figure above, the trend in Batelco's share price has been similar to the general trend in the Bahrain All Share and World Telecoms indices, although the World Telecoms index has experienced some recovery in recent months and has only seen a decline of 15% since 1 August 2007.

Batelco's share price decline is broadly comparable to that of a sample of comparable companies, which on average fell by 30%[16] in the two years from 1 August 2007 to 31 July 2009.

Our analysis of the share prices of quoted companies that we consider comparable to Batelco is set out in Table 2 below.

[16] This is calculated as the median share price fall in order to avoid extreme outliers.

Table 2: Impact of the credit crisis on share prices of a sample of the selected comparators

Country	Company	Share price as of 01/08/07 (local currency)	Share price as of 31/07/09 (local currency)	Percentage change
Integrated	**Integrated**			
Bahrain	Bahrain Telecom Co	0.8	0.6	-25%
Czech Republic	Telefonica O2 Czech Republic AS	570.7	490.0	-14%
Estonia	Eesti Telekom	8.2	4.3	-47%
Hungary	Magyar Telekom Telecommunications Plc	966.0	680.0	-30%
Israel	NetVision	4913.0	3879.0	-21%
Jordan	Jordan Telecom	4.2	4.9	17%
Oman	OmanTel	1.2	1.3	13%
Poland	Telekomunikacja Polska SA	21.8	14.9	-32%
Saudi Arabia	Saudi Telecom Company	66.0	52.0	-21%
UAE	Emirates Integrated Telecom	5.0	2.7	-46%
Mobile				
Kuwait	National Mobile Telecommunication Co KSC	2563.6	1700.0	-34%
Kuwait	Zain	2137.8	1260.0	-41%
Egypt	Orascom Telecom Holding S.A.E.	74.8	36.3	-51%
Israel	Partner Communications Company Ltd	6935.0	7246.0	4%
Lithuania	TEO LT AB	2.5	1.3	-49%
Saudi Arabia	Etihad Etihad Etisalat	49.1	38.3	-22%
Turkey	Turkcell	8.8	9.4	7%
Median				**-30%**

Source: Bloomberg, Batelco analysis.

At least some of the decline in equity values, for telecommunications companies, utilities and for the market as a whole, is likely to have been associated with reduced expectations of economic and dividend growth.

It is informative to examine the performance of utility businesses because they provide a useful benchmark indicator of the extent of any broad based softening of growth expectations. Regulated utilities traditionally have had very stable dividends and have been protected from the effects of economic cycles because of the nature of the services they provide and the duties of regulators to set prices which allow them to recover efficiently their incurred costs and earn a fair return. Recently however, utilities have been experienced a fall in output. For example, in the year to the first quarter of 2009, utilities output in the UK was down by 6.7%, a significant decline for what usually is a non-cyclical sector, whilst overall GDP was down by 4.9% over the same period[17]. Short term contractions associated with the recession should not necessarily feed through into long term views of depressed dividend growth, but are likely to have

[17] PwC "UK Economic Outlook", July 2009.

influenced perceptions of dividends in the short and medium term, and may have reduced longer term expectations as well. Table 3 below illustrates the effect of the crisis on a selection of Middle Eastern listed utilities.

Table 3: Impact of the credit crisis on share prices of a sample of the selected Middle Eastern utilities

Country	Company	Share price as of 01/08/07 (local currency)	Share price as of 31/07/09 (local currency)	Percentage change
Israel	Ormat Industries Ltd	5263	3241	-38%
Jordan	Jordan Electric Power Company Limited	2.5	3.2	29%
Oman	Al Kamil Power Company SAOG	1.8	1.9	6%
Oman	Dhofar Power Company SAOC	1.9	1.5	-22%
Qatar	Qatar Electricity and Water	81.6	113.2	39%
Saudi Arabia	Saudi Electricity Company	11.5	9.4	-19%
UAE	ABU Dhabi National Energy Company	2.8	1.6	-43%
Median				**-19%**

Source: Bloomberg, Batelco analysis.

Moreover regulated businesses such as telecoms companies have traditionally been more susceptible to the effects of economic cycles because of the nature of the services they provide compared to other regulated businesses such as utilities. Given the severity of the current economic downturn it may impact telecommunications companies to a greater extent than in the past.

Nevertheless, given the stability associated with their market positions and regulated status, it seems unlikely that such a significant drop in share price valuations across the telecommunications sector can be solely attributable to lower expected growth in dividends. An increase in the cost of equity seems to be a possible explanation for some proportion of the fall in telecommunication sector valuations.

The more unforeseen outcome of the downturn has been a significant reduction in the availability of funding credit in the market – a lack of liquidity. Therefore, any assessment of the allowed cost of capital must consider the impact that the persistence of the current economic conditions is likely to have on Batelco's actual cost of raising capital. We discuss further the impact that the lack of liquidity has on the EMRP in Section 2.6.

2.2 Conceptual framework

2.2.1 TRA's approach

TRA has adopted the CAPM approach to assessing the cost of equity and considers two scenarios for determining the cost of equity under this approach. The base case scenario estimates the cost of capital in an international context, which is from the perspective of an international, globally diversified investor. TRA notes that this is the preferred scenario as it assumes that investors are rational and seek to diversify their investments by holding a global portfolio. The alternative scenario assumes a less diversified domestic investor. TRA have ultimately used the base case (international investor) scenario in coming to a range for the cost of capital as it considers this scenario to be more robust and conceptually preferable.

2.2.2 Batelco's approach

In this section we set out our recommendation as to the most appropriate conceptual framework for estimating the cost of equity for Batelco.

2.2.2.1 Capital asset pricing model

The methodology used most often in estimating the cost of equity is the CAPM. This assumes that equity investors require their investment to yield at least the return available on risk-free instruments. Added to this risk-free rate of return, equity investors expect a premium for the risk involved in an equity investment. This premium is equal to the general equity market risk premium multiplied by the equity beta.

The equity market risk premium (EMRP) represents the additional expected return investors require to compensate them for the additional risk associated with investing in equities rather than risk-free instruments. The equity beta is a measure of the riskiness of a particular equity investment relative to the average equity investment. In particular, it is a measure of the degree of "systematic risk" for a particular investment. A key aspect of the CAPM framework is that it distinguishes between specific risks and systematic risks, as follows:

- **Specific risks** are those risks which are specific to a company or project. They can be eliminated or "diversified away" by holding a well-diversified portfolio of investments in which, on average, investments which perform badly due to specific risk factors can be expected to be offset by investments which perform well for specific risk reasons and vice versa; and

- **Systematic risk** refers to risk factors which affect all equity investments simultaneously in the same direction to a greater or lesser extent, and hence cannot be diversified away. Movements in economy-wide factors such as changes in the GDP growth rate, interest rates, savings rates and inflation contribute to systematic risk.

Since equity investors can diversify away specific risks, they do not affect required returns, and hence under the CAPM framework are not reflected in the cost of equity. Required or expected equity returns reflect only exposure to systematic risk. However it is important to note that the consideration of specific risk is an important aspect in the calculation of the expected cash flows from any business or project being evaluated.

Under the CAPM framework, the cost of equity is defined as follows:

*Ke = Rf + β * [EMRP]*

Where:

Ke is the cost of equity

Rf is the risk-free rate

β is the equity beta

EMRP is the equity risk premium (Rm – Rf), where Rm is the equity market return

2.2.2.2 Alternative methodologies

We discussed the DGM in the earlier section reviewing recent equity market trends, and concluded that it is unreliable as the prime methodology for calculating the cost of equity, but could be used by TRA as an additional piece of evidence. In addition to the CAPM and the DGM, the cost of equity can be estimated using a number of alternative methods. These include:

- The Fama French Three-Factor model (FFTM); and
- Arbitrage Pricing Theory (APT).

We discuss each of these in turn below.

2.2.2.3 Fama French Three-Factor Model

Some academic tests of the CAPM have shown that the explanatory power of CAPM does not always perform well. The most prominent contradiction is the "size effect" discovered by Banz (1981)[18], who found that the average returns of smaller US companies appeared high relative to the returns implied by the CAPM framework. This was further investigated by Fama and French (1993)[19], who found that two variables, size and book-to-market value, capture most of the variation in stock returns not captured by the CAPM framework. Fama and French proposed the Fama French three-factor model that attempts to adapt the conventional CAPM by adding additional explanatory variables for size and book-to-market value. In particular, under the FFTM:

[18] Banz, Rolf W., (1981) "The relationship between return and market value of common stocks", Journal of Financial Economics.
[19] Fama, E., French, K., (1993) "Common risk factors in the returns on stocks and bonds", Journal of Financial Economics.

*Ke = βi*EMRP + si*E(size) + hi*E(book/market)*

Where:

EMRP is the equity market risk premium

βi is the sensitivity of security i to the EMRP

E(size) is the extra return expected for small capitalisation companies

si is the sensitivity of security i to E(size)

E(book/market) is the extra return expected for companies with high book-to-market ratios

hi is the sensitivity of security i to E(book/market)

The FFTM is usually considered when estimating the cost of capital for small or distressed firms. As the model is really an adaptation of the CAPM, for non-distressed firms the most common practice is to extend the CAPM to a two-factor model in which a small company risk premium is added to the conventional CAPM model.

This is shown below:

*Ke = Rf + β * EMRP + S*

Where:

Rf is the risk-free rate

β is the equity beta

EMRP is the equity market risk premium

S is the small company premium

A small company risk premium has been used in the past by regulators, when determining the cost of equity for small companies.

2.2.2.4 Arbitrage Pricing Theory

Arbitrage Pricing Theory extends the three-factor model even further to an unlimited number of explanatory variables and beta coefficients:

$Ke = R_f + \beta_1 * E_1 + \beta_2 * E_2 + \beta_3 * E_3 \ldots + \ldots. \beta_n * E_n$

Where:

R_f is the risk-free rate

β_i is the sensitivity of the security to each of the 1 to n risk factors

E_i is the expected risk premium associated with each unit of risk for factors 1 to n

In practice, the individual APT variables and associated betas can be seen as a decomposition of the single beta factor of the CAPM. So, for example, although APT theory does not tell us what the APT factors are, typically they are related to systematic macroeconomic variables such as the level of GDP, inflation and interest rates.

2.2.2.5 Batelco's recommendation

Table 4 below summarises Batelco's assessment of the alternative methodologies for calculating the cost of equity (including the DGM) compared to the CAPM approach.

Table 4: Evaluation of methodologies for estimating the cost of equity

Methodology	Explanation	Advantage	Disadvantage
CAPM	The intuition behind CAPM is that investors are only rewarded for being exposed to non-diversifiable risk (also known as systematic or market risk).	Widely used and applied in practice, in both a regulatory and valuations context.	Empirical tests have found that beta may not be the only variable that has explanatory power.
Dividend Growth Model	The DGM is a simple forward-looking model that assumes that current share prices are equal to the present value of all future dividend payments.	Simple to compute.	Relies on accurate knowledge of dividend growth assumptions underpinning share prices. Cost of equity estimates tend to be highly volatile.
Fama French Three-Factor Model	Some academic tests of CAPM have shown that there may be some mis-specification with regard to size and book-to-market value. The Fama French Three-Factor Model attempts to compensate for the perceived mis-specification.	Has achieved some empirical support.	In practice, this model is not widely used in its pure form but practitioners may increase the cost of equity in a judgemental way to reflect greater perceived risk for a small company.
Arbitrage Pricing Theory	The principle behind APT is similar to CAPM: investors are incrementally rewarded for incremental (non-diversifiable) risk.	Theory is sound and intuitively appealing.	APT is rarely used because of problems with data availability and remains more of a conceptual academic model than a practitioners' tool.

Source: Batelco analysis

Based on its assessment of the alternative methodologies for calculating the cost of equity Batelco considers the CAPM to be the most appropriate framework for calculating the cost of equity.

Furthermore, Batelco's analysis of the regulatory precedents indicates that the CAPM has consistently been the preferred approach adopted by regulators in the past. Further details of the regulatory precedents reviewed by Batelco can be found in Appendix I.

We consider CAPM to be the most appropriate framework for calculating the cost of equity for Batelco.

2.2.3 International versus domestic investor

As noted in Section 2.2.1, TRA has estimated the cost of capital from the perspective of a globally diversified investor. This involves an assumption about the integration of international capital markets that is unrealistic. It is not standard practice even in developed countries with highly liquid capital markets attracting international investors to calculate the cost of equity with reference to a global portfolio. This point is particularly true for the marginal investor in Batelco. A large proportion of Batelco's marginal investor portfolio is likely to comprise of Middle Eastern investments. For example, as outlined in Section 1.2, approximately 78% of Batelco is owned by the Government of Bahrain and quasi-governmental institutions. The portfolios of all of these shareholders mainly comprised of Bahraini and other Middle Eastern investments[20].

We agree with TRA that it is appropriate to consider both the local and worldwide market portfolio perspective; however we believe that it is inappropriate to consider the cost of capital primarily from an international perspective as the typical marginal investor in Batelco is clearly not globally diversified. In practice, we believe that the typical Batelco investor lies somewhere between the pure global and domestic categories and is likely to be more comparable to a domestic investor. We also note that it is standard practice to use the domestic portfolio as the benchmark in cost of equity calculation. We discuss the implications of this on specific components of the cost of capital in subsequent sections of this report.

We consider that it inappropriate and unrealistic to assume from the outset that the marginal Batelco investor is globally diversified. We believe that the typical marginal investor in Batelco lies between the global and domestic categories and is likely to be more comparable to a domestic investor.

[20] Further details of the investments held by Batelco's major shareholders can be found at http://www.bmhc.bh/company/portfolio.asp (Bahrain Mumtalakat); http://www.gulfbase.com/site/interface/CompanyOwnership.aspx?id=1053&c=157 (The Pension Fund Commission); and http://www.gosi.org.bh (General Organisation for Social Insurance).

2.3 Capital structure

2.3.1 TRA's recommendation

TRA has concluded that zero gearing is an appropriate assumption in estimating the cost of capital for the provision of telecommunication services in Bahrain. This conclusion is based on the fact that there are no corporation taxes in Bahrain and therefore a company has no incentive to take advantage of any tax shields that may exist as a result of increasing debt.

2.3.2 Batelco's recommendation

We agree with TRA's approach that under the no corporate tax regime that is in place in Bahrain, it is reasonable to assume a gearing level of zero. If gearing is assumed to be zero, the cost of equity is equal to the overall cost of capital and therefore the main focus of this response is to assess Batelco's cost of equity parameters.

Response to question 1:

We agree with the assumption of a zero percent gearing level with respect to the capital structure proposed by TRA.

2.4 Risk-free rate

The risk-free rate (RFR) is the rate of return that can be earned on a risk-free investment, i.e. an investment that guarantees a fixed return, with no possibility whatsoever of any variation in the level of return. Whilst there are no investments that are absolutely risk-free, it is conventional practice to determine the RFR by examining the yield on "safe", liquid financial instruments that are considered to have negligible default risk. To determine the nominal RFR the yields on conventional treasury bills and government bonds are normally used.

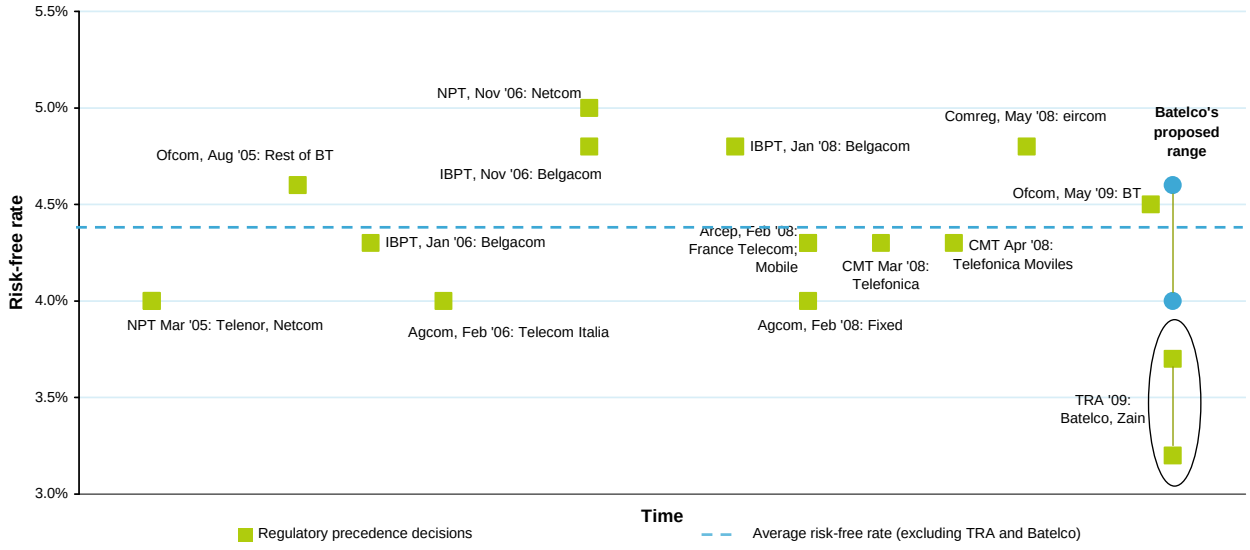
2.4.1 TRA's approach and regulatory precedents

In its Draft Determination, TRA considered two scenarios for determining the RFR. The base scenario estimates the RFR in an international context. This involves using a synthetic nominal RFR which in principle is calculated by applying a country risk premium to the yields on US government bonds and adjusting for the average expected inflation differential between the US and the country under consideration. Specifically, the nominal US RFR used by TRA is 3.2% to 3.7%. The lower end of the range is based on US government spot yields on 5 – 7 year maturity bonds and the upper end is calculated by uplifting the lower end by 50 bps to reflect the current uncertain economic climate.

The alternative scenario assumes a less diversified domestic investor and therefore involves looking at securities issued by the Government of the Kingdom of Bahrain. This approach produces an estimate for a RFR in the region of 3.5% to 5.8% after allowing for additional headroom reflecting the uncertainty of estimates created by the turmoil in financial markets.

In order to put the above estimates in a broader context, Figure 3 below outlines the range of nominal risk-free rates used by other telecoms regulators since 2005 in their cost of capital decisions. In all of these decisions the regulator has adopted a nominal RFR ranging between 4% and 5%.

Figure 3: Regulatory precedents - nominal risk-free rate



Note: In cases where a range is given, we have used the midpoint in our approximation
Source: Various regulatory decisions

2.4.2 Batelco's approach

Batelco has identified several issues that should be considered in relation to TRA's proposed cost of capital estimation. These are discussed below.

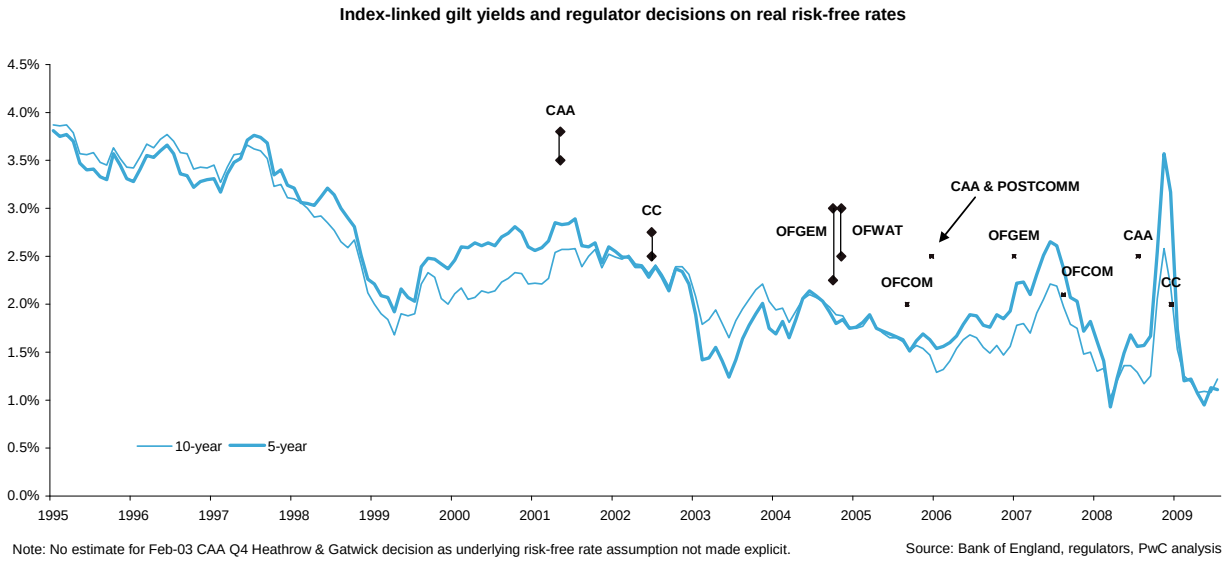
2.4.2.1 Local versus international benchmark

Generally, the synthetic nominal RFR is appropriate when yields on domestic government bonds are considered to be distorted as a result of market imperfections such as lack of liquidity and supply/demand imbalances, or are unavailable due to lack of pricing. This appears to be very much the case for Bahrain. Therefore we agree with TRA that the RFR should be established primarily by looking to the US government yields rather than returns on domestic securities, and adjusting this for the inflation differential and CRP relative to the US.

2.4.2.2 Current yields versus historical average

When setting the nominal US RFR under the current market conditions the choice of using the current spot rates versus the medium term historical averages becomes an important issue, as the two are significantly different from each other. TRA has used spot yields on the US government bonds to calculate the US RFR and added an uplift of 50 bps to reflect the view that current spots rates might be artificially low as a result of flight to quality. To avoid making such ad hoc adjustments, utilities and telecom regulators have generally taken a medium to long term view by examining historical trends (as opposed to spot rates) when setting the allowed cost of capital. As an example, Figure 4 below illustrates the RFR adopted by regulators in the UK which has typically been greater than the spot yields on UK government bonds, and which has often been determined by taking historical averages.

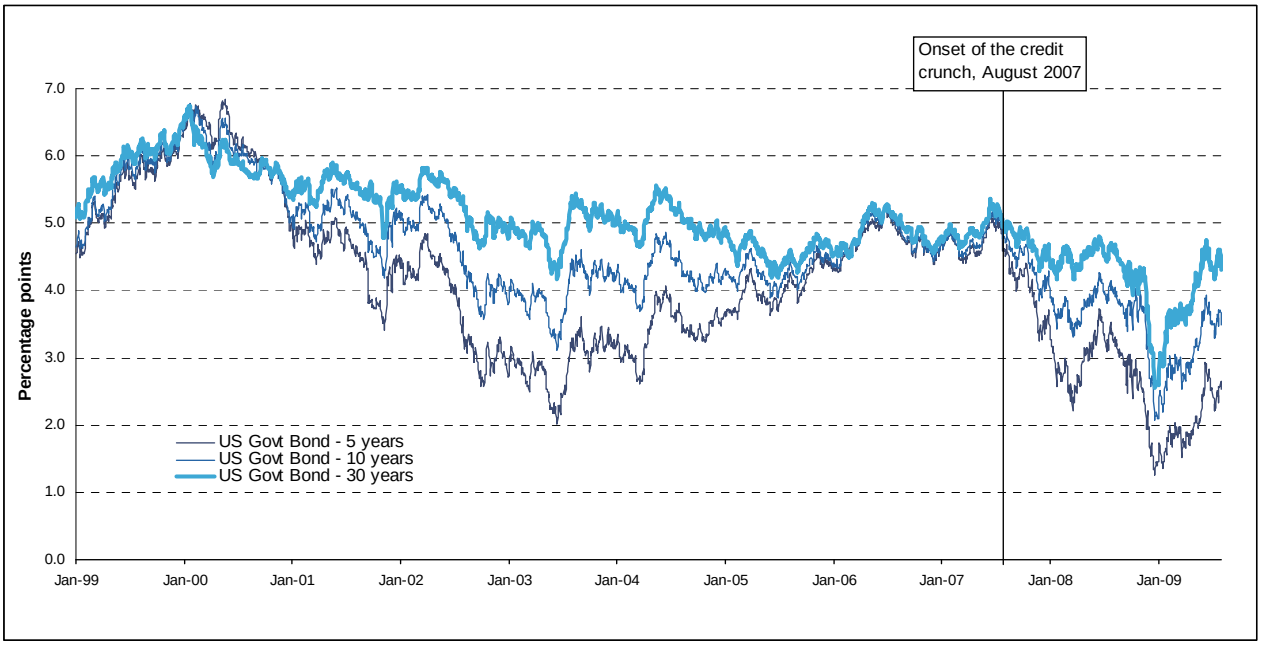
Figure 4: RFR – regulatory precedents in UK



Source: Various regulatory decisions, Bank of England

This issue should therefore be considered also in relation to yields on US government bonds. Figure 5 below illustrates the evolution of yields on US government bonds over time and depicts a number of important points.

Figure 5: Evolution of yields



Source: Datastream

First, it shows that the spot yields for bonds with maturities of 5 and 10 years as at 31 July 2009 were generally below the range of 4% to 5% typically used by regulators in the past[21]. They are also below their long term averages. It is expected that, considering the current volatile market conditions, it is the recent quantitative easing that has created an excessive demand for low risk assets, putting more downward pressure on yields on those government bonds.

Secondly, even when looking at the trend over the past year, it can be seen that the average yields have also been relatively low over this period.

Lastly, our analysis indicates that since the onset of the credit crisis, yields on US government bonds have been much more volatile. For example, the volatility (which we proxy using the standard deviation) of yields on 10 year bonds over the 12 months since the onset of the credit crisis, has increased by 50% (from 0.2% to 0.4%) relative to the 12 months immediately prior to the credit crisis. This situation may complicate the use of current market data on US government yields.

The above analysis therefore suggests that more emphasis should be placed on long term averages. We recommend an averaging period of 10 years which results in average yields of 4.0%, 4.6% and 5.0% for bonds with maturities of 5, 10 and 30 years respectively, and is broadly in line with the estimates obtained by other regulators in the past. The spot, 5 year and 10 year averages for bonds with maturities of 5, 10 and 30 years are summarised in the table below.

[21] Our analysis of regulatory precedents is based on European regulators which do not provide a perfect comparison given potential differences in the underlying real risk-free rate and inflation expectations. Nevertheless, we consider such differences to be small and therefore UK precedents still provide a useful comparison.

Table 5: US nominal risk-free rate – summary of results

RFR measure	5 year maturity	10 year maturity	30 year maturity
Spot rate as of 31/07/09 (%)	2.5	3.5	4.3
5 year average (%)	3.7	4.2	4.6
10 year average (%)	4.0	4.6	5.0

Source: Datastream

2.4.2.3 Maturity

A relevant issue in relation to the RFR is the choice of maturity for the financial instrument selected. In its determination, TRA proposed using a US government bond with a maturity range from two to seven years

Table 6 below puts this estimate into perspective by listing the financial instruments that were recently used by other telecoms regulators in formulating their views on the RFR. It shows that most of the regulators have in fact examined yields on long term bonds with 10 years maturity.

Table 6: Regulatory precedents - maturity of government bonds used to infer the risk-free rate

Regulator	Country	Companies	Financial instrument considered	Years to Maturity		
				5	10	20
IBPT (Nov 2006)	Belgium	Belgacom	US government bonds		✓	✓
IBPT (2008)	Belgium	Belgacom	US government bonds		✓	✓
Arcep (2008)	France	France Telecom	French government bonds		✓	
Arcep (2008)	France	Orange France, SFR, Bouygues Telecom, Orange Caraibe, SRR.	French government bonds		✓	
ComReg (2008)	Ireland	Eircom	Irish and German government bonds		✓	
Agcom (2006)	Italy	Telecom Italia	Italian government bonds		✓	
Agcom (2008)	Italy	BT Italia, Fastweb, Tele2, Tiscali	Italian government bonds		✓	
NPT (2006)	Norway	Netcom/Telenor	Norwegian government bills	✓		
CMT (2008)	Spain	Telefónica, Telefónica Móviles	Spanish government bonds		✓	
Anacom (2006)	Portugal	Portugal Telecom	Portuguese government bonds		✓	
Anacom (2007)	Portugal	Portugal Telecom	Portuguese government bonds		✓	
Ofcom (2005)	UK	British Telecom	UK government bonds	✓		
Ofcom (2009)	UK	British Telecom	UK government bonds	✓		

Source: Various regulatory decisions

TRA acknowledges that the maturity of instruments should broadly match the company's asset lives, which has been a general approach in the regulatory environment. However, its choice of US government bond maturity is based on its estimate of the average remaining useful life of Batelco's assets which it calculates using regulatory accounting data. As accounting data is historical and backward looking, asset lives estimated using this approach are generally not in line with the economic useful life and therefore could result in misleading results. Moreover, using the average remaining life suggests that the assets will not be

replaced, and only need to be rewarded over their remaining lives. Batelco needs to be incentivised to invest in assets. Therefore in principle maturity should be equal to the entire remaining economic life of assets. As a result, considering that telecoms companies are businesses with investments in long term assets, and taking into account the regulatory precedents set out above, it appears that 5 years may be too short to reflect properly the nature of Batelco's business.

Another important aspect to consider is the volatility in yields depicted by different maturities. Typically, yields on medium to short term maturity bonds (such as 5 years) tend to be more volatile making them less useful for determining an ex-ante RFR. This is illustrated in Figure 5 on the previous page, which shows a sharp downward deviation in yields on US benchmark bonds after the onset of the current credit crisis, where the 10 year and 30 year US benchmark bond yields appear to be relatively more stable than bond with 5 year maturities, possibly better reflecting fundamentals.

2.4.2.4 Supply and demand factors distortions

Federal Reserve policies that focus on injecting liquidity into the current financial system may have created excessive demand for government bonds which is also likely to result in artificially low yields. The recent quantitative easing policy that was announced by the Federal Open Market Committee (FOMC) and started in March 2009 has complicated the use of yields on US government bonds to calculate the RFR. As part of this policy, the Federal Reserve has been buying significant amounts of US government bonds in order to boost the money supply in the economy (between March and July 2009 the Federal Reserve bought $197.7bn of government securities of a planned $300bn). This move, leading to an excessive demand for bonds, briefly put more downward pressure on spot yields with 10 year yields dropping by 50 bps over the period. However, the yields have jumped significantly since then as a result of news that the Federal Reserve intends to reduce borrowing over the next quarter. This volatility in yields provides further support of our view that more weight should be put on long term averages as opposed to spot rates.

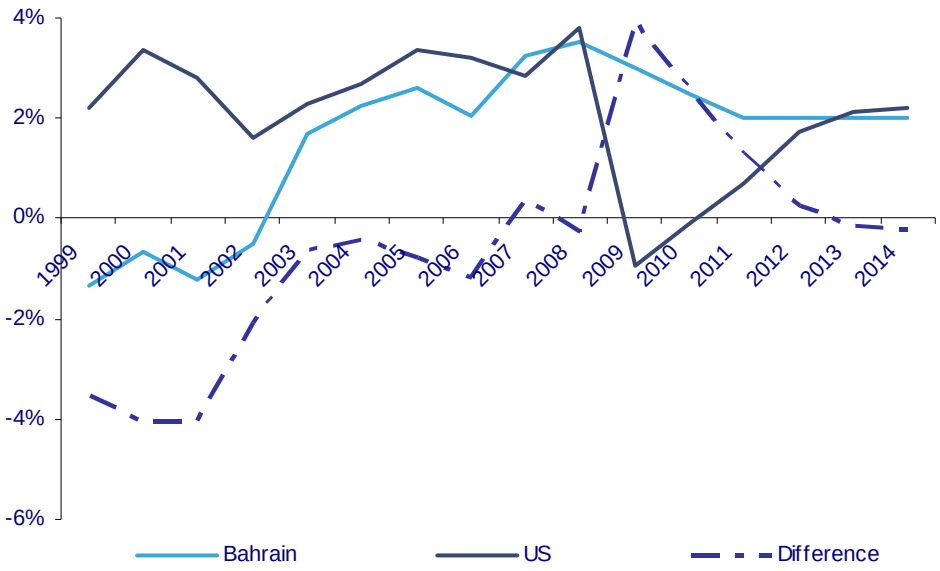
2.4.2.5 Inflation

TRA has made no inflation adjustment in its synthetic RFR calculation[22]. TRA's analysis is based on IMF projections, suggesting that since 2001 the differential between the US and Bahrain inflation rates has been relatively small and is expected to reduce to approximately zero after 2010.

As illustrated in Figure 6, the expected inflation differential between the two countries is indeed forecast to decline significantly in the medium term.

[22] We note that the Batelco did not include any adjustments for inflation differentials when calculating the RFR in the previous determination either.

Figure 6: Inflation rates for the US and Bahrain



Source: IMF

However, prior to this convergence taking place, the IMF forecasts a period of significant difference in inflation rates in the period from 2009 to 2011. This may be mainly justified by a significant decline in the US inflation rate which is expected to reach negative territory (effectively implying deflation) by late 2009. This near term volatility in the inflation differential between the two countries may suggest looking at an average value across a longer period for the purposes of calculating the synthetic RFR for Bahrain.

Also, regulators in the past have often considered using the same period for choosing a maturity of benchmark bonds and for analysing inflationary differences between countries. Taking the same approach we therefore recommend calculating a 10 year average forecasted differential starting from 2010. This results in an inflation differential of 0.3% between the US and Bahrain.

Table 7: Inflation forecasts for Bahrain and the US

Inflation forecasts	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2010- 1019 average
Bahrain	2.5%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.1%
US	-0.1%	0.7%	1.7%	2.1%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	1.8%
Differential											**0.3%**

Source: IMF

2.4.2.6 Alternative approaches

The main advantage of using the yields on US government bonds to determine the US RFR is that it gives a direct market measure and does not require any additional assumptions apart from inflation differential between the two countries. However, the current heightened volatility in financial markets complicates the use of bond yields to estimate an appropriate RFR for use in cost of capital calculations. Moreover, the Federal Reserve policies that focus on injecting liquidity into the current financial system have further complicated issues as discussed above. Resultantly, other approaches to estimating the RFR have been suggested.

One such alternative approach, suggested in a recent cost of capital study for Water UK (the industry body for the UK water sector), was based on interest rate swaps. Specifically, estimating a nominal RFR by taking the five-year swap rate for the six-month LIBOR and deducting an estimate of the default premium embedded in the swap rate (which was based on credit default swap rates). In the recent Stansted price control review, the UK's Competition Commission (CC) reviewed this approach and, based on data concerns, rejected it in favour of the using market evidence on yields as the best estimate of the RFR. We agree with the CC and therefore only recommend using this approach if there are significant long term market imperfections in the nominal government bond market.

2.4.3 Batelco's recommendations

Table 8 below summarises our proposed US RFR calculation based on the analysis outlined in the previous sections.

Table 8: US nominal risk free rate – Summary of results (adjusted for expected average difference in inflation)[23]

	5 year maturity	10 year maturity	30 year maturity
Spot rate as of 31/07/09 (%)	2.8	3.8	4.6
5 year average (%)	4.0	4.5	4.9
10 year average (%)	4.3	4.8	5.3

Source: Datastream

In formulating our view we have considered that:

- It is most appropriate to use US government bonds in the calculation of a relevant RFR for the purposes of calculating a synthetic RFR for Bahrain;
- Regulators have generally taken a long term view on the nominal RFR for regulatory determinations. This has often resulted in the nominal RFR allowed in the regulatory determinations being higher than the prevailing spot rates;
- Under the current volatile market conditions there is much uncertainty around the level of RFR that is likely to prevail over the near term and as a result we recommend using a ten year average yield;
- Yields on bonds with longer term maturity are relatively less distorted as a result of supply and demand imbalances. We therefore recommend a maturity of 10 years as the most appropriate, although 5 year and 30 year maturities are also relevant given the range in asset lives; and
- We consider taking a longer term view of an expected inflation differential between the two countries to be the most appropriate approach.

Considering this, our view is that a US RFR range of 3.2% - 3.7% is too low for the purposes of this determination. The US RFR range that we suggest is 4.3% - 5.3%. The lower end of the range is consistent with the 10 year average on a 5 year US government bond, adjusted for the inflation differential. The upper end of the range is consistent with the 10 year average on a 30 year US government bond, adjusted for the inflation differential.

[23] All figures have been rounded to one decimal point.

Response to question 2:

Our recommendation is to use a range of 4.3% to 5.3% for the nominal US RFR, adjusted for the inflation differential between the US and Bahrain.

2.5 Country risk premium

2.5.1 TRA's approach

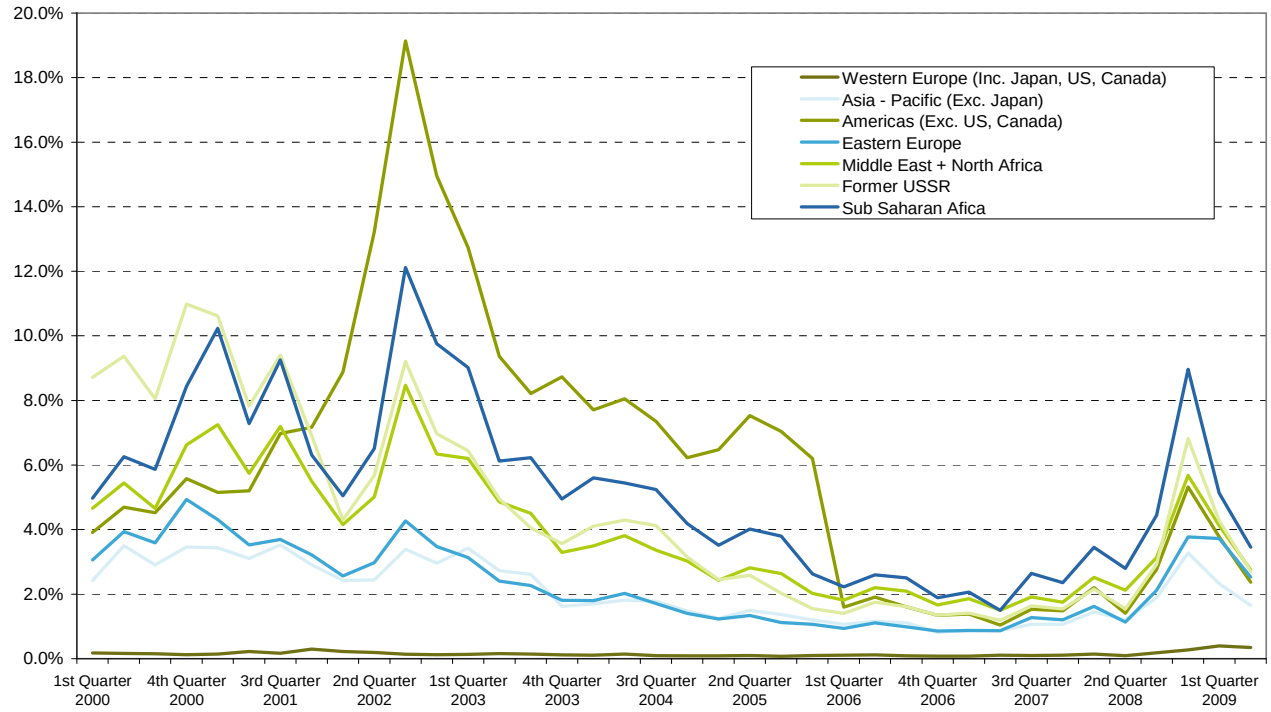
The CRP for Bahrain is an important input into estimating the appropriate RFR and is used to adjust the nominal yield on US government bonds.

In order to obtain a CRP for Bahrain, TRA has compared the yields of 5 year US dollar sovereign debt issued by countries with comparable credit ratings to Bahrain against 5 year US government bond yields. TRA's CRP is effectively a spot estimate as of 28th May 2009. This results in a CRP for Bahrain of 1.50%.

2.5.2 Batelco's approach

In order to cross check the CRP that has been used by TRA we examine the CRP on a selection of comparable countries that have actively traded government bonds. Figure 7 below illustrates CRPs based on PwC's Country Risk Model arranged by region. Please refer to Appendix II for further details on the PwC Country Risk Model.

Figure 7: Historical CRP by region (GNP weighted)

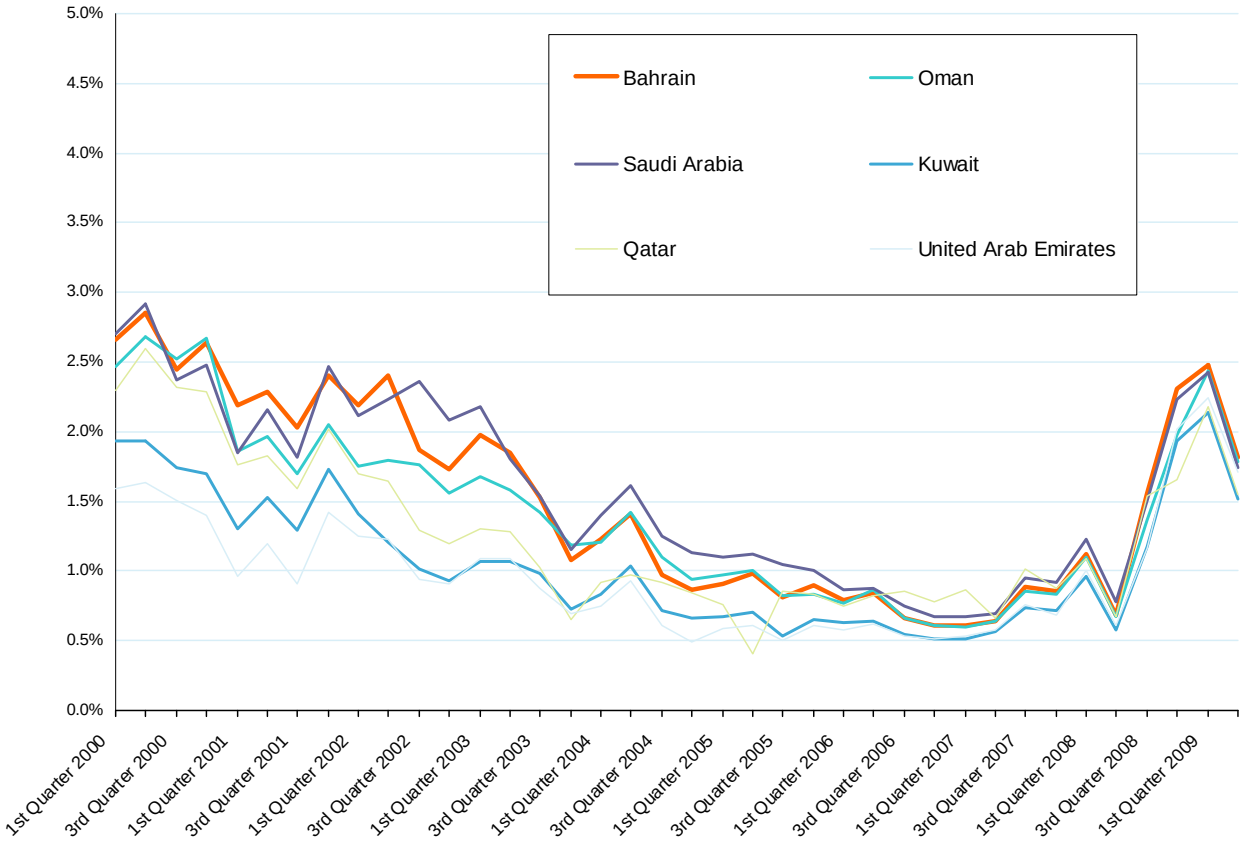


Source: PwC Country Risk Model

Most of the regions appear to have followed a broadly similar pattern over the last 10 years.

Figure 8 below shows the historical CRP of Bahrain and other countries in the Middle-East.

Figure 8: Historical CRP for Bahrain and other countries in the Middle-East



Source: PwC Country Risk Model

Comparing Bahrain to other countries with similar bond ratings, we can see that all the comparators have been following a very similar pattern over the last 3 years.

Table 9 below shows average CRP for Bahrain and its comparators over the past four quarters. We consider the average CRP to provide a better indicator of expected CRP as it smoothes out any short term fluctuations. Relative to other countries with similar bond ratings, 2.0% would also appear to be a reasonable estimate of Bahrain's CRP. However, allowing for additional risk factors such as size of country and economy, level of diversification of the economy, and developing legal and commercial framework we believe an additional risk factor of between 0.3% and 0.6% would need to be added. On conservative basis we would consider 2.3% to be an appropriate CRP for Bahrain.

Table 9: PwC country risk premia by country

Country	3rd Quarter 2008	4th Quarter 2008	1st Quarter 2009	2nd Quarter 2009	Average CRP over last four quarters
Bahrain	1.6%	2.3%	2.5%	1.8%	2.0%
Oman	1.4%	2.0%	2.4%	1.8%	1.9%
Saudi Arabia	1.5%	2.2%	2.4%	1.7%	2.0%
Kuwait	1.2%	1.9%	2.1%	1.5%	1.7%
Qatar	1.5%	1.7%	2.2%	1.6%	1.7%
United Arab Emirates	1.2%	2.0%	2.2%	1.7%	1.8%
Average CRP					**1.9%**

Source: PwC Country Risk Model Batelco's recommendations

2.5.3 Batelco's recommendations

On the basis of the above analysis carried out by PwC, our view is that the CRP for Bahrain is 2.3%. This is 50 bps greater than the CRP suggested by TRA.

Response to question 3:

Our recommendation is to use a country risk premium of 2.3%.

2.6 Default risk premium

Default risk premium for non payment of interest or principal takes into account the probability of default and value lost upon default[24]. There is greater than ever probability of default risk in the current economic market, the bleak forecast by IMF in their Global Financial Stability Report (GFSR), April 2009, suggest that this likely to continue for number of years. A direct consequence of current financial crisis is inability of corporations to issue debt instruments and this lack of financing is likely to have higher than normal default risk. "Being unable to refinance dramatically increases the probability of experiencing what finance theory calls bankruptcy costs (witness the re-rating of the equity in these firms)." Officer and Bishop (2008) pp16.

Default risk has been correctly excluded in the TRA draft submission from the nominal risk-free rate but it has also been omitted from nominal rate of interest equation, which comprises of real rate of interest, expected rate of inflation, default risk and maturity premium.

2.7 Equity market risk premium

The EMRP represents the premium of the market portfolio above the RFR. It is the return investors expect over and above the RFR to compensate for the additional risk associated with investing in equities instead of investing in risk-free assets. Arithmetically, it is calculated as:

EMRP = Rm - Rf

Where:

Rm is the expected return on the market portfolio

Rf is the risk-free rate

2.7.1 TRA's approach and regulatory precedents

TRA's EMRP is based on Dimson, Marsh and Staunton's (DMS) 2009 estimate of the worldwide, arithmetic mean (AM) EMRP, to which it applies a 50 bps liquidity premium and a 50 bps uplift to reflect the current financial turmoil. TRA assumes that investors hold internationally diversified investment portfolios, and that there is a single world EMRP. As discussed previously, we on the other hand do not consider this to be a realistic assumption. In reality, the typical marginal investor in Batelco is likely to hold a domestic or regional portfolio of assets.

We have therefore undertaken an alternative approach to estimating the EMRP that we consider is more relevant to Batelco, and furthermore, and does not require the same scale of ad-hoc adjustments as under TRA's approach. In our approach we first estimate the EMRP for a developed economy. We then apply an uplift to reflect the difference between the EMRP for Bahrain and a developed economy. This uplift accounts for the higher return required by investors in the region as a compensation for the higher volatility of equity market returns. Below we explain in more detail the rationale and framework behind our approach.

[24] The rate for default risk premium can be determined as the "yield or return difference between long-term BAA corporate bonds and long-term AAA or U.S. Treasury Bonds." Vassalou and Xing – (2004).

2.7.2 Developed market's EMRP

The size of the EMRP is contentious as it cannot be directly observed in the market and must instead be estimated. In principle, the EMRP is an ex-ante (forward-looking) rather than an ex-post (historic) concept. However in practice both historic and forward-looking approaches are commonly used in its estimation.

We summarize below some of the key studies of the EMRP. They include both ex post (historic outturns) and ex ante (forward looking views of the EMRP, based on surveys or inferences from stock valuations) estimation methods. We also present both the geometric and arithmetic mean returns over the period. The geometric mean return gives a measure of the average annual return achieved by an investor as if the investor enters into a buy and hold strategy for the whole period considered. The arithmetic mean return is equal to the average of all the single year returns over the period. We consider both methods of calculating returns.

Table 10 provides a summary of some well known studies on the ex-post EMRP.

Table 10: Ex-post estimates of the EMRP

Source	Time period considered	EMRP – geometric mean (%)	EMRP – arithmetic mean (%)
DMS – LBS (2009):			
France	1900 – 2008	3.4	5.7
UK	1900 – 2008	3.6	5.0
US	1900 – 2008	3.8	5.9
Barclays Capital (2007):			
UK	1900 – 2006	4.2	
Ibbotson (2006):			
US	1970 – 2005	4.8	n/a
Canada	1970 – 2005	3.9	n/a

Source: DMS (2009), "Global Investment Returns Sourcebook 2009"; Barclays Capital (2007), "Equity Gilt Study"; Ibbotson (2006), "Stocks, Bonds, Bills and Inflation Year Book".

There are two inherent assumptions built into the use of long run ex-post data on actual historic additional equity returns to estimate the forward looking EMRP. The first is that the long run historical EMRP is a good guide to the current or future EMRP, so the past is worthy of study. The second assumption is that over the long run the actual returns achieved by equity investors in the past must reflect the returns they needed to compensate them for investing in equities – under- or over-performance of equities could not persist in the long run, because demand for equities would have increased or decreased, changing share prices to bring the available returns back into line. Of course in shorter run periods, actual returns below or in excess of the EMRP can be experienced which is why practitioners who use the ex-post approach prefer a very long run data series such as that provided by DMS. The use of very long term historic figures also implies that the EMRP is expected to be a stable figure over the long run.

Approaches that take a forward looking view on EMRP, putting more weight on current market evidence, are referred to as ex-ante approaches. There are two main sources of ex-ante EMRP estimates:

- Inferred value – the EMRP is inferred from the required rate of return calculated using the DGM; and

- Surveys of expectations – aggregate investors' or others' expectations about returns from investing in the market as a whole are derived by survey.

Table 11 below shows some example of ex-ante estimates of EMRP.

Table 11: Ex-ante estimates of EMRP

Source:	EMRP (%)	Comments
Competition Commission (2008)	3.8–5.0	Based on DGM
Welch — GM (2008)	4.0–6.0	Based on a survey of 400 finance professors
Welch — AM (2008)	4.5–7.0	Based on a survey of 400 finance professors
Gregory — GM (2007)	1.7–3.3	Based on DGM
Gregory — AM (2007)	2.0–3.9	Based on DGM
Competition Commission (2007)	2.1–3.3	Based on DGM
Claus and Thomas (2001)	3.4	Based on DGM

Sources: Competition Commission (2008), "Stansted Airport – Q5 price control review"; Welch, Ivo (2008) "The Consensus Estimate For The Equity Premium by Academic Financial Economists in December 2007"; Gregory (2007), "How Low is the UK Equity Risk Premium?"; Competition Commission (2007), "A report on the economic regulation of the London airports companies (Heathrow Airport Ltd and Gatwick Airport Ltd)"; Claus and Thomas (2001), "Equity premia as low as three percent? Empirical evidence from analysts earnings".

Prior to the onset of the credit crisis, taking into account both ex-post and ex-ante estimates of EMRP, it would have been reasonable to conclude an EMRP of 4.5% for the calculation of the WACC for companies operating in developed economies. However, there are good conceptual reasons to suggest the EMRP has risen since then, including:

- Current high levels of implied equity market volatility;
- Low equity valuations, which cannot be solely attributed to a reduction in forward looking earnings expectations; and
- The significant discounting required to attract equity in rights issues and share placements.

We consider some recent studies on the EMRP that have taken these market developments into account, some of which have adjusted their long term EMRP estimates accordingly. These are summarised in the table below.

Table 12: Summary of recent developed markets EMRP views

Source	Date	EMRP (%) – reflecting the impact of the current financial turmoil	Author's comments
Grabowski	30 January 2009	6.0	Using an EMRP derived during "normal" economic times will underestimate the cost of equity.
Citigroup	4 December 2008	5.1 – 5.3	Adjusted from 4.0% to reflect the long term re-pricing of risk.
Nomura	27 October 2008	8.0	Risky financial assets such as equities have significant risk premia embedded in them, to reflect the expectation of policy failure.
McKinsey	December 2008	No change – 4.5% to 5.0%	Conceptual

Sources: Grabowksi, J, Roger (2009), "Problems with cost of capital estimation in the current environment – update", 30th January; Citigroup Global Markets (2008), "Calculating the cost of capital in a downturn", 4th December; McKinsey & Company (2008), "The McKinsey Quarterly", December 2008 and Nomura, "European Strategy Weekly", 27 October 2008.

The table shows that there are mixed views. Those who favour a dividend growth model approach (e.g. Nomura) believe that the EMRP is substantially above the 4.5% (our previous view). However, the same approach would have produced significantly lower figures before the stock market falls, and thus suggests that the EMRP is a volatile figure. We do not believe that this is correct from a theoretical standpoint. The EMRP should be relatively stable and alter only rarely and then by small amounts.

Others, such as Citibank and Grabowski, see a higher EMRP of 6.0% to 6.5% now, perhaps falling in the medium term. We agree that where market valuations can be observed these are consistent with such high figures. However, we question whether this is evidence that the EMRP per se has shifted so radically in such a short timescale. An alternative explanation is that the EMRP has increased by a smaller amount as theory would suggest, but that other factors such as liquidity are also affecting valuations.

The table also reports the view of McKinsey that there has been no significant change in the EMRP. This adds support to our view that caution needs to be exercised in altering the EMRP by any significant amount in reaction to immediate, and potentially short term, changes in market conditions.

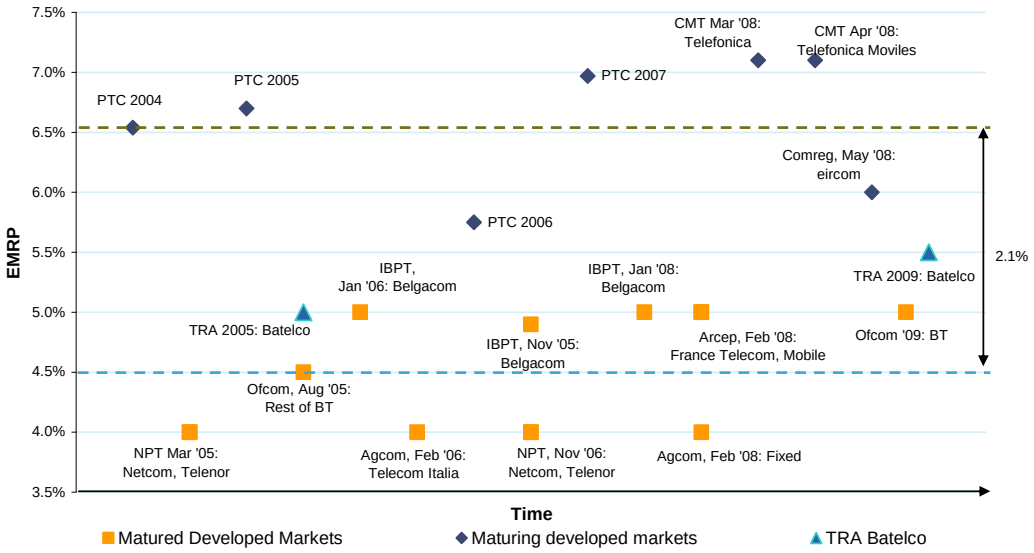
We consider that most of the recent views set out above take a short term view on EMRP. However, given that we consider EMRP does not move around a lot in the short run, and that it is likely that equity market volatility will drop again, but still be higher than the low levels of 2005/6, we recommend an EMRP of 5% for developed markets. Under the current market conditions, we consider that an uplift of 0.5% is appropriate and is consistent with TRA's view.

Bahrain is a developing economy. A number of equity market risks that are relevant to developing markets are not reflected within our developed market EMRP estimate of 5.0%. Therefore it is necessary that we apply a developing market uplift to this estimate in order to determine the EMRP that would be appropriate for Bahrain. This is discussed in the next section.

2.7.3 Developing market uplift

As mentioned above, the expected EMRP for less developed and emerging markets such as Bahrain would typically be higher than that for developed markets to account for higher levels of equity market volatility. The higher volatility of returns compared to that of developed markets is as a result of an aggressive risk profile on a number of accounts; higher political risk, higher liquidity premia, weaker corporate governance structure and legal framework etc. Therefore, we consider it necessary to apply a developing market uplift to the EMRP estimate of 5.0%. To determine the appropriate level of uplift, in principle we should compare robust EMRP estimates on a number of developing markets with those of developed markets. However, as recognised by TRA itself, very limited information is available on the EMRP for developing markets using rigorous methodologies. Considering these data limitations we have compared the EMRP allowed by regulators in a sample set of marginally less developed markets to developed economies. These are set out in Figure 9 below.

Figure 9: Comparison of regulatory precedents on EMRP in developed and (marginally) less developed markets



Note: Average of Maturing Developed Markets and Average of Matured Developed Markets does not include TRA Batelco 2005 or TRA Batelco 2009.
[Batelco 2005 EMRP does not include country risk premium of 2.25% tbc]

Source: Various regulatory decisions

A comparison of regulatory precedents indicates that on average regulators in our sample of maturing developed markets have allowed an EMRP that is approximately 2 percentage points higher than that allowed for in matured developed markets. Given that Bahrain is less developed than the sample of maturing developed markets examined above, it is likely to warrant a greater uplift than 2 percentage points. Given the difficulties in estimating the EMRP, we apply an uplift range of 2.0% to 3.0% to our developed market's EMRP estimate of 5.0% to derive an appropriate EMRP for Bahrain.

2.7.4 Batelco's recommendation

Table 13 below provides a summary of EMRP estimates based on the alternative sources presented above.

Table 13: Summary of EMRP sources

EMRP basis	EMRP (%)
Developed market EMRP	5.0
Uplift for developing markets	2.0 - 3.0
Bahrain's EMRP	7.0 – 8.0

Source: Batelco's analysis

As set out above, we consider that the appropriate EMRP to use for this regulatory determination is 7.0% to 8.0%. Our estimate is based on our view of the EMRP for developed markets to which we apply an uplift to reflect the relatively aggressive risk profile of developing markets. We consider that our approach is more relevant, transparent and requires less arbitrary adjustments than that applied by TRA in its Draft Determination.

Response to question 4:

We recommend an EMRP of 7.0% to 8.0% for the purpose of this determination.

2.8 Equity beta

Under the CAPM framework, investors are only compensated for bearing systematic risk. The degree of systematic risk associated with any individual investment depends on the correlation between movements in returns on that investment and returns on the market portfolio. The stronger the correlation, and the greater the amplitude of any movement in returns as a result of market-wide events, the higher the systematic risk. For a particular equity investment this is measured by the investment's equity beta. Specifically the equity beta is equal to:

Be = Cov (Re, Rm) / Var (Rm)

Where;

Re is the return on the specific stock

Rm is the return on market portfolio

Equity betas need to be adjusted for differences in gearing. Equity betas can be un-geared/de-levered to derive asset betas, which are then comparable between companies. This is done by applying the following de-levering formula developed by Harris and Pringle[25].

$$\beta_e = \beta_a\left(1+\frac{D}{E}\right) \qquad (1)$$

where:

β_e is the company's equity beta;
β_a is the company's asset beta;
D is the market value of the company's debt; and
E is the market value of the company's equity.

2.8.1 TRA's approach

TRA have considered two approaches in estimating Batelco's equity beta. First they adopt a direct approach whereby they consider Batelco's beta measured against the Bahrain Stock Exchange index and FTSE All World index to assess investment risk for domestic versus international investors. Using this approach, they conclude that Batelco's asset beta ranges from 0.40 - 0.70 and 0.65 – 0.8 for an international and a domestic investor respectively. The range they ultimately use is 0.55 – 0.70.

TRA then conduct a comparator analysis, first using cluster analysis to identify comparator markets (i.e. other countries that are comparable to Bahrain), based on a set of relevant parameters including total population, urban population and GDP per head, amongst others. They have primarily identified certain

[25] Further details of the Harris-Pringle de-levering formula are provided in Appendix II.

Middle Eastern and Eastern European comparator countries as well as a few Southern European nations. TRA have then selected quoted telecommunication companies that are based in these countries, according to their overall similarity with Batelco and a number of specific characteristics, for example, proportion of mobile revenue, market capitalization and enterprise value.

TRA estimated equity betas for the selected comparator companies, measured against the local and global indices, to assess investment risk for domestic versus international investors. The equity betas were then converted into asset betas. They estimate an asset beta range of 0.60 – 0.70 from a domestic investor's perspective and a range of 0.55 – 0.60 from an international investor's perspective.

TRA also consider a set of regulatory precedents from Western Europe and New Zealand, indicating a range of 0.45 – 0.80 for asset betas.

Based on their analysis, TRA proposes that the same asset beta be applied to both fixed and mobile activities in Bahrain. They ultimately recommend an equity beta range from the perspective of an international investor of 0.55 – 0.70.

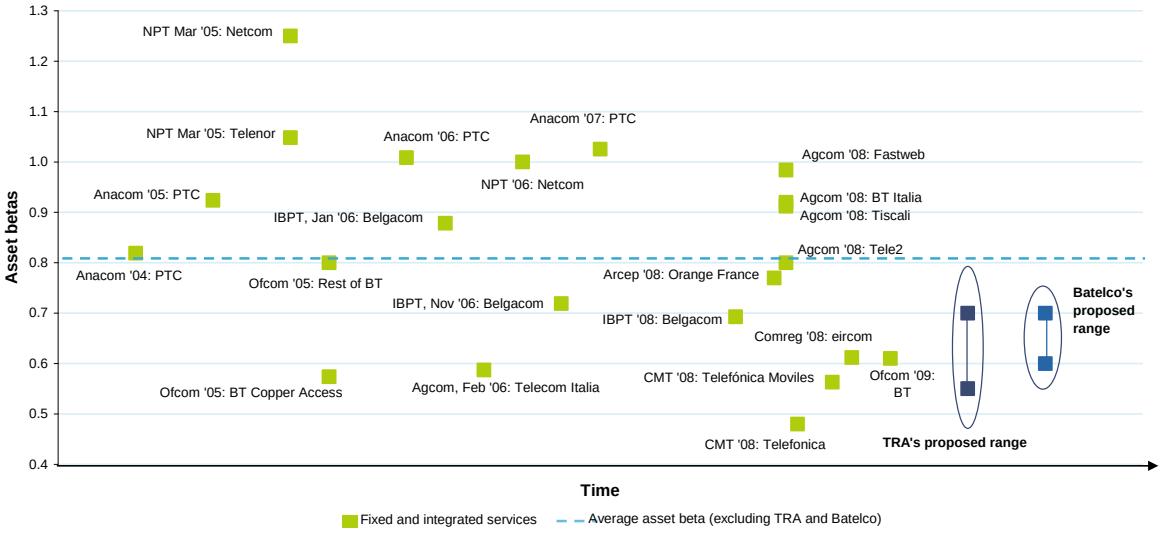
However, in the alternative scenario TRA has suggested equity beta range of 0.65 and 0.8, which we believe is closer to the market.

2.8.2 Regulatory precedents

Recent regulatory precedents on the cost of capital provide a useful reference point for the appropriate equity beta for Batelco. However, a degree of caution needs to be exercised when interpreting this evidence since it is likely to include an element of judgment by regulators rather than being based on primary market data. Figure 10 below and Appendix IV summarise a selection of recent regulatory precedents for telecommunication operators in Europe. The key findings are as follows:

- Most regulators have undertaken comparator analysis in order to calculate the equity beta. This involves estimating comparator equity betas that are then de-levered and averaged resulting in the average asset beta (which we report in the figure that follows);
- There is mixed evidence on the estimation period and frequency of data used. Some regulators estimate an equity beta over a 1 to 2 year period, whereas others use a 5 year period. Similarly, some regulators have used monthly data whereas others have used daily or weekly data; and
- The asset beta range emerging from this exercise (either reported or calculated using reported equity betas and gearing) is in the range 0.5 – 1.3, the top end being significantly above TRA's recommendation for Batelco.

Figure 10: Asset betas (implied or reported) across a selection of European countries



Source: Various regulatory decisions, Batelco analysis. Please see appendix IV for a full list of references.

2.8.3 Batelco's approach

We agree with TRA in respect of the limitations encountered when directly estimating Batelco's equity beta and have based our estimation of Batelco's equity beta on an analysis of companies that we believe are most comparable to the Company.

We have considered telecommunications companies based in the Middle East and Eastern Europe. We have included Middle Eastern markets due to their regional similarities, and certain Eastern European markets which bare similar characteristics to Bahrain. The list of countries considered are summarised in the table below.

Table 14: Regions

Region	Countries
Middle East	Bahrain, Oman, Jordan, Saudi Arabia, Israel, UAE, Kuwait, Egypt
Eastern Europe	Poland, Hungary, Estonia, Czech Republic, Lithuania, Turkey

Source: Batelco analysis

We have established which companies are suitable for benchmarking Batelco's beta by analysing each companies' revenue, market capitalisation and business segmentation. We have then narrowed the list down to identify the most suitable comparators for Batelco.

Appendix V outlines the complete list of potential companies that we have considered including a brief explanation as to why we believe they may or may not be relevant for the purpose of benchmarking Batelco's beta.

As TRA has done, we have analysed both pure-play mobile companies and integrated companies separately. Table 15 below lists our selected integrated comparators and Table 16 lists the mobile comparators.

Table 15: Integrated comparators

Country	Company
Bahrain	Batelco
Czech Republic	Telefonica O2 Czech Republic AS
Estonia	Eesti Telekom
Hungary	Magyar Telekom Télécommunications PLC
Israel	NetVision
Jordan	Jordan Telecom
Oman	OmanTel
Poland	Telekomunikacja Polska SA
Saudi Arabia	Saudi Telecom Company
UAE	Emirates Integrated Telecom

Source: Batelco analysis.

Table 16: Mobile comparators

Country	Company
Egypt	Orascom Telecom Holding S.A.E.
Israel	Partner Communications Company Ltd
Kuwait	National Mobile Télécommunications
Kuwait	Zain
Lithuania	TEO LT
Saudi Arabia	Etihad Etisalat Co
Turkey	Turkcell

Source: Batelco analysis.

For each of the comparators listed above, we have estimated following:

- Two-year weekly equity beta, against the local index;
- Five-year monthly equity beta against the local index;
- Two year weekly equity beta against the global index (Morgan Stanley Capital Integration (MSCI) world index); and
- Five year monthly equity beta against the global index.

For each of the identified comparators we have calculated adjusted[26] equity betas which we then un-levered to arrive at the corresponding asset betas. We have calculated simple averages of these asset betas and established a range based on the different measures of equity betas. A complete list of asset betas can be found in Appendix V.

[26] The adjustment applied to raw betas is called the Blume adjustment. The adjusted equity betas are calculated using the Bayesian adjustment: (2/3)* raw beta + (1/3)* 1. Raw betas represent estimated coefficients from a regression where returns on the equity are regressed on returns on either the local or the world index. The Blume adjustment is applied because there is greater measurement error associated with betas with extreme values i.e. further away from 1.

Table 17 summarises the results of our beta analysis. As would be expected, the results show that the global betas are lower than the local betas. This reflects both the significance of companies' market shares as well as the importance of local factors relative to global factors in company returns.

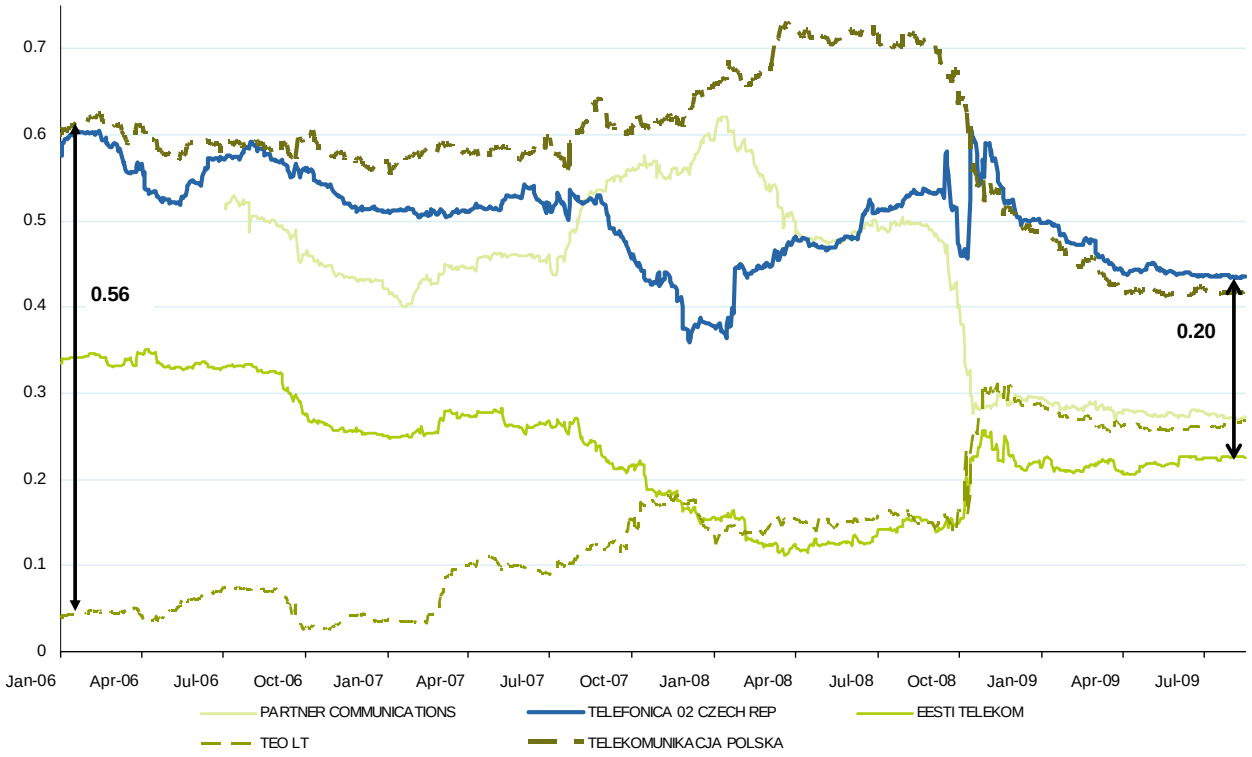
Table 17: Asset betas or global and domestic investors in the Middle East and Eastern Europe

	Local			Global		
	5-year monthly	**2-year weekly**	**Average**	**5-year monthly**	**2-year weekly**	**Average**
Integrated	0.7	0.7	**0.7**	0.6	0.5	**0.6**
Pure-play mobile	0.6	0.8	**0.7**	0.7	0.5	**0.6**

Source: Bloomberg, Batelco analysis

Our analysis indicates that there is no difference between the average asset beta for integrated and mobile operators. We have also analysed the trend in equity beta estimates of telecoms operators in the Middle East and Europe over the past 10 years. A selection of the trends for these companies is shown in the graph below.

Figure 11: Convergence of equity betas for a selection of comparators



Source: Datastream, Batelco analysis

This shows a clear trend of convergence in equity betas of integrated and mobile companies. This is consistent with our view that both these types of businesses are subject to the same systematic risk. We therefore agree with TRA that there should be no differential in the betas used for fixed-line and mobile operators.

2.8.4 Batelco's recommendation

Given the above analysis, we consider it appropriate to use both integrated and mobile comparators for the purpose of benchmarking Batelco's beta. Therefore taking into account the results set out in Table 17 above and TRA's equity beta in the alternate scenario, we consider Batelco's equity beta to lie within a range of 0.65 to 0.8, where the bottom end of the range is consistent with the average of the global beta estimates and the top end of the range is consistent with the average of the local beta estimates.

The midpoint of this range is consistent with TRA's proposed midpoint, which has been estimated using data from the perspective of an international investor. As we have discussed in previous sections of this report, we are strongly of the view that it is inappropriate to assume that the marginal investor in Batelco is an international investor, however we do acknowledge that that Batelco's beta is likely to be influenced by both local and global factors. As such, we believe that Batelco's equity beta is likely to lie within a range of 0.65 to 0.8.

Response to question 6:

Our recommendation is to use an equity beta range of 0.65 to 0.8 for Batelco.

3. Cost of Capital (WACC)

The table below sets out our overall estimate of the cost of capital for Batelco.

Table 18: Proposed cost of capital for Batelco[27]

	Batelco's calculations (Low)	Batelco's calculations (High)	TRA's calculations – (Low)	TRA's calculations – (High)
Nominal US risk-free rate (US$)	4.0%	5.0%	-	-
Inflation differential	0.3%	0.3%	-	-
Nominal US risk-free rate (BHD)	4.3%	5.3%	3.5%	3.7%
Country risk premium – Bahrain	2.3%	2.3%	1.5%	1.5%
Nominal Bahrain risk-free rate (BHD)	6.6%	7.6%	4.7%	5.2%
Default Risk	1.7%	1.7%	-	-
Nominal interest rate before - EMRP	8.3%.	9.3%	4.7	5.2
Equity beta	0.65	0.80	0.55	0.70
EMRP	7.0	8.0	5.1%	6.1%
Cost of equity (nominal)	12.85%	15.7%	7.5%	9.5%
Cost of equity – mId point (nominal)	**14.28%**		**9%[28]**	

Source: TRA's Draft Determination and Batelco analysis

We have also calculated the cost of equity as implied by our regulatory precedents sample considered in previously (although it is more meaningful to compare asset betas than the overall cost of equity as betas are directly observable as opposed to other elements of the cost of equity). Based on these calculations, the average implied cost of equity for the mature developed markets in our set is 9.2%. In comparison, the average implied cost of equity for maturing developed markets is 12.85%. The maturing developed markets are more comparable to Bahrain, and therefore serve as a better guideline of regulatory precedents in relation to TRA's decision. However it is worth noting that the countries in our sample have a CRP of zero percent as well as a lower EMRP relative to Bahrain. Therefore the implied cost of equity average from our set of maturing developed precedents (14.28%) should serve as good indication of the lower end of the range.

We summarise below our recommended approach to calculating the cost of capital for Batelco:

- **Methodology for calculating the cost of equity**: We agree with TRA that the CAPM is the most appropriate framework for calculating the cost of equity; however we do not consider it appropriate to primarily consider the cost of capital from the perspective of an international investor. In reality, the typical marginal investor in Batelco does not hold a globally diversified portfolio of assets. Further details of Batelco's investors are provided in Section 1.2.

- **Capital structure:** We agree with the zero gearing level assumption proposed by TRA.

- **Risk-free rate:** There are several important points to be made in relation to TRA's estimate of the RFR:

[27] All figures have been rounded to one decimal place.
[28] TRA has proposed a cost of capital of 9% in the TRA's draft determination.

vi) TRA has used the spot yields on the US government bonds to calculate the RFR and uplifted it by 50 bps to reflect the view that current spots rates might have been artificially low as a result of flight to quality. To avoid making such ad hoc adjustments, utilities and telecom regulators generally take a medium to long term view by examining historical trends.

vii) TRA's choice of US government bond maturity is based on its estimate of the average remaining useful life of Batelco's assets which it calculates using regulatory accounting data. As accounting data is historical and backward looking, asset lives estimated using this approach are generally not in line with the economic useful life and therefore could result in misleading results. Moreover, using the average remaining life suggests that the assets will not be replaced, and only need to be rewarded over their remaining lives. Batelco needs to be incentivised to invest in assets. Therefore in principle maturity should be equal to the entire remaining economic life of assets. From an estimation perspective, another important aspect to consider is the volatility in yields associated with different maturities. Typically, yields on medium to short term maturity bonds (such as 5 years) tend to be more volatile making them less useful for determining an ex-ante RFR.

viii) Federal Reserve policies that focus on injecting liquidity into the current financial system may have created excessive demand for government bonds which is also likely to result in artificially low yields. This recent quantitative easing has complicated the use of yields on US government bonds to calculate the RFR as it has created an excessive demand for bonds, briefly putting more downward pressure on spot yields with 10 year yields dropping by 50 bps over the period. However, the yields have jumped significantly since then as a result of the Federal Reserves news to reduce borrowing over the next quarter. This volatility in yields provides further support of our view that more weight should be put on long term averages as opposed to spot rates.

ix) We also consider taking a longer term view of an expected inflation differential between the two countries to be the most appropriate approach.

x) Our view is that the US RFR range of 3.2% - 3.7% proposed by TRA is too low for the purposes of this determination. We consider the US RFR range of 4.3% - 5.3% to be more appropriate. The lower end of the range is consistent with the 10 year average on a 5 year US government bond. The upper end of the range is consistent with the 10 year average on a 30 year US government bond. Our suggested range is also consistent with previous regulatory determinations.

- **Country risk premium**: In our view the CRP for Bahrain is 2.0%. This is 50 bps greater than the CRP suggested by TRA[29].

- **EMRP:** TRA's EMRP is based on Dimson, Marsh and Staunton's (DMS) 2009 estimate of the worldwide, arithmetic mean EMRP, to which it applies a 50 bps liquidity premium and a 50 bps uplift to reflect the current financial turmoil. TRA assumes that investors hold internationally diversified investment portfolios, and that there is a single world EMRP. We consider this to be inappropriate and unrealistic for the purpose of estimating Batelco's cost of capital, as the typical marginal investor in Batelco is likely to hold a domestic or regional portfolio of assets. We have undertaken an alternative, more

[29] Batelco's estimate of the CRP is based on PricewaterhouseCooper's (PwC) Country Risk Model. Further details of the model assumptions and approach can be found in Appendix II.

appropriate approach to estimating the EMRP. In our approach we first estimate the EMRP for a developed economy. We then apply an uplift to reflect the difference between the EMRP for Bahrain and a developed economy. This uplift accounts for the higher return required by investors in the region as compensation for their exposure to higher volatility of equity market returns.

An increased risk to cover for the environment in which Batelco operates, for example our fixed costs forms a higher % of the total cost base. Accordingly, profits will show greater fluctuations given the future likely more intensive competition. Furthermore, Batelco have recently invested in new technologies for example NGN and 3G. These investments are substantial and varies from previous investments, hence more inherent risk.

Based on this analysis, we estimate that the appropriate EMRP for Batelco's cost of capital should be 7.0% to 8.0%

- **Equity beta:** We agree with TRA that there should be no differential in the betas used for fixed-line and mobile operators. We are strongly of the view that it is not appropriate to assume that the marginal investor in Batelco is an international investor, although we do acknowledge that Batelco's equity betas are likely to be influenced by both local and global factors. On this basis we consider Batelco's equity beta to lie within a range of 0.65 to 0.8. The midpoint of this range is consistent with TRA's proposed midpoint, which has been estimated using data from the perspective of an international investor.

Overall our estimate of the cost of capital for Batelco is in the range of 12.85% to 15.7%, resulting in a mid-point estimate of 14.28%. Taking into account the need to incentivise further investment in a sector that requires significant scale, operating in a small country, we recommend a point estimate of 14.28%.

Response to question 6:

We are firmly of the view that 9% significantly under-estimates the cost of capital of Batelco. We believe that TRA's approach to be flawed and inadequate in certain areas. In particular, it overlooks important market features specific to Bahrain and wider considerations, such as the increased volatility in government bonds yields and the fact that 5 and 10 year maturities are significantly below their long term averages. Further, it assumes that the typical investor in Batelco holds a globally diversified portfolio of assets which we consider to be highly inappropriate and unrealistic.

Overall, our estimated cost of capital for Batelco is in the range of 12.85% to 15.7%, with a point estimate of 14.28%.

Appendix I – Regulatory precedent

Table 19: Summary of regulatory precedents

Country	Company	Decision date	Decision reference
Belgium	Belgacom	11 Jan 06	IBPT Jan 2006: Belgacom
Belgium	Belgacom	22 Nov 06	IBPT Nov 2006: Belgacom
Belgium	Belgacom	23 Jan 08	IBPT Jan 2008: Belgacom
France	France Telecom	07 Feb 08	Arcep Feb 2008: FT
France	Orange France, SFR, Bouygues Telecom, Orange Caraibe, SRR.	07 Feb 08	Arcep Feb 2008: Mobile
Ireland	Eircom	22 May 08	ComReg May 2008: Eircom
Italy	Telecom Italia	09 Feb 06	Agcom 2006: TI
Italy	Fixed: BT Italia, Fastweb, Tele2, Tiscali	19 Feb 08	Agcom 2008: Fixed
Norway	Netcom	01 Mar 05	NPT 2005: Netcom
Norway	Telenor	01 Mar 05	NPT 2005: Telenor
Norway	Netcom	01 Nov 06	NPT 2006: Netcom
Norway	Telenor	01 Nov 06	NPT 2006: Telenor
Portugal	Portugal Telecom	2004 - 2007	Anacom 2004-07: Portugal Telecom
Spain	Telefónica	18 Mar 08	CMT Mar 2008: Telefónica
Spain	Telefónica Móviles	24 Apr 08	CMT Apr 2008: Telefónica Móviles
UK	British Telecom	18 Aug 05	Ofcom 2005: BT
UK	British Telecom	22 May 2009	Ofcom 2009: BT

Source: Various regulatory decisions, Batelco analysis.

Appendix II – PwC Country Risk Model methodology

Country risk reflects risks inherent to investing in different sovereign territories. It is close to zero for most developed and stable countries, but can be substantially higher in emerging markets. Broadly speaking, it can be attributed to variations in the degree of economic, political, financial and institutional stability in different countries.

Country risk adjustments

Many academics agree that country risk has a material impact on Net Present Value (NPV), but disagree about how it is best handled. The standard textbook approach assumes it has already been dealt with by making (downwards) adjustments to cashflows – for factors such as the risk of civil unrest, expropriation, exchange controls and so on – when the cashflows were initially assessed.

In reality, this is rarely the case. Most financial analysts are not country risk experts, and cashflows are usually assembled using straightforward public or management account information without further adjustment.

Financial textbooks are typically silent on this problem, even though the principle of arbitrage states that two opportunities of similar risk should have the same required rate of return, and an exposure to a higher risk macroeconomic, political or institutional environment should therefore be compensated by a premium on invested cash.

The PwC approach handles country risk (where it is clear that adjustments to cash flows have not been made), through adjustments to the discount rate. If such adjustments were not made, the value ascribed to investments in countries with higher country risk would be overstated.

Quantification of country risk

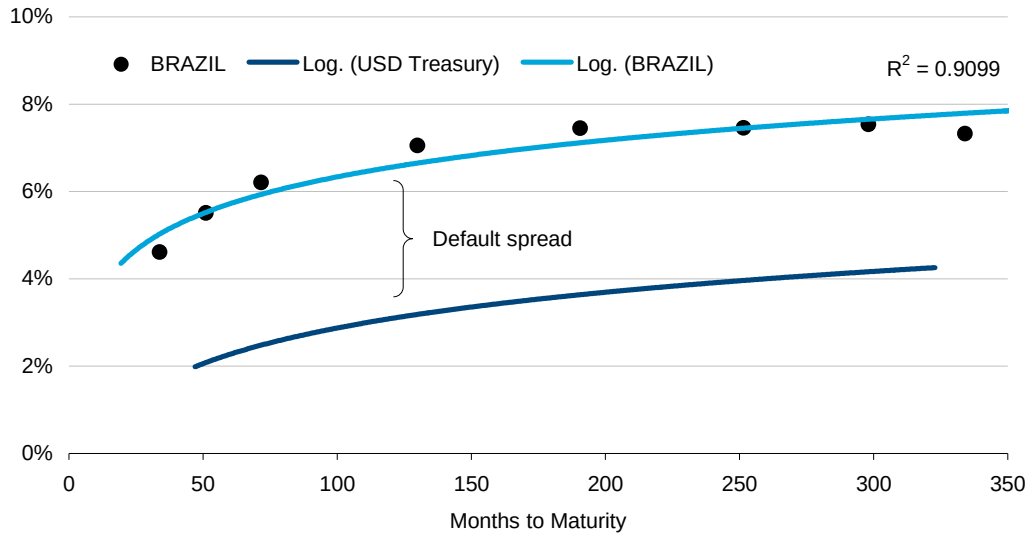
It is possible to quantify country risk premia by measuring the default yield spreads on US dollar–denominated sovereign Eurodollar bonds (issued by various countries) compared with the yields on US Treasury bonds of the equivalent maturity (US Treasury bonds are usually considered “risk-free”). Because both types of bond will pay both principle and interest in US dollars, the cashflow payoffs from both are identical; any premia on the yields on the sovereign bonds (compared with the US Treasuries) can therefore be attributed to the perceived default risk of the sovereign country relative to the US.

These premia are derived directly from market prices. They can therefore be seen as representing a consensus view of the level of country risk.

An in-house PwC model estimates default spreads for over 30 countries where bond information is available, by using logarithmic regressions to fit yield curves so that a statistical term structure model can be derived. By way of illustration, the graph below shows the US Treasury yield curve and a Colombia US dollar yield curve, based on observations in the Eurobond market. The gap between the two represents the default spread associated with Colombia, at different points in time. This varies with duration.

From the modelled curves, it is possible to estimate a 10 year CRP of 3.4% for Colombia.

Figure 12: Yield curves

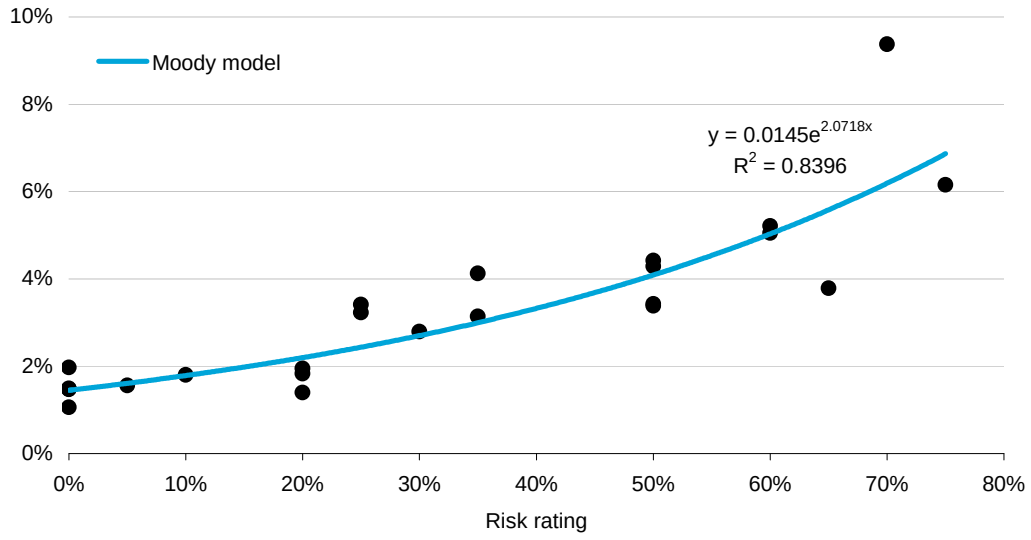


Source: PwC Country Risk Model

Where sovereign bond information is unavailable, the PwC model calculates an implied premium by looking at credit ratings of the country in question. This relies on country credit ratings from Moody's, S&P, EIU and Euromoney (section four below). The PwC model regresses observed premia for countries where direct bond market information is available against their corresponding credit rating. This derives a predictive statistical model of country risk.

The graph below shows the relationship between observed 10-year default spreads and credit ratings supplied by Moody's. The credit ratings are linearised into percentages to facilitate this process.

Figure 13: Country risk premium as a function of rating (Moody model)



Source: PwC Country Risk Model

We use four credit rating agencies to derive four separate predictive models. By a process of residual analysis, we are able to rank them in order of preference. For the third quarter in 2004 we continue to use an average of all four credit rating variables as the best predictor for yield spreads in our sample.

For countries where no credit rating is supplied by one or more of the rating agencies, the model uses those that are available. As a consequence, as long as a country has a credit rating supplied by one or more agencies from our sample, it is possible to estimate a country risk premium for that country.

Credit ratings

There are numerous organisations that rate the political, social, institutional and macroeconomic risks faced by particular countries. For example, EIU and Euromoney grade individual countries between 0% and 100%, - where 0% is zero risk and 100% is maximum risk – using a system of factors considered of importance. These include the risk of social unrest, the impact of crime and more economic factors such as debt service as a percentage of GDP.

Moody's and Standard and Poor's also provide credit ratings for sovereign states, reflecting the risk of default on government bonds. These ratings consist of twenty bands ranging from AAA (minimal risk of default) to D (default). For the purpose of our regression analysis, we have linearised these ratings into percentages – where 0% represents no risk of default and 100% represents maximum risk – in order to derive our predictive statistical models.

Sovereign credit ratings are largely determined by the markets' perception of country risk. The ratings are therefore intended to be forward-looking, assessing the prospects of different countries in relation to their future ability to repay debt.

Appendix III – Equity and asset betas

Summary

In choosing a beta de-levering/re-levering formula to use in estimating the WACC an assumption must be made about the degree of certainty around future debt tax shields. Treating companies' future debt tax shields as certain is generally not a realistic assumption to make. A more reasonable assumption is that future debt tax shields are uncertain, consistent with companies having active debt management policies (although the first year's debt tax shields might, perhaps, be considered as certain).

This assumption points to the Harris and Pringle beta de-levering/re-levering formula, being the appropriate formula to use in all beta de-levering/re-levering calculations. The formula is as follows:

$$\beta_e = \beta_a\left(1+\frac{D}{E}\right) \qquad (2)$$

where:

β_e is the company's equity beta;
β_a is the company's asset beta;
D is the market value of the company's debt; and
E is the market value of the company's equity.

It is noted that provided the same formula is used for de-levering the comparable company betas as is used for re-levering the target company beta, and that the comparable companies have similar gearing and tax rates as the target company, the target company equity beta estimate should not be particularly sensitive to the choice of beta de-levering/re-levering formula.

Background

The beta input required for the CAPM is an equity beta (β_e). Equity betas reflect the "riskiness" of shareholder returns that arises as a result of fixed debt servicing commitments (i.e. the effects of financial leverage or gearing) as well as the underlying riskiness of the firm's assets. The latter is measured as an asset beta (β_a). Only equity betas are "observed" in the market place, through statistical analysis of share price behaviour for companies whose shares are actively traded. Since financial leverage varies between companies the preferred, and indeed conventional, approach to estimating the equity beta for the firm being valued is as follows:

Obtain equity beta estimates for a sample of listed companies that are considered comparable to the company being valued ("compcos");

Obtain financial leverage details for the compcos;

"De-lever" the compco equity betas to arrive at asset beta estimates for the compcos (formulae for doing this are discussed below). This step removes the influence on beta arising from variations in compco financial leverage;

Having regard to the compco asset betas, make an assessment of the asset beta appropriate for the "target" company being valued; and

"Re-lever" the assessed asset beta for the level of gearing being assumed for the target company, to arrive at an assessed equity beta for that company (the formula used is generally the reverse of that applied in the "de-levering" process).

Formulae for de-levering/re-levering betas

Fundamentally the asset beta of a company is a weighted average of that company's equity beta and its debt beta (β_d). Estimation of debt betas is problematic, so current practice among most practitioners and many academics is to assume that companies' debt betas have a value of zero. This simplifies the relationship between equity beta and asset beta, but three issues still need to be considered in determining the appropriate formula to use. These issues are:

The company's effective corporate tax rate (T_C);

The effect of investors' taxes on the value (if any) of the tax shield arising from the use of debt; and

The effect of the company's debt management policy on the value of the debt tax shield.

The Hamada Formula

Under a classical tax system (i.e. one where dividends are paid from company earnings after corporate tax, and are then subject to personal taxes at the investor level) and where the company adopts a passive debt management policy (i.e. the future debt servicing schedule is assumed to be known with certainty at the valuation date), then the appropriate formula for relating equity and asset betas is:

$$\beta_e = \beta_a\left[1+(1-T_C)\frac{D}{E}\right] \qquad (3)$$

where:

D is the market value of the company's debt; and

E is the market value of the company's equity.

The above formula is known as the "Hamada" formula[30] and is widely used by practitioners and academics. However, the assumption that the company's future debt servicing schedule is known with certainty is questionable. For example, in the face of changes to its enterprise value a company is likely to adjust its level of debt in order to maintain a target leverage ratio. Furthermore, features of the personal tax regime may significantly reduce the value of the tax shield attributable to the use of debt financing.

The Harris and Pringle Formula

Where all of the company's future debt tax shields, including those arising in the first period, are treated as uncertain or risky then analysis by Harris and Pringle (1985) provides the following relationship between the equity beta and asset beta:

$$\beta_e = \beta_a\left(1+\frac{D}{E}\right) \qquad (4)$$

[30] Hamada (1969).

The above formula is known as the "Harris and Pringle" formula and is derived from different assumptions to the Hamada formula. If the company is expected to maintain a target leverage ratio through time (i.e. it has an active debt management policy), but with total firm value evolving with uncertainty, then it follows that the future debt servicing schedule is uncertain. Typically this assumption is more realistic than the alternative of assuming that the future debt servicing schedule is known with certainty. This means that in most circumstances the Harris and Pringle formula will be more appropriate than the Hamada formula.

The Miles and Ezzell Formula

Miles and Ezzell (1985) derive a beta de-levering/re-levering formula that assumes that the tax shield on debt is certain for the first period (i.e. the first year), but thereafter is uncertain. These assumptions fall between those of Hamada and of Harris and Pringle so, as to be expected, the resulting formula falls between formulae (2) and (3) above. The Miles and Ezzell formula is:

$$\beta_e = \beta_a \left[1 + \left(1 - \frac{r_f T_C}{1 + r_f} \right) \frac{D}{E} \right] \qquad (5)$$

where:

r_f is the risk-free rate of return.

Appendix IV – Regulatory precedents for reported equity beta and asset betas

Table 20: Regulatory precedents for reported equity beta and asset betas (implied or reported)

Country	Regulator (Date)	Company	Asset beta estimate	Equity beta estimate	Data frequency/estimation period	Methodology
Belgium	IBPT (Jan 2006)	Belgacom	0.9	1.4	n/a	Equity beta was estimated by undertaking comparator analysis. Although Belgacom is listed, the regulator did not undertake regression analysis to estimate its equity beta directly as the listed period was too short and not enough data was available.
Belgium	IBPT (Nov 2006 and Jan 2008)	Belgacom	0.7	1.1	n/a	Equity beta was calculated by undertaking comparator analysis. In particular, equity betas were calculated for listed comparator companies. These equity betas were de-levered to calculate comparator asset betas. The average of the comparators' asset beta was re-levered at the actual gearing level of Belgacom to estimate its equity beta.
France	Arcep (2008)	Orange France, SFR, Bouygues Telecom, Orange Caraibe, SRR.	0.8	1.0	n/a	Comparator analysis/ regulatory precedents (comparators included Vodafone, Mobistar and Cosmote).
Ireland	ComReg (2008)	eircom	0.6	1.0	Daily, weekly, monthly	Statistical estimation of eircom's equity beta using different data frequencies (daily, weekly, monthly), different market indexes and various time periods (between March 2004 and September 2005). The implied asset betas were de-levered from the equity betas estimates. Other sources considered included third-party estimates (Bloomberg and the London Business School Risk Management Service) and comparator analysis.
Italy	Agcom (2006)	Telecom Italia	0.6	0.8 – 0.9	Daily / five years	Equity beta was estimated by undertaking comparator analysis.
Italy	Agcom (2008)	BT Italia, Fastweb, Tele2, Tiscali	0.9, 1, 0.8. 0.9	1.1, 1.2, 1.0, 1.2	n/a	Equity beta was estimated by undertaking comparator analysis.
Norway	NPT (2005)	Netcom, Telenor	1.3, 1.0	1.3	Monthly / five years	Equity beta was estimated by undertaking comparator analysis. Comparators included Mobistar, O2, Tele2 and Vodafone.
Norway	NPT (2006)	Telenor [Netcom N/A]	1	1.3	Monthly / five years	Equity beta was estimated by undertaking comparator analysis. Comparators included Mobistar, O2, Tele2 and Vodafone.
Portugal	Anacom (2004–	PTC	0.8, 0.9, 1, 1	1.2	Monthly / c. 10 years	Equity beta was calculated using monthly observations of PT quoted on the stock

Country	Regulator (Date)	Company	Asset beta estimate	Equity beta estimate	Data frequency/estimation period	Methodology
	07)					exchange.
Spain	CMT (2008)	Telefónica	0.5	0.6	Daily, weekly / three years	Equity beta was calculated by undertaking comparator analysis. In particular, equity betas were calculated for listed comparator companies. These equity betas were de-levered to calculate comparator asset betas. The average asset beta of the comparators was re-levered at the actual gearing level of Telefónica to estimate its equity beta.
Spain	CMT (2008)	Telefónica Móviles	0.6	0.6	Daily, weekly / two years	Equity beta was calculated by undertaking comparator analysis. In particular, equity betas were calculated for listed comparator companies. These equity betas were de-levered to calculate comparator asset betas. The average asset beta of the comparators was re-levered at the actual gearing level of Telefónica Móviles to estimate its equity beta.
UK	Ofcom (2005)	BT	0.6 – 0.8	0.9 - 1.2	Daily / one year	Equity beta estimate was based on historic data over a one-year period. This gave an equity beta of around 1 which Ofcom argued was a reasonable estimate for BT.
UK	Ofcom (2009)	BT Openreach, Rest of BT	0.61 (BT Group)	0.76, 0.96	Daily / one, two and five years.	Equity beta estimate was based on historic data over a one, two and five-year periods. After calculating asset beta using 38% gearing rate and debt beta of 0.15, this gives an equity beta of 0.86 for BT Group. Ofcom considers it reasonable to use a beta of 0.76 for Openreach and 0.96 for the rest of BT.

Source: Various regulatory decisions

Appendix V – Comparable company descriptions

Table 21: Descriptions of comparable companies considered - Middle East

	Country	Company	Comment
TRA's comparators	**Bahrain**	Bahrain Telecom Co	Bahrain Telecommunications Company B.S.C offers public telecommunications internet services and associated products in Bahrain. The company holds the Franchise to provide all of Bahrain's public telecommunications. All telephone lines are digital.
	Kuwait	National Mobile Telecommunication Co KSC	National Mobile Telecommunications Co. (Wataniya Telecom) provides mobile telephone and paging systems services and other services in Kuwait.
	Kuwait	Zain	Mobile Telecommunications Co. (Zain) purchases, delivers, installs, manages and maintains equipment for mobile telephone and paging system equipment. These systems are used both locally and internationally.
	Qatar	Qatar Telecom Q-Tel QSC	Qatar Telecom Q.S.C (Q-Tel) offers telecommunications services. The company has a monopoly on providing domestic and international fixed line, and mobile paging, telex, mobile radio, and data transmission services.
	Saudi Arabia	Etihad Etisalat	Etihad Etisalat company provides a wide range of mobile telecoms services in the Kingdom of Saudi Arabia
Batelco's additional comparators	**Egypt**	Orascom Telecom Holding S.A.E.	Orascom Telecom Holding S.A.E. is an international telecommunications company operating global system for mobile communications (GSM) networks in the Middle East.
	Israel	NetVision	NetVision Limited offers services within the communications sector. The company offers cable television and Internet access, as well as telephone services to residential customers.
	Israel	Partner Communications Company Ltd	Partner Communications Company Ltd. is a global system for mobile communications (GSM) mobile telephone network operator in Israel. The company offers voice mail, voice messaging, information services, and data and fax transmission services.
	Israel	Cellcom Israel	Provides cellular communication services.
	Jordan	Jordan Telecom	Jordan Telecom Corporation provides a wide range of telecommunications products and services, including broadband services, prepaid calling cards, and data services
	Oman	OmanTel	Oman Telecommunications Company offer cellular telephone and internet access.
	Saudi Arabia	Saudi Telecom Company	Saudi Telecom Company offers telecommunications services. The Company offers fixed-line telecommunications, leased circuits, telex and telegraph, Internet access, website hosting, mobile telecommunications and paging services, and operates public telephones.
	UAE	Emirates Integrated Telecom	Emirates Integrated Telecommunications Company provide a wide range of telecommunication services. The company's services include mobile and fixed line telecommunications, broadband internet, and pay television services to residential and business customers in the free zones and Dubai Internet City.

Source: Bloomberg, Batelco analysis

Table 22: Descriptions of comparable companies considered - Central and Eastern European

	Country	Company	Description
TRA's comparators	**Croatia**	Hrvatske telekomunikacije dd	Hrvatske Telekomunikadije dd offers telecoms services, fixed-line and mobile, data transfer and Internet access services.
	Czech Republic	Telefonica O2 Czech Republic AS	Telefonica O2 Czech Republica a.s. operates telephone and telecommunications networks throughout the Czech Republic. The company offers telephone telegraph, telex, voice data transmission and internet services. Telefonica also offers wireless telephone services and provides international telecommunication services.
	Estonia	Eesti Telekom	AS Eesti Telekom, through subsidiaries, offers fixed -line and mobile telephone services. The Company provides local, national and international long distance telephone services in Estonia.
	Hungary	Magyar Telekom Telecommunications Plc	Magyar Telekom Telecommunications PLC provides telecommunications services in Hungary. The Company offers local and long-distance, mobile, data transmission, and Internet access services
	Lithuania	TEO LT AB	TEO LT AB offers telecommunications services in Lithuania. The company offer fixed line telephone service, e-mail, voicemail, call forwarding, call waiting, networks, toll-free lines, and facsimile services.
	Poland	Telekomunikacja Polska SA	Telekomunikacja Polska S.A. owns, operates, and leases telecommunications networks throughout Poland. The company provides local and long distance telephone, telegraph, paging, and internet access services. Telekomunikacja Polska also offers mobile telephone services through its subsidiary company.
Batelco's additional comparators	**Turkey**	Turkcell	Offers cellular telephone, voice and data services through its GSM network in Turkey. Services its customers through regional offices, subscription centres and shops across turkey, even internet store

Source: Bloomberg, Batelco analysis

Table 23: Middle Eastern comparators

	Country	Company	Do we include it?	Comment
TRA's comparators	**Bahrain**	Bahrain Telecom Co	Yes	
	Kuwait	National Mobile Telecommunication Co KSC	Yes	D:E and market cap are comparable.
	Kuwait	Zain	Yes	D:E and market cap are comparable.
	Qatar	Qatar Telecom Q-Tel QSC	No	D:E is 90%, much higher than Batelco's 13%.
	Saudi Arabia	Etihad Etisalat	Yes	D:E is comparable.
Batelco's additional comparators	**Egypt**	Orascom Telecom Holding S.A.E.	Yes	Comparable 5 year D:E of 57%.
	Israel	NetVision	Yes	Comparable D:E ratio, although large market cap. The company has no mobile component, business is split between fixed and internet/TV.
	Israel	Partner Communications Company Ltd	Yes	This is a pure-play mobile with comparable D:E but larger market cap.
	Israel	Cellcom Israel	No	Insufficient data points for 5 year, monthly beta.
	Jordan	Jordan Telecom	Yes	Comparable market cap, although small 5 year D:E.
	Oman	OmanTel	Yes	Comparable D:E, market cap and company segmentation.
	Saudi Arabia	Saudi Telecom Company	Yes	Comparable D:E ratio, although large market cap.
	UAE	Emirates Integrated Telecom	Yes	Comparable D:E and market cap, provides fixed and mobile.

Source: Bloomberg, Batelco analysis

Table 24: Central and Eastern European companies

	Country	Company	Do we include it?	Why not
TRA's comparators	**Croatia**	Hrvatske telekomunikacije dd	No	Insufficient data points for 5 year, monthly beta.
	Czech Republic	Telefonica O2 Czech Republic AS	Yes	Comparable operations and company segmentation.
	Estonia	Eesti Telekom	Yes	Comparable operations and company segmentation.
	Hungary	Magyar Telekom Telecommunications Plc	Yes	Comparable operations and company segmentation.
	Lithuania	TEO LT AB	Yes	Pure-play mobile with similar market cap.
	Poland	Telekomunikacja Polska SA	Yes	Comparable 5 year D:E ratio
Batelco's additional comparators	**Turkey**	Turkcell	Yes	Pure-play mobile company
	Turkey	Turk telekom	No	Insufficient data points for 5 year, monthly beta.

Source: Bloomberg, Batelco analysis

Table 25: Two year weekly betas

Country	Company	Equity beta (local)	Asset beta (local)	Equity beta (global)	Asset beta (global)
Middle Eastern and Eastern European integrated companies					
Bahrain	Batelco	0.6	0.5	0.4	0.3
Estonia	Eesti Telekom	0.9	0.9	0.6	0.6
Hungary	Magyar Telekom Telecommunications PLC	0.8	0.5	0.7	0.5
Israel	NetVision	1.0	0.8	0.7	0.6
Jordan	Jordan Telecom	0.9	0.8	0.6	0.6
Oman	OmanTel	0.9	0.9	0.4	0.4
Saudi Arabia	Saudi Telecom Company	0.8	0.7	0.7	0.7
Saudi Arabia	Emirates Integrated Telecom	1.0	0.9	0.8	0.7
	Min	0.6	0.5	0.4	0.3
	Max	1.0	0.9	0.8	0.7
	Average	**0.86**	**0.75**	**0.61**	**0.55**
Middle Eastern and Eastern European mobile companies					
Egypt	Orascom Telecom Holding S.A.E.	1.1	0.7	1.0	0.6
Israel	Partner Communications Company Ltd	0.7	0.5	0.3	0.3
Kuwait	National Mobile Telecommunications	1.1	0.9	0.6	0.5
Kuwait	Zain	1.3	1.0	0.6	0.4
Lithuania	TEO LT	0.8	0.8	0.6	0.6
Saudi Arabia	Etihad Etisalat Co	0.9	0.7	0.8	0.6
Turkey	Turkcell	0.7	0.7	0.7	0.6
	Min	0.7	0.5	0.3	0.3
	Max	1.3	1.0	1.0	0.6
	Average	**0.9**	**0.8**	**0.6**	**0.5**

Source: Bloomberg, Batelco analysis

Table 26: Five year monthly betas

Country	Company	Equity beta (local)	Asset beta (local)	Equity beta (global)	Asset beta (global)
Middle Eastern and Eastern European integrated companies					
Bahrain	Batelco	1.0	0.8	0.5	0.4
Czech Republic	Telefonica O2 Czech Republic AS	0.7	0.6	0.6	0.6
Estonia	Eesti Telekom	0.9	0.8	0.7	0.7
Hungary	Magyar Telekom Telecommunications PLC	0.7	0.5	0.8	0.5
Israel	NetVision	0.7	0.6	0.5	0.5
Jordan	Jordan Telecom	0.8	0.8	0.5	0.5
Oman	OmanTel	0.9	0.8	0.6	0.5
Poland	Telekomunikacja Polska SA	0.7	0.6	0.6	0.5
Saudi Arabia	Saudi Telecom Company	0.7	0.6	0.8	0.7
UAE	Emirates Integrated Telecom	0.9	0.7	0.9	0.7
	Min	0.7	0.5	0.5	0.4
	Max	1.0	0.8	0.9	0.7
	Average	**0.8**	**0.7**	**0.6**	**0.6**
Middle Eastern and Eastern European mobile companies					
Israel	Partner Communications Company Ltd	0.7	0.6	0.7	0.5
Egypt	Orascom Telecom Holding S.A.E.	1.1	0.7	1.5	0.9
Kuwait	National Mobile Telecommunications	0.6	0.5	0.8	0.7
Kuwait	Zain	0.9	0.7	1.0	0.7
Lithuania	TEO LT	0.8	0.8	0.6	0.6
Saudi Arabia	Etihad Etisalat Co	0.9	0.7	0.6	0.5
Turkey	Turkcell	0.6	0.6	0.7	0.6
	Min	0.6	0.5	0.6	0.5
	Max	1.1	0.7	1.5	0.9
	Average	**0.8**	**0.6**	**0.8**	**0.7**

Source: Bloomberg, Batelco analysis

Appendix VI – Consolidated list of answers to TRA's questions

Question 1 Do you agree with the capital structure proposed by TRA? Please elaborate.

Batelco's response:

We agree with the assumption of a gearing level of zero with respect to the capital structure proposed by TRA.

Question 2 Do you agree with the risk-free rates proposed by TRA under the base-case and alternative scenarios? Please elaborate.

Batelco's response:

Our view is that the US RFR range of 3.2% - 3.7% proposed by TRA is too low for the purposes of this determination. We consider the US RFR range of 4.3% - 5.3% to be more appropriate and have outlined the rationale for this in the main body of this report.

Question 3 Do you agree with the country risk premium proposed by TRA? Please elaborate.

Batelco's response:

Our recommendation is to use a country risk premium of 2.3%, this is 50bps greater than the CRP suggested by TRA.

Question 4 Do you agree with the ERP proposed by TRA? Please elaborate.

Batelco's response:

We believe that TRA has significantly underestimated the EMRP for the cost of capital. Based on our robust analysis, we recommend an EMRP range of 7.0% - 8.0% for the purpose of this determination.

Question 5 Do you agree with the equity betas proposed by TRA? Please elaborate.

Batelco's response:

We are of the view that both the local and global betas are of relevance for estimating Batelco's equity beta. As such we estimate an equity beta range 0.65 – 0.8.

Question 6 Do you agree with the point selection within the range? Please elaborate.

Batelco's response:

We consider TRA's point estimate of 9% significantly underestimates Batelco's cost of capital. Overall, our estimated cost of capital for Batelco is in the range of 12.85% to 15.7%, with a point estimate of 14.28%.