Purpose: To consult on the scope and timing of retail price control of certain tariffs charged by Batelco, and the rebalancing of tariffs as required.
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1 Summary

1.1 Overview

This Consultation is issued in accordance with Sections 3 and 58(b) of the Telecommunications Law (Legislative decree 48 of 2002). It addresses the need to control by regulation some of Batelco’s retail tariffs, i.e. the prices it charges its residential, business, corporate and government customers in Bahrain. The main topics that need to be considered within the consultation are:

- Tariff rebalancing – allowing for the more significant of the present cross-subsidies between the services supplied by Batelco to be largely removed over approximately the next two years.
- Price controls – placing pressure on Batelco to eliminate excessive pricing of those of its services that are least likely to be subject to competition.
- Measures to ensure the protection of that small proportion of households that may be adversely affected by necessary tariff reforms.

The Telecommunications Law provides for fixed line services to be fully opened to competition from July 2004. The pricing reforms outlined in the Consultation will contribute greatly toward the establishment of a competitively fair environment for the provision of fixed services in Bahrain. They include a mechanism that provides for a significant reduction in overall costs to the majority of consumers, even though fixed exchange line rental prices are expected to rise. These pricing reforms are necessary in order to maximise the benefits that Bahrain and its citizens can expect from liberalisation of the telecommunications sector.

The objectives of price regulation include:

- gaining sustainable benefits for consumers without unnecessarily threatening the viability of Batelco or its competitors;
- encouraging the development of effective competition in the supply of fixed telephone networks and services;
- encouraging a suitable response from Batelco in the way it provides and prices its services arising from changing patterns of demand and technology;
- giving Batelco the incentive to make the greatest possible operating efficiency gains;
- ensuring the price control meets certain social objectives.

1.1.1 Impact of proposed controls

The overall effect of the proposed retail price controls is to require a downward movement in the total bill of fixed telecommunications customers by 4% on average, in real terms, within a six-month period (if usage patterns remain as at present). This would represent a transfer of approximately BD3m of value to Bahraini customers over the initial year of price controls.

Different customers will, of course, experience different degrees of change, depending on the services they buy most.
In developing the price cap, the TRA has paid particular attention to the need to rebalance Batelco’s tariffs between services within a relatively short period of time. This need arises because some services are believed to be provided at excessive levels of profitability whilst others are provided below the cost of providing them. The price cap also has to recognise the impact on vulnerable user groups, especially those on low incomes, who could be disproportionately affected by the potential increases in the fixed element of their overall bill. As a result of its desire to protect vulnerable user groups, the TRA has imposed sub-caps for exchange line rental so that it may only be increased in a stepped manner over time. There may well be more targeted and innovative ways of protecting low income telephone users and the TRA will continue to give consideration to alternative mechanisms that may be proposed, particularly in the context of consideration of universal service obligations that may be imposed on licensed operators.

It should be noted that although the maximum permitted percentage increases in line rental that are detailed later in this section, may appear, in isolation, to be large, the absolute increase in the line rental is not considered to be significant. For example for an average household in Bahrain, the maximum permitted 6-monthly increase in line rental is estimated to represent only 3% of a median monthly bill or less than 0.04% of the median household income. For many, this increase will be more than offset by compensating reductions in international call charges and changes in effective national call charges (through the implementation of per second billing).

1.2 Key aspects of proposed controls

1.2.1 The need for rebalancing

Where access charges (mainly line rental) do not generate sufficient revenue to cover the economic cost of providing access services, what is known as an access deficit (AD) is said to exist. Tariff rebalancing is commonly understood to mean raising line rentals where they are priced at less than their relevant long-run incremental cost, and lowering international call prices so as to remove cross-subsidies between access and international calls.

At present with the current line rental prices for business and residential subscribers, Batelco is incurring an access deficit. However, it more than compensates for this through excess profits earned from the sale of other telecommunications services. While accounting data is not always a reliable means of identifying super profits (also known as economic profits), the data suggests that super profits earned in providing at least the following services, are more than sufficient to fund the present AD:

- terminating incoming international calls from foreign operators,
- selling outgoing international calls to Bahraini subscribers
- providing leased lines

The TRA therefore considers that tariff rebalancing, and specifically the period over which line rental prices will be rebalanced upward, can comfortably extend for 12 months following the full opening of the market to competition in July 2004, without Batelco incurring exceptional losses.
1.2.2 Proposed retail price controls

In regulating retail prices in Bahrain, the TRA intends to adopt incentive-based price-cap regulation, which is generally regarded as the most effective approach. This approach can involve the regulatory authority committing for a period of perhaps 4 or 5 years, to a set of controls that incentivise the regulated firm to increase its efficiency significantly over the period.

However, for the first price-cap, the TRA is considering an interim one year price cap, which will involve adjustments at approximately 6 monthly intervals of CPI-4%.

The need to employ a relatively short period price cap is explained by the unpredictability of market developments in the period leading up to and following liberalisation in July 2004, and also by a need to complete a process of tariff rebalancing over the next two years. Moreover, before moving fully to incentive-based price capping in the future, the TRA may wish to include wholesale services in one or more price capped baskets of services. At present, wholesale services, such as interconnection and possibly some forms of access, are to be addressed by a means of a reference interconnection offer (RIO) and, potentially, a reference access offer (RAO).

The TRA’s intention with regard to the first price cap is, in addition to addressing imbalanced tariffs, to also focus on retail services where there are expected to be individual instances of enduring problems arising from the dominance of Batelco which cannot, practically, be rectified through the regulation of upstream markets. Such situations, unless addressed by the TRA, can result in competition not developing in retail markets.

1.2.3 Price cap basket

Price caps are typically applied to a ‘basket’ of services, within which the supplier of the services may adjust prices provided that the overall effect is compliance with the price cap level.

At least in the first year, the TRA favours the use of a single basket in order to accomplish both tariff rebalancing and price capping. This entails the inclusion of retail tariffs for a greater range of services than those where an enduring significant market power (SMP) problem might exist. But in order to prevent the possibility that Batelco could strategically target the required price reductions in order to frustrate new entry and investment, thus keeping prices high for the least contestable services, the TRA proposes sub-caps be applied to:

- national call prices, and
- leased line prices.

In order to control the pace of rebalancing, sub-caps are also favoured for:

- residential and business access (i.e. line rentals, connection and reconnection charges).

For national calls and particularly leased lines, Batelco’s accounting data suggest that these services are earning significant profits. The prices for leased line services offered to other licensees are intended to be addressed under other regulatory measures including a Reference Access Offer from Batelco, and for this reason the TRA is minded to exclude them from the retail price control basket. For retail national and international leased lines provided to end-users in Bahrain, the TRA initially proposes...
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Retail price controls

to apply a sub-cap at the same level as the main price cap, i.e. CPI-4%, but desires to have the flexibility to adjust this individual parameter.

Batelco has proposed to introduce elapsed time charging (ETC) before the end of 2003. This would mean with a price for national fixed to fixed of BD 0.021 for 3 minutes, elapsed time calls of less than 3 minutes would be charged at the appropriate proportion of BD0.021.

ETC will significantly reduce the profitability of the national call service provided by Batelco. The TRA’s initial analysis suggests that ETC and a price of BD 0.007 per minute for national calls is not likely to be far out of line with the economic cost of provision. The TRA therefore proposes to sub-cap national calls at CPI-0 for the next 12 months, but intends to begin reviewing the topic in detail before the end of first price cap. The TRA may also address at or before this time, the issue of the possible introduction of peak and off-peak pricing for national calls.

In addition, Batelco will not be free to raise the prices for directory enquiry (DQ) and emergency call services provided to other network operators (ONO), as in the first 12 month price cap these will also be subject to a Reference Access Offer.

The TRA considers that, following an approximate two year period of rebalancing, the retail price of access should be close to its economic cost and residential access should be set at approximately 60% of the price for business access. Because the TRA is awaiting further data from Batelco in order to better estimate the economic value of its access network, it is not possible at this time to provide exact values for the sub-caps on access. The TRA expects that the sub-cap on access prices, representing the maximum permitted increase in each capping period, will be in the range CPI+17% to CPI+24%.

These are maximum permitted access price rises that are estimated to be needed to remove Batelco’s access deficit over the anticipated rebalancing period. Over the same period Batelco will need to make significant reductions in international call prices in order to meet the price cap requirements.

Retail services to be excluded from the basket are essentially those that are subject to competition. Those proposed are:

- Subscription payments for ADSL and dial-up ISP services,
- Services provided by Batelco’s GSM Network, and
- Revenues or credits from foreign operators regarding incoming international calls.

1.2.4 Related measures to protect certain consumers

In the short to medium term, rebalancing may result in higher phone bills for households that make very few international and national calls. Some of these households may have only modest incomes, and TRA wishes to find ways of softening the impact of rebalancing on these households.

The TRA’s initial estimates are that up to 17% of households may exhibit the lower levels of fixed telephone usage which could possibly result in a net increase in their overall telephone bill for fixed services. However, it must be remembered that the number of mobile phones now exceeds the number of fixed lines. Therefore, the lower levels of fixed service usage may be as a result of mobile substitution of fixed calls, rather than any lack of affordability. In many cases, households may not have a

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telephone line or make limited use of the facility, because they do not value the service, as they may do other facilities, such as a TV.

The TRA will, however, continue to give consideration to mechanisms that may be proposed to mitigate the impact of increases in the cost of fixed services, including, for example, the use of specially designed service packages that enable the customer to tailor the services adopted to match their circumstances. This approach works by offering all subscribers the choice of two (or more) packages, typically a standard service offer, and a reduced service offer. Types of reduced service packages include:

- an outgoing calls barred service, or
- prepayment for outgoing calls, most probably priced above the level for standard subscribers, or
- a low user qualifying requirement.

The TRA is considering requiring Batelco to develop proposals for these types of packages. Until the packages are developed, and considering the other changes in the Bahraini telecommunications market, including the establishment of a second mobile operator with its expected effect of further reducing the cost of mobile services, it is not possible to predict accurately the need for and level of adoption of such packages. The TRA, however, expects only a small proportion of households to need to opt for reduced service packages.
2 Introduction

This consultation document sets out the TRA’s proposals regarding the implementation of retail price controls on Batelco, currently the main provider of telecommunications services in Bahrain. The objectives of retail price regulation include:

- capturing as much of the consumer benefits as possible on a sustainable basis without unnecessarily threatening the viability of Batelco or its competitors;
- encouraging the development of effective competition in the supply of fixed telephone networks and services;
- encouraging a suitable response from Batelco to changing demands and technology in the way it provides and prices its services;
- giving Batelco the incentive to make the greatest possible operating efficiency gains;
- ensuring the price control meets certain social objectives.

The TRA is proposing to apply retail price controls to some of Batelco’s services to address the need for Batelco to rebalance some of its retail tariffs, and to provide for reduced prices and improving efficiency on the part of Batelco in those areas of its operation that are not subject to competition.

The objective of the document is to set out the rationale behind the application of retail price control in relation to Sections 3(c)14 and 58(b) of the Telecommunications Law, the TRA’s proposed values of various parameters within the controls, including timescales and to seek interested parties comments on the proposals.

The controls will only be applied to certain services provided by Batelco. The proposed price controls do not directly affect other operators. However, the controls proposed will have an impact on the prices paid for telecommunications services by all users in Bahrain. All users could therefore be considered as interested parties in this consultation.

The document is set out as follows:

Section 3 introduces the need for rebalancing of retail tariffs;
Section 4 introduces the rationale behind retail price regulation;
Section 5 discusses the proposed process of controlling prices;
Section 6 introduces aspects of the design of the price controls for Bahrain;
Section 7 discusses the proposed value of X and the use of sub-caps
Section 8 discusses related universal service issues; and
Section 9 invites comments from interested parties to specific issues raised in the document.

There are a number of annexes providing more detailed discussion of the regulatory and economic issues relating to the proposed use of retail price controls.
3 The need for rebalancing

The situation in Bahrain of imbalanced tariffs is also one shared by many operators in the liberalised countries: international call prices are far in excess of their incremental cost, and line rental prices are far below incremental cost. To be completely accurate reference should be made to the price of “access” rather than just line rental. Access comprises line rental, connection (installation) and reconnection charges, although to the extent that the latter two are paid for by the subscriber as one-off charges, focusing on line rental is appropriate.

Where access charges (mainly line rental) do not generate sufficient revenue to cover access costs, an access deficit (AD) is said to exist. Where an AD exists a higher than normal return on capital (profit) needs to be earned on another service or services if the operator is to make an adequate return on capital overall. In other words, an AD implies the need for an internal cross-subsidy in order for the operator to continue carrying a fair value for the capital invested in the access network.

Tariff rebalancing is commonly understood to mean raising line rental where it is priced at less than the relevant incremental cost, and lowering international call prices so as to remove cross-subsidies between these different services. It should be noted that other services apart from international leased lines may also contribute to the cross subsidy. Tariff Rebalancing can be thought of as the minimum price adjustments required in order to bring about an end to inter-service cross-subsidies to access.

At present with the current line rental prices for business and residential subscribers, Batelco is incurring an access deficit, which it comfortably cross-subsidises with profits earned from the sale of other telecommunications services. While accounting data is not always a reliable means of identifying super profits (also known as economic profits), the data suggests that super profits earned in providing at least the following services, are more than sufficient to fund the present AD:

- terminating incoming international calls from foreign operators;
- selling outgoing international calls to Bahraini subscribers;
- providing leased lines.

The main benefit of rebalancing is to create a fair competitive environment for new entrant companies and to remove the competitive distortion inherent in a sustained access deficit which represents a restraint on the overall level of economic activity in the telecommunications sector. The maintenance of high international prices reduces the competitiveness of the Bahraini economy in general, and the cross-subsidisation of low access prices is not believed to increase the adoption or usage of fixed telephone services across the population by a significant degree.

The TRA therefore considers that tariff rebalancing is a key element in the liberalisation of the sector in Bahrain and the proposals included in this consultation are intended to achieve it in the most effective manner with out the imposition of unreasonable increases in fixed access charges.
4 Controlling retail prices

4.1 The rationale for retail price regulation

The rationale for regulating retail prices is typically founded on a finding of enduring market power (e.g. SMP). Retail price control is, however, only one option within a range of regulatory solutions that may be implemented when enduring market power is identified. Other possibilities include the regulation of upstream markets such as occurs with interconnection. The document discusses these issues further below.

According to section 58 of the Law, the TRA may choose to apply tariff controls to licensed operators where the licensee is found to have significant market power (SMP). SMP is defined broadly in the Law as a “…licensed operator which holds twenty-five percent or more of the market share of the relevant market” although the Law states that “The Authority may determine that a licensed operator has significant market power even if such operator holds a share of less than twenty-five percent of the market or that it does not have significant power even if it holds more than such percentage”.

Controlling a firm’s retail prices is perhaps the most interventionist of all regulatory mechanisms. As a general rule the TRA would not consider a 25 percent market share to be a basis for sufficient market power such as would warrant retail price controls. The TRA’s preferred approach to dealing with market power problems in retail markets will be to free up upstream markets so that competition can develop in retail markets.

Market power implies a lack of effective competition. Firms that have enduring and substantial market power in a particular market have no incentive to price their services at competitive rates. They typically charge significantly higher prices than those that would prevail if the good or service was provided competitively. The reasons firms with SMP can do this is because there are insufficient alternative supplies of substitutable substitutes, and thus even at high prices the SMP firm will retain most of its customers and earn excess profits. If an entity has a great deal of power in a market it will face a more steeply sloped demand curve than operators with less market power. Annex A outlines in more detail the main problems arising from market power.

Where there is significant market power, and it persists in the long term, we can say that there is enduring market failure; in other words, that market power is excessive and persistent. Where it exists in Bahrain, such a situation represents an inefficient form of industry structure and would result in Bahrain enjoying significantly depleted economic benefits compared to an industry organisational structure that is competitive.

The accepted treatment for this type of market failure is liberalisation and competition. However, in telecommunications (as well as in some other network industries) there are enduring bottlenecks which tend to make liberalisation ineffective in introducing competition into certain markets. In markets containing such bottlenecks some form of regulatory control over prices is normally recommended.

4.2 Approaches for regulating prices

There are broadly three different approaches that have been used to regulate or control prices:

- Political (or discretionary) price setting
- Rate of return regulation
4.2.1 Political price setting

The pricing of residential telephone service in most countries has historically been politically determined, either directly by the minister, a parliament, or indirectly through politically appointed persons who managed the State owned operator. Virtually without exception, political price setting resulted in access (mainly line rental) being subsidised, with outgoing international calls and incoming international call termination, paying much if not most of those subsidies, i.e. the price of access was below cost, while the prices of international services were above cost. Also as international services tend to be disproportionately purchased by businesses, the cross-subsidies tended to result in residential subscribers being subsidised by businesses.

Presently, prices in Bahrain also fit this description; line rentals are much less than the average cost of providing customers with access to the network, while international services are priced at levels that are much higher than are required for these services to cover their costs. On the basis of data supplied by Batelco, line rental prices in Bahrain are currently estimated to be approximately 30 to 40 percent of what the TRA estimates annualised average per line access costs to be in Bahrain. On the other hand, average international call prices are many times higher than they need be in order for Batelco to cover the full cost of provision including a fair return on capital employed.

Many countries are moving away from this form of price setting in moving to liberalise their telecommunications industry. Bahrain is among them. The rationale for this follows from the importance of telecommunications services to commerce and trade, and the convergence of telecommunications, computing and video technologies and services. In undertaking liberalisation, however, Bahrain also needs to address tariff rebalancing in order that Bahrain captures the largest share of the benefits that liberalisation can bring, and to prevent Batelco’s assets being unfairly stranded by it being required to compete with rivals on the basis of prices that in some important cases diverge considerable from the cost of provision. We address tariff rebalancing in more detail in chapter 6 and Annex D.

4.2.2 Rate of return regulation

Rate of return (RoR) regulation sets the rate of return that a company can earn on an approved capital rate-base. It permits the regulator to constrain any super-normal profits earned by the company. It gives the operator certainty that it can earn enough revenues to cover its costs including a reasonable return on its prudent investments. However, RoR regulation requires a great deal of regulatory supervision in order to determine the capital items that will be admitted into the rate-base and their respective values. Arguably the main problem with RoR regulation is that it removes the regulated firm’s incentive to minimise it costs and improve its efficiency. Other well documented problems concern other inefficiencies associated with RoR regulation, and its inappropriateness as a mechanism for transitioning to competition. For these reasons, over the last 15 or so years, it has largely been replaced by price cap regulation. We do not address RoR regulation further in this document.
4.2.3 Price cap regulation

Price cap regulation is designed to control the prices of a group of services in a revenue weighted basket, but does not as a rule, control the specific price of services individually. This enables the regulated firm to choose the prices of individual services in the basket of price controlled services, subject to the controls imposed on the total value of the basket. In this way the price cap mechanism constrains the operator’s freedom to generate excessive profits, but does not generally remove the operator’s control over setting individual prices. The regulator should take care in setting the cap so as to provide for a fair sharing of the any efficiency improvements by the regulated firm, between the firm’s shareholders and its customers. In this way price capping encourages ongoing cost reductions, and provides lower consumer prices in the medium and long-term than can be provided by other forms of price regulation. The advantage of price capping over other forms of price regulation is that the mechanism works on the operator’s incentives in roughly the same way as competition does. Price cap regulation is presently recognised as the superior means of controlling the level prices in market where competition is not presently possible.

4.2.4 The TRA’s preferred approach

The TRA believes the use of incentive based regulation in the form of price capping is the most appropriate option for Bahrain, because it rewards Batelco for improving its services and improving its efficiencies, it enables a number of regulatory challenges to be met in Bahrain within one instrument and is internationally accepted as the most effective mechanism for controlling prices.

Consultation:

The TRA seeks respondents views on whether the use of incentive based regulation in the form of price capping is the most appropriate option for Bahrain.
5 Controlling prices through a price cap

5.1 The price-cap formula

Retail price cap regulation is a form of incentive regulation, and is commonly used in liberalised countries. Price capping is applied to a weighted basket of services that are to be price controlled. At an aggregated level the price cap formula is defined as \[ \text{CPI} - X \], where CPI (consumer price index) indicates the existing inflation rate and ‘X’ is the differential of the total factor productivity growth rate of the telecommunications operator and the total factor productivity growth rate of the Bahraini economy.

CPI is a retail price index published regularly by the Bahrain Monetary Agency (BMA) based on data gathered by the Central Statistical Office (CSO) and represents the official source for estimation of the inflation rate in Bahrain.

Calculating the value of X is not an exact science and this consultation addresses the associated issues further below.

The basic price cap formula is:

\[
\text{Change in the weighted price of the basket} \ (\Delta P) = \text{CPI} - X
\]

If prices were regulated to remain constant in real terms, nominal prices would need to change at the same rate as inflation (i.e. CPI). This would not be a satisfactory arrangement in Bahrain at present due to two main reasons:

1. The TRA estimate of Batelco’s profitability shows it to be significantly higher than other similarly placed firms earn in competitive markets, and
2. Batelco is almost certainly operating at significantly lower efficiency than similarly placed firms in competitive markets.\(^\text{ii}\)

Together these factors provide compelling evidence that Batelco’s average prices are too high.

Moreover, an indication that X should be additionally negative, comes from the fact that unit costs for telecommunications network operators have trended significantly downward for several decades, and are expected to continue to do so on an annual basis. The three main factors explaining this trend are:

- The relative cost of capital inputs (telecommunications equipment) has been falling for many years;
- The economies of scale enjoyed by telecommunications operators, i.e. the average cost of a unit of telecommunications output tends to decline as the network and traffic expands, and
- The increased use of lower cost and more reliable technologies, e.g. fibre optic and digital technologies, requiring significantly less maintenance and repair.

These factors suggest that X should be additionally negative as over time Batelco’s internal efficiency will improve, and its underlying costs will continue to decline.

Formally, the X factor consists of the following two elements:
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- The value of the growth in Total Factor Productivity (TFP) for the telecommunications sector covered by the price capped services, in relation to the productivity gains of the economy as a whole. This is calculated by subtracting the change in TFP of the economy as a whole from the change in the rate of TFP growth of the operator in providing the price controlled services.

- Exogenous factors that affect the rate of return of the telecommunications operator but are outside of the control of the operator. These effects should be allowed for in setting the price cap. Relevant exogenous factors include:
  1. Currency fluctuations,
  2. War and especially its affects on commerce (e.g. raising or lowering oil prices),
  3. Natural disasters,
  4. Strikes, and
  5. Unforeseen acts by government that significantly affect the commercial environment.

It is widely accepted among regulatory experts that these exogenous effects should be removed from X. In some jurisdictions this is done expressly through using a separate variable for them called ‘Z’. By doing this we get the following price control formula:

\[ \Delta P = CPI - X + Z, \]

where

\[ X = TFP_{Batelco} - TFP_{Bahrain}, \]

and

\[ Z = \Delta P_{Inputs_{Bahrain}} - \Delta P_{Inputs_{Batelco}}. \]

In order to derive the X factor, Equation (3) above requires us to subtract the productivity growth of the economy as a whole from the productivity growth of Batelco. As noted above, the reason for this is that the X factor should reflect the degree to which productivity in producing telecommunications outputs has increased relative to the productivity growth of the economy as a whole.

5.2 Return on capital employed (ROCE)

Although the price cap has replaced rate of return regulation, the regulated operator’s rate of return on capital employed (ROCE) is normally a key input into the financial modelling used to set X. ROCE provides a reference point for setting the X value.

ROCE is defined as the return on sales, (i.e. profit / sales) times sales / capital employed. But in order to obtain a number that reflects economic profitability a number of adjustments to the component accounting measures are normally required:

1. Assets should be re-valued from historic to current cost;
2. Adjustments need to be made for differences in the timing of recorded receipts and payments, and when cash was actually paid or received, and
3. The capital rate-base should be adjusted in order to accurately reflect the items, or quantity of items (assets and capitalised labour) used in the provision of price controlled services by an efficient business. There are two classes of problem here:
• Intangible assets which are not carried in company accounts, such as R&D and the development of intellectual property, and which are not purchased by the company and thus not listed as assets but were developed internally, should in principle be valued and added onto the capital rate base.

• Items that were purchased with apparent imprudence would not normally be included, such as gross over-capacity and overly lavish offices for company executives. Usually these would be considered as being outside of the items for which the costs could be recovered from subscribers, and thus they would be excluded from the items used to calculate the operator’s existing ROCE which is to be used for price-capping.

4. Where invested assets are long-lived, as is often the case with telecommunications networks, an expectation of demand volatility can result in significant errors in profit measures that have been inferred from the profitability of certain assets using one or two years of revenue data. This problem does not necessarily provide a bias in the estimates (i.e. provide for more over than under-prediction, or visa versa), but is likely to introduce prediction errors.

In the case of 1 to 3, making these adjustments is a complex and time consuming exercise, but one that is explained by the need to avoid imposing an unfair ‘X’ value on Batelco, or avoid subscribers paying inflated prices for largely monopolised services. In the case of 4, forecasts of future demand can be used to reduce the errors, although clearly this will not completely prevent them.

The TRA’s view is that the existing unadjusted accounting data, suggests a level of profitability which is sufficiently above that needed to provide a fair return to investors, that these adjustments would not change the observation that Batelco is excessively profitable, and would not materially effect the TRA’s choice of ‘X’ value for the first year or two of price capping. In other words, at the end of the initial price capped period, the TRA is confident that Batelco profitability will still be above what is needed to provide a fair return on capital to Batelco’s investors. Indeed, as suggested already, the TRA considers that the ROCE for Batelco’s fixed line business may underestimate its potential profitability due to the likelihood of current operating inefficiencies at Batelco. The TRA’s information suggests that a value of “X” of 8 – 10% over a twelve month period will leave a sufficient margin of error that at the end of this period Batelco will still be earning profits in excess of those required to provide investors with a fair return.

Cost of Capital

Defining the level of returns that is fair, termed the “cost of capital”, refers to the return an operator needs to generate in order to continue attracting investor’s funds. Although there are many forms of investment, it is reasonable to group them into the two most common forms of investment: debt and equity. The cost of capital of an operator is the weighted sum of the return required by investors in equity and the return required by those investing in the company’s debt. This is commonly referred to as the weighted average cost of capital (WACC). The TRA has estimated Batelco’s cost of capital in a separate determination, also issued on 9th August 2003, ref ERU/DE/004.

The TRA is of the view that reliance on largely unadjusted accounting data for determining Batelco’s ROCE will suffice at least until liberalisation occurs. Given the present profitability of Batelco based on unadjusted accounting data, the TRA contends
that adjusting the value of the rate-base in ways outlined in this section would make no practical difference to the determination of X, at least for the first 12 to 24 months.

5.3 The mechanics of the basket

Within the price cap formula, the symbol “X” signifies a weighted basket of services that are to be price controlled. The weightings can be determined in several ways, although in designing the price cap and its weighting mechanism, a choice is needed between using indices or actual revenues in the basket’s operation. Indices are created from revenue weights, but once created their focus is on prices. The advantage of indices is their simplicity and transparency of operation. Their weakness is that in practice they can result in a higher price level for price controlled services than the TRA intended when calculating the required overall price reductions.

By working directly with revenues at all stages of the price control mechanism, on the other hand, calculations tend to be more complicated, but this approach has the advantage of maintaining a tighter relationship between the modelling work that underpins the calculation of ‘X’ with its reliance on data concerning revenues and forecast rates of return, and the changes in prices and revenues resulting from the application of the price controls.

The preferred method chosen by the TRA is to work directly with revenues at all stages of the mechanism.

Further detail on the mechanics of the operation of the basket is found in Annex B.

Consultation:

_The TRA seeks respondents views on the use of the CPI-X formula as an appropriate price capping method, and the proposal to work with revenues rather than indices within the mechanism._
6 Policy aspects of basket design

6.1 The length of period over which the price cap should apply

Price cap regulation is now widely accepted as being superior to rate-of-return regulation. However, ROCE looms large behind the financial modelling used to set the value of X in CPI-X price cap regulation. The principal advantage that price capping methodology has over rate-of-return regulation is that the regulated firm is in practice able to increase its ROCE over the price capped period by improving its efficiency. In order to provide sufficient incentive for this to occur, the period between price cap reviews must be several years. The shorter is the price capped period, the more CPI-X price cap regulation resembles rate-of-return regulation. If price caps are reviewed each year there is little difference between the two approaches.

On the other hand, for the first price cap set by an authority there is a higher risk of inaccuracies, including, for example, the difficulties faced by regulatory and industry experts to accurately forecast revenue and sales growth, and the uptake of new technology over an extended price capped period. Especially in the year or two following full liberalisation, Batelco’s business environment can be expected to change fairly rapidly. Hence, there is also a greater risk that X may have been set at an inappropriate level due to incomplete data supporting the forecasting and, at least initially, insufficient experience in price capping under local conditions.

Thus, the TRA recommends that the initial price cap, and possibly a second price cap, should be set annually. After this period there will likely be a rigorous review of Batelco’s ROCE and operational efficiency, before setting a longer-term price cap i.e. one that the TRA commits to for a 4 or 5 year period.

The TRA is, therefore, of the opinion that the first price-cap should apply for a year from as soon as practical in 2003, and a second for a subsequent year after that.

Consultation:

The TRA would like the views of interested parties on whether one or two annual caps should be set by TRA before moving onto an extended price capped period.

The TRA would like respondents views on whether they agree that for the first price controlled basket in Bahrain, the price cap should run for 1 year, after which time it would be reviewed.

6.2 Competition conditions

The principles of price capping are that a service provided by a licensee should be considered for inclusion in a retail price cap where the following conditions are satisfied:

- The service is not subject to competitive pressure or the threat of competition, i.e. where there is an enduring and high level of market power.
- The lack of competitive pressure is derived from a competition bottleneck rather than a firm’s superior grasp of technology, a technological innovation that is unique to the firm, or superior management or business plans;
The bottleneck cannot be dealt more efficaciously by regulation of an input market, e.g. regulating interconnection rather than retail call prices;

The service is not embryonic or growing very rapidly. The rationale here is that price capping such services is likely to hinder the operation of the market; it may reduce or slow investment, hinder the development of competition, and even result in price controlled firm winding back its planned supply. An exception may occur where fairly rapid rebalancing is required (as is the present case in Bahrain) - this issue is discussed further below, and

The service in question has a substantial revenue base, or is an essential input into the provision of end services that represent a substantial revenue base, and the firm has an enduring and high level of market power.

Services that usually pass these conditions and are thus included in telecommunications retail price caps are:

- Residential access, including rental connection and installation,
- Business access, including line rental, connection, and installation, where satisfactory competitive provision is absent and not likely to develop in the foreseeable future.
- Local calls (where regulations are not present that effectively allow subscribers to choose between different operators when originating local calls) – this may be considered to be equivalent to national calls in Bahrain.

Although the core network component of leased lines may be excluded from the basket, as can be leased lines in central business districts where there is very high demand for telecommunications services, other leased lines are normally included. Thus, price caps may also include,

- Leased lines and leased line components.

The inclusion of these four bulleted services is justified for the following reasons:

(i) due to economies of scale in the provision of fixed line service, little competition is possible for their provision in the foreseeable future;
(ii) for each of these four services, there is insufficient substitution on the margin with any other service, such that they each constitute a relevant market in themselves, and
(iii) The incumbent operator is dominant in these markets over the period of relevance.

6.3 Market power of Batelco

It can be seen that the foregoing arguments regarding candidate services for inclusion in any price cap in Bahrain apply to Batelco at the current stage of market development.

The relevant markets relating to these services may be defined as follows:

- For public telephone services provided at a fixed location, the retail market at a general level may be described as ‘Access to the public telephone network or
the provision of a connection or access (at a fixed location or address) to the public telephone network for the purpose of making and/or receiving telephone calls and related services’.

Telephone service in Bahrain is currently supplied as an overall package of access and usage. It is possible that, in the future, various options and packages may be available to end users depending on their typical usage or calling patterns, but until July 2004 end users have to purchase both fixed access and outgoing fixed calls from the same undertaking, i.e. Batelco. Therefore, it may be more appropriate, for the immediate future, to define the market as “for the supply of fixed access and national calls”.

It is, however, possible to distinguish between business and residential markets for access because the contractual terms of access and service vary, particularly in terms of price.

In other jurisdictions where liberalisation is more developed, it is possible to identify separate retail markets for access (together with incoming calls) and outgoing calls and in time this may happen in Bahrain with the arrival of alternative fixed network operators. It may, therefore be appropriate to define ‘outgoing call services’ as separate from access at this stage. In respect of outgoing telephone calls, end users do not perceive national calls, calls to mobiles or international calls to be substitutes for each other. Therefore, it can be argued that these also constitute separate retail markets.

- National and international retail markets for fixed capacity-based data services (i.e. leased lines or private circuits)

Batelco currently offers leased lines in 12 bandwidths ranging from 9.6 Kbps to 2 Mbps. These would appear to form a chain of substitutes such that all bandwidths would be included in the market definition. Higher bandwidths will likely be in demand, and following liberalisation in July 2004, it is possible that competitive conditions will develop in certain urban areas, although this may be limited to bandwidths above 2 Mbps, such that the competitive conditions for the provision of higher bandwidth leased lines in certain areas, are sufficiently different for more than one product market to exist in Bahrain. However, at present, the TRA considers the product market to be for all leased lines.

The relevant market for leased lines is discussed in greater detail in a forthcoming consultation paper “Dominance in certain markets and the provision of access”. This paper will be published during the currency of this public consultation and interested parties are referred to that paper for further discussion of this relevant market.

These market definitions may change as a result of the arrival of full competition after July 2004. It is, however, self evident that, at present, Batelco has significant market power in the relevant markets by the fact that it is currently the only supplier of the services. In a prior submission to the TRA in connection with an earlier consultation, Batelco has acknowledged that it is dominant in these relevant markets.

For the foreseeable future, and particularly for the proposed period of the initial price cap, it is not expected that Batelco will face significant competition at the retail level in these markets. Even allowing for full liberalisation after July 2004, which permits alternative operators to enter Bahrain to offer these fixed services in competition to
Batelco, it is expected to take some time for alternative operators to become established at either the retail or wholesale level. Batelco is, therefore, expected to retain significant market power in these markets at least for the period of the first year of retail price controls.

Consultation

The TRA seeks respondents’ views on the most appropriate relevant market definitions in relation to the services discussed and the proposed declaration that Batelco has SMP in these relevant markets.

6.4 Batelco’s Access Deficit.

Batelco’s current line rental revenues are perhaps only 35 to 40 percent of what is needed for Batelco to cover its access network costs, i.e. Batelco has an access deficit (AD). The reform of prices so that they better reflect underlying costs (i.e. the removal of an AD and the lowering of international call charges) is known as tariff rebalancing. Where price capping is also required it can make sense to initially design the price controlled basket in order to accomplish both tasks.

Batelco’s current AD is presently comfortably cross-subsidised through the generation of excess profits elsewhere in Batelco’s business. While accounting data tends not to provide an accurate measure of the economic profitability of a service category, the level of accounting profits is such as to suggest that the profits earned in providing at least the following services, could presently fund Batelco’s AD:

- profits from handling and terminating incoming international calls (i.e. paid by foreign operators);
- selling outgoing international calls to Bahraini subscribers;
- providing leased lines

The profitability of these services gives Batelco some degree of comfort that it will be able to continue funding an AD after full liberalisation, even if it is facing competition in the provision of international calls. The TRA therefore considers that tariff rebalancing, and specifically the period over which line rental prices will be rebalanced upward, can comfortably extend for 12 months following full liberalisation in July 2004, without Batelco incurring windfall losses.

Note: It is not necessary that Batelco incur any loss because of its access deficit while it retains its monopoly. This is because Batelco is supplying a range of services jointly, and Batelco is charging very high prices for other services that are jointly consumed alongside access. It is thus not correct to suggest that an access deficit necessarily entails a loss for Batelco.

This topic is discussed further in the section below addressing sub-caps, and in Annex D which provides an analysis of pertinent tariff rebalancing and access deficit issues.

6.5 The number of baskets

In Bahrain, in addition to price capping services or elements where there is expected to be enduring dominance, a weighted basket of retail services is also needed in order to allow for tariff rebalancing by Batelco. Presently, there are substantial cross-subsidies


<table>
<thead>
<tr>
<th>Retail price controls</th>
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<tr>
<td>taking place between services, with access being the principal recipient of these cross-subsidies.</td>
</tr>
</tbody>
</table>

It is possible to separate the two policy goals – price capping, and tariff rebalancing – by having two baskets, one a price cap basket that includes only services and elements that are thought to be enduring bottlenecks, the other a rebalancing basket containing most retail services. Access services, especially line rental, have to increase in price, while international calls (and some other services) have to decrease in price. By having these two baskets, it is keeps the two mechanisms separate, which on the face of it has the advantage of assisting in not confusing the two issues – price capping and tariff rebalancing.

Services that the TRA considers should be included in the price-cap basket, are: residential access; business access; national calls, and leased lines.\(^iv\) However, as the TRA is minded to place sub-caps on each of these services (sub-caps are discussed in more detail in Section 7), there would not appear to be any advantage gained in operating two baskets – one for price capping and the other for tariff rebalancing. The TRA therefore proposes to operate one basket only, with sub-caps on access, national calls and leased lines.

Such a combined price capping basket generally needs a wider inclusion of services in the basket, than a price cap that does not need to accommodate tariff rebalancing. It will, for example, include outbound international calls, whereas a price cap basket is unlikely to. These issues are addressed in more detail below.

Consultation:

*The TRA seeks respondents views on the proposal to employ a single basket with sub-caps on particular services.*

### 6.6 Proposed omissions from the basket

Given the need for the price cap basket to address rebalancing and price-capping, the services omitted from the basket should only be restricted to those which are subject to competitive pressures over the short term.

Retail services the TRA considers should be left out of this basket are:

- Subscription payments for ADSL and dial-up ISP services,
- Services provided by Batelco’s GSM Network, and
- Revenues or credits from foreign operators regarding incoming international calls.

End-user ISP services are now liberalised in Bahrain. This is the main reason behind the TRA’s preference to leave them out of the basket. However, we note that ADSL subscription prices are very high in Bahrain by international standards, and by leaving them out of the basket, Batelco will not receive any reward for reducing the ADSL subscription price, i.e. it will not be able to claim a price reduction in this service against the total revenue it must ‘give away’ through lower service prices, as specified by the X in the CPI-X basket. However, the TRA considers that ADSL and dial-up service are probably in the same relevant market, and together with leased line ISP access, the TRA is of the opinion that competitive ISP entry will provide an incentive.
for Batelco to continue the downward price trend we have seen recently for end-user ISP services provided by Batelco.

The second mobile operator (SMO) will begin providing services in competition with Batelco later this year, and thus mobile retail services should not be price capped for the initial one year cap. The continued exclusion of mobile retail services from any retail price controls will be contingent on the development of fair competition in that market.

The prices Batelco charges to foreign operators for transiting, switching and terminating calls originated in other countries, tend to be determined by bilateral negotiation, although technological development and liberalisation are also contributing to a downward trend in ‘settlement’ prices. Incoming settlement rates are, however, still a significant source of excess profits for Batelco. The TRA’s preference is to leave this service, which is paid for by foreign operators, out of the basket.

Additionally, the TRA is considering whether to also exclude from the basket,

- Revenues pertaining to Batelco’s discounted services.

Where discounts are provided and liberalisation is on the horizon, Batelco could target price reductions needed to meet the price cap, to those services and customers that it considers would likely be targeted by new entrants. This would have the effect of frustrating competition and not providing reductions in those markets where Batelco was most dominant.

On the other hand, where a large number (perhaps majority) of customers get some sort of discount, leaving discounts out of the basket may have the unintended result of seeing these prices remain unchanged, or even increase. The main service of relevance here is leased lines.

The TRA will be asking Batelco for more information about the discounts currently provided. This information should assist the TRA in deciding whether to include discounts in the basket. However, before the next price cap, the TRA is considering the necessity for a Consultation process regarding regulations applicable to dominant operators, which addresses the topic of strategic discounting, strategic delays, and strategic behaviour generally, which has an anticompetitive purpose as one of its effects.

Consultation:

The TRA seeks respondents views on the services to exclude from the basket for this initial cap.

For this price cap, the TRA is also interested in the views of respondents regarding the inclusion or exclusion of discounts. For the period of this price cap, it should be assumed that these discounts will not have been vetted by the TRA in regard to their strategic profile.

6.7 Carry over provisions

In the event that Batelco exceeds the price reductions required in a particular period, the TRA could either; allow automatic carry over of the price reductions above the target so that Batelco could reduce prices by less in the following period; refuse to
allow such carry over; or examine the case for carry over on its merits and make a
decision at that time.

There may be concerns that if the Batelco were to be able to automatically carry over
achievements in one period against later periods, it could have scope to target the
majority or all of its price reductions in those services where competition becomes
effective earliest, thus making competitive market entry more difficult. It is therefore
believed that the TRA will examine the case of carry-over on its merit and make a
decision on a case by case basis.

Consultation:

The TRA seeks respondents views on the proposal to examine the potential for carry
over on a case by case basis.
7 The value of ‘X’ and proposed sub-caps

7.1 The value of ‘X’

The TRA proposes to apply the overall basket value assigned to ‘X’ on a six monthly basis initially. This means that there will be two minimum reductions required in the overall price level for the services that are included in the basket. Whenever Batelco raises the price of a service that is included within the basket, the TRA will require that at the same time, prices must be lowered for other capped services in order to make sure that the revenue weighted value of X is preserved.

The TRA’s estimated value for X to be applied for a six monthly period is CPI-4% (CPI-8.16% p.a.).

<table>
<thead>
<tr>
<th>Date and duration of price-cap</th>
<th>Value of the overall price-cap.</th>
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</thead>
<tbody>
<tr>
<td>Period 1</td>
<td>6 months</td>
</tr>
<tr>
<td>Period 2</td>
<td>6 months</td>
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</table>

Figure 7.4: The overall price-cap

The 12 month price capping period favoured by the TRA for the initial price control basket, will return to subscribers a share of the excess profits Batelco currently earns, although Batelco will still be earning an excessive rate of return. Given these circumstances the TRA’s choice of X is not primarily based on an estimate of ROCE and a sharing of obtainable efficiency improvements, as is the case with a 4-5 year cap. Rather, the TRA has estimated the value of X as a compromise involving several considerations:

- The need to reduce Batelco’s overall price level given that on average, and in particular for some specific services, Batelco’s prices are well above international benchmarks, and Batelco is earning excessive profits,
- A significantly larger X might risk imposing windfall losses on Batelco. It is an important principle of independent regulation, that the regulator’s decisions should not result in windfall losses for any market participant.
- Excess profits of Batelco should, wherever appropriate, be left to competition to remove. A tough ‘X’ value in CPI-X price control baskets is likely to make conditions more difficult for competitors. High profits are a vital price signal in market styled economies, attracting new entry, competition and investment.

7.2 Determining the appropriate value of “X”

The TRA has taken a number of steps to determine the value of “X” and those of sub-caps highlighted above, these steps included:

- Reconciliation between Batelco data for 2002 and other years, including reconciliation of cost categories. In order for the TRA to set a price control it is essential to have robust data for the base year from which price control can
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start. It was necessary therefore for the TRA to reconcile the submissions and information provided by Batelco with the last set of statutory accounts produced by the company for the year ending 31 December 2002. It was also necessary to reconcile revenue, volume, cost categories and cost data and this required significant effort with the absence of robust data from Batelco.

Batelco has yet to supply all the relevant information requested, and therefore the TRA has set interim values based on the information available at the time of the consultation.

- Identification of the appropriate services to be included: The TRA has concentrated on those services that had been outlined in the consultation document, considered the limitations of the information available for monitoring and compliance purposes, and identified a set of services to be included in the price control that constitute the core fixed network services that contribute to imbalanced tariffs.

- Asset base, capital cost, operating cost and cost of capital: This step involved identifying the asset base, capital costs and operating costs associated with the price capped services only, separating out those elements of the business that would not be subject to price control.

- Market assumptions: The TRA has not taken into account market growth of the different services or the impact competition may have upon Batelco, but has included reported elasticities to ensure the impact of price regulation does not drastically effect Batelco’s revenue base.

- Impact on vulnerable users: The TRA has taken into account the potential impact of price changes on vulnerable users, and is mindful in constraining any disproportionate increase in the bill of such users by placing an upper limit on any price change in the fixed rental element of a bill.

- Efficiency Gains: The TRA believes calculating efficiency measures as a basis for setting the value of “X” in initial period or two periods has limited value. Price regulation subsequent to the initial period will take into account efficiency gains.

In carrying out the above steps, the TRA was conscious of the fact that this is the first price control of this nature and was also concerned at the quality of the underlying data that was provided for the setting of the control. Therefore the TRA has adopted conservative assumptions.

The level of the control has been set with a view to allowing as much rebalancing of tariffs as is possible whilst protecting vulnerable users.

The values of “X” and sub-caps have been set, such that if Batelco operates in an efficient manner, will be able to recover its costs associated with the price controlled business from the revenue attributable to that business.

The TRA considers that there is in fact scope for greater efficiency gains than have been factored into the current control, which affords Batelco the opportunity to achieve these greater efficiency gains and keep the resulting profits.

Consultation:

The TRA seeks respondents views on the proposed overall value of ‘X’ to be employed in the retail price control.
7.3 Prudence with sub-caps

The modern approach to tariff regulation does not as a rule involve controlling the price of individual services (although there are exceptions which we explain below). The main reasons for not price controlling individual services is that:

1. The cost of providing telecommunications services is changing quite rapidly due largely to technological progress, such that:
   - costs are declining steadily over time due mainly to technological progress, and
   - the cost drivers within networks are changing.

These factors mean that while it is possible for the TRA to find out the additional cost of providing one or more service at some point in time, this would involve intensive investigation and the data obtained are likely to become inaccurate within a review period due to cost drivers changing over time. Given the costs the TRA would face in learning these costs, and in periodically updating them, it will not usually be viable for the TRA (or any other regulatory authority) to undertake such intensive cost studies with such frequency.

2. By price controlling individual services the authorities will tend to undermine the incentive for the price controlled operator to pursue efficiency improvements in the provision of the service or services. As much of the industry is based on technology which continues to improve, these incentive problems are generally regarded as one of the main reasons why micro-regulated price controls should be avoided in favour of capping a weighted basket of services.

A large part of the cost of providing a telecoms service is shared among several other services, i.e. the provision of a service involves common and joint costs, suggesting no obvious cost-based price exists for individual services. (See Annex C for an analysis of the common cost problem).

There are two main exceptions where prices are in practice controlled for individual services; one based on politics, the other on competition policy concerns:

- Price control tends to also include a political dimension, especially when prices of services purchased by many subscribers are set to rise significantly, as is the case for residential line rental in Bahrain. In such cases a specific service might be capped in order to control the speed of tariff rebalancing – i.e. price rises. Price capping individual services will typically be in the form of CPI+Y%, where Y is a sub-cap on a specified service that operates under the overall CPI-X cap.

- Where price-capping is used to protect level playing field conditions. Two categories of relevance to regulatory authorities generally are:
  - Where the item being capped is an important input used by competitors which they can not economically provide themselves, and
  - Where a price capped service shares common or joint costs with a service(s) that is not price capped, regulations concerning the
7.4 Proposed sub-caps for Batelco

The TRA proposes to sub-cap access i.e. residential and business line rentals, connection and reconnection charges, and to also sub-cap domestic call prices. It also proposes to put a sub-cap on leased lines. Moreover, Batelco will not be free to raise the prices for directory enquiry (DQ) and emergency call services provided to other network operators (ONOs), as these will be subject to a reference interconnection offer or a reference access offer (RIO, RAO).

7.4.1 Residential and Business access

Access charges (mainly line rental) need to increase substantially in Bahrain over the next couple of years in order for Batelco not to have to cross-subsidise access, i.e. to largely remove Batelco’s access deficit (AD). The TRA’s rationale for sub-capping access is to help it address the equity, social, and competition implications of tariff rebalancing. The sub-cap proposed by the TRA is intended to control both the pace of access price increases, and to set a level at which access prices can rise no further. By only permitting a gradual program of access price rises, the TRA is better able to address with Batelco any universal service consequences, and to minimise disruption to the public that tariff rebalancing can cause.

By setting a level beyond which access prices may not increase (this level will not be reached for residential subscribers until 2005), Batelco will be prevented from pricing access above its relevant long-run economic costs, and thus Batelco will be prevented from over-recovering costs on access and under-recovering costs in markets where Batelco faces competition or pending competition. This could have serious equity, social, and competition implications. A sub-cap on the elements that make up access would prevent Batelco from charging prices above the TRA’s estimate of its relevant long-run economic costs.

The TRA proposes to sub-cap residential line rental using five 6 monthly caps of CPI+Y, where Y has a value in the range 17%-24%. The TRA is waiting for additional data in order to confirm this estimate. The value of Y represents the maximum percentage price rise permitted in each of the 6 month periods. For the first price cap proposed to cover 12 months, there would be two permitted price rises of Y%, at six month intervals.

The TRA proposes to sub-cap business line rental using four 6 monthly caps of CPI+Y, where Y has a similar value in the range of 17% to 24%.

For both residential and business line rental, the value of the Y sub-cap may be influenced by the cap the TRA places on connection and reconnection charges. These are currently priced at BD20 and BD3 respectively. In particular, if the BD20 for a new connection is below the average incremental cost involved in connecting individual subscribers, Batelco may ask that this price be permitted to rise. This may require the TRA to recalculate the sub-cap for line rental through applying a net present value (NPV) analysis of various revenues streams relating to access, that are paid over the life of the access assets. It is envisaged, therefore, that, if Batelco can demonstrate to the TRA’s satisfaction that its present connection charge is significantly less than the average incremental cost of connections, then business and residential connection...
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Charges would also come under a sub-cap at a similar level, although this would likely be for a shorter period of time, say 3 periods. Connection charges would then be sub-capped at CPI-0. Similarly for reconnections, if Batelco can show that the average incremental cost is higher than the present price, reconnection prices would be permitted to rise within a sub-cap for perhaps 3 periods, from when they would be capped at CPI-0.

In regard to the residential line rental sub-cap in Table 7.1, the 5th sub-cap has a ‘??’ to indicate that the TRA may need to set this figure closer to June-2005 as the TRA’s estimate of the economic value of Batelco’s access network is refined. The TRA will be gathering further information from Batelco and other sources to assist it in this regard.

The 4th sub-cap for business line rental, and the 3rd cap for connections in Table 7.1, is left open for the same reason.

The TRA has chosen these percentage sub-caps based on a final ratio of residential to business line rental of approximately 65%. This implies that the TRA is considering moving away from equal proportionate mark-ups for common costs specifically for access, and assigning a disproportionate share of common costs to businesses in this case. This approach is in keeping with both equity and economic efficiency, i.e. Ramsey pricing requires that common and joint costs are disproportionately allocated to the most price insensitive service – business access in this case.

It should be noted that although the permitted percentage increases in line rental may seem large, the absolute increases in the line rental in each period are considered not to be significant for the majority of customers.

The TRA notes that rebalancing will not be completed by the time full liberalisation occurs in July 2004. It is estimated that cross-subsidies will need to be paid to access for a period of approximately 12 months after full liberalisation. The TRA does not consider that this will unfairly penalise Batelco, as Batelco’s accounting data suggests that there are current levels of economic profit in the provision of other services, which could comfortably fund Batelco’s access deficit. These high profit services include:

- incoming international calls (which the TRA proposes to be out of the basket),
- leased lines;

<table>
<thead>
<tr>
<th>Proposed 6 monthly sub-caps for Batelco:</th>
<th>Present price (BD)</th>
<th>Period 1</th>
<th>Period 2</th>
<th>Period 3</th>
<th>Period 4</th>
<th>Period 5</th>
<th>Further periods</th>
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<tbody>
<tr>
<td>CPI+Y (ending Period 4 for Bus, &amp; Period 5 for Res, with CPI-0)</td>
<td></td>
<td></td>
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<td>Residential line rental</td>
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<td>Maximum permitted price rise</td>
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<td>17-24%</td>
<td>17-24%</td>
<td>??%</td>
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<td>Business line rental</td>
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<td>Residential and Business connection</td>
<td>20</td>
<td>Maximum permitted price rise</td>
<td>15-20%</td>
<td>15-20%</td>
<td>??%</td>
<td>CPI-0</td>
<td>CPI-0</td>
</tr>
<tr>
<td>Res &amp; Bus reconnection</td>
<td>3</td>
<td>Maximum permitted price rise</td>
<td>zero-?</td>
<td>zero-?</td>
<td>zero-?</td>
<td>CPI-0</td>
<td>CPI-0</td>
</tr>
</tbody>
</table>

Figure 7.1: Proposed line rental sub-caps
Consultation:

The TRA seeks respondents views on the proposed sub-caps on access services, the values of those sub-caps and the time periods over which they may apply.

7.4.2 National calls

For national fixed to fixed calls, Batelco currently charges in blocks of 3 minutes each, i.e. for calls that last up to 3 minutes or 180 seconds, BD 0.021 is charged. Calls that last 10 seconds are also charged BD 0.021. For calls between 3 minutes and 6 minutes another BD 0.021 is charged...etc. For national fixed to mobile calls Batelco currently charges BD 0.021 for blocks of 90 seconds or twice the rate of fixed to fixed calls. The TRA does not as yet have sufficient data from Batelco to estimate effective per minute prices for national fixed to fixed and fixed to mobile calls. However, based on comparison with data from abroad including from a country that also uses 3 minute charging categories, the TRA expects the majority of calls in Bahrain to fit into the first 3 minute category, and for average call duration to be heavily biased by a significant number of very short calls. The upshot of this will be that Batelco’s effective per minute price for national calls will be much higher than BD0.007 per minute.

The TRA has asked Batelco for more data concerning the number and profile of calls in each fixed to fixed and fixed to mobile category, and data regarding the distribution of actual elapsed times of calls in each category.

The TRA intends to require Batelco to move to elapsed time charging (ETC), i.e. Bahraini callers will pay according to the elapsed time of the call. Batelco has provided the TRA with an assurance that it plans to move to ETC before the end of 2003.

The implementation of ETC is likely to have a significant impact on the profitability of Batelco’s national calls, since it will substantially lower the existing effective price paid per minute. Once the TRA has additional data from Batelco it will enable the TRA to confirm the estimated impact that ETC will have in terms of the ‘X’ in the price controlled basket. ShouldBatelco delay the introduction of ETC then the TRA may adjust the value of ‘X’ accordingly.

The TRA has investigated data (although limited) concerning the economic cost of providing national calls in Bahrain, and considers that, once ETC is implemented by Batelco, an effective charge of BD 0.007 per minute for fixed to fixed national calls will be approximately in line with the likely economic cost of provision. The TRA has also considered the economic cost of providing national fixed to mobile calls, for which the data is more limited, and has yet to reach a firm conclusion as to how closely an effective charge of BD 0.014 per minute matches the economic cost of provision.

The TRA therefore proposes to sub-cap national fixed to fixed and fixed to mobile calls at CPI-0 for the next 12 months. The TRA intends to revisit the issue of national call prices and costs before the end of first price cap. The TRA may also address at or before this time, the issue of the possible introduction of peak and off-peak pricing for local calls.

<table>
<thead>
<tr>
<th>Date and duration of sub-cap</th>
<th>Value of sub-cap on National calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period 1</td>
<td>6 months</td>
</tr>
</tbody>
</table>

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7.4.3 Calls to Directory Enquiries

Batelco is proposing to introduce retail charges for calls to Directory Enquiries (DQ) in the near future. DQ calls in Bahrain are currently free to the user and Batelco considers that there is an element of mis-use in the current levels of calls to its DQ service. The introduction of charges will mean, however, that Batelco would be raising new revenues from its customers for a service that was previously provided free. This may not be considered reasonable by some customers in the current market environment where there is no alternative choice of provider of DQ services.

In most other countries charges are made for DQ services, and in many countries the service is competitive. The TRA accepts that it will be necessary to introduce charges for the DQ service in Bahrain, both as provided to end users and as provided, where appropriate, to other licensed operators, and that this will also bring operational efficiencies to Batelco.

The TRA is, therefore, considering the inclusion of any new retail DQ charges in the proposed price cap. This would mean that the effective increase in DQ charges from zero would be included in the calculation of tariff changes that Batelco may have to make in meeting its overall initial price cap.

Consultation:

The TRA seeks respondents views on the inclusion of any new retail charges for DQ calls within the price cap.

7.4.4 Leased lines

Batelco’s own accounting data, and a comparison with leased line prices charged in other jurisdictions, suggests that Batelco’s retail leased lines are presently substantially over-priced.\textsuperscript{ix} The terms and conditions applying to the set of leased line products designed to be supplied to the second mobile operator (SMO), the Bahrain Internet Exchange (BIX), ISPs, and VAS providers, will be addressed in Reference Interconnection Offers (RIO), and Reference Access Offers (RAO).

In some cases the TRA expects there to be technical differences compared to the leased lines Batelco currently sells to end-user businesses. The TRA’s view is that the leased lines to be included in the basket would most appropriately be leased lines other than those provided the new entrants, i.e. retail leased lines only. The tariffs for retail leased lines would then be capped at the same level as the cap for the overall basket.
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Retail price controls

<table>
<thead>
<tr>
<th>Date and duration of sub-cap</th>
<th>Value of leased line sub-cap.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period 1</td>
<td>6 months</td>
</tr>
<tr>
<td></td>
<td>CPI-Y, where Y=X</td>
</tr>
<tr>
<td>Period 2</td>
<td>6 months</td>
</tr>
<tr>
<td></td>
<td>CPI-Y, where Y=X</td>
</tr>
</tbody>
</table>

Figure 7.3: Sub-cap on leased lines

Consultation:

The TRA seeks respondents views on the proposed sub-cap on retail leased line services.

7.5 Impact of proposed controls

The overall effect of the proposed controls is to require a downward movement in the total bill of fixed telecommunications customers by 4% on average within a six-month period in real terms, if usage patterns and other factors were to remain the same. This reduction would represent a transfer of approximately BD 1.5m of revenues or value back to customers in each 6 month period of the price control if usage did not change. Different customers will experience different degrees of change, depending on the services they buy most.

In developing the price cap, the TRA paid particular attention to the need to rebalance Batelco’s tariffs within a relatively short period of time, balanced against the impact on vulnerable user groups, especially those on low incomes, who could be disproportionately affected by increases in the fixed element of their overall bill.

As a result, while allowing some rebalancing of prices, the TRA has imposed sub-caps for exchange line rental so that it may only be increased in a stepped manner over time. It should be noted that although the proposed limits on percentage increases in line rental may appear to be large, the potential absolute increase in the line rental is not considered to be significant. For example, for an average household in Bahrain, the maximum 6-monthly increase in line rental permitted within the sub-cap is estimated to represent only 3% of a median monthly bill or less than 0.04% of the median household income.

For many, this potential increase in fixed access charges will be more than offset by:

- the expected reductions in international call charges that Batelco will need to make to meet the price cap parameters; and
- the expected reductions in the effective national call charges (through the implementation of per second billing).
8 Tariff rebalancing and measures to protect certain consumers

8.1 Introduction

In the short to medium term, rebalancing will result in higher phone bills for households that make few international and national calls. Some of these households may have only modest incomes, and the TRA wishes to find ways of softening the impact rebalancing may have on these households.

Except for lower international call prices and more accurate charging for the time on national calls, there are few benefits that households can directly associate with tariff rebalancing. Many of the benefits will accrue to them indirectly, through improved efficiency and lower average prices in the telecommunications sector, growth in international and regional business opportunities, and spill-over benefits to the Bahraini economy as a whole.

The TRA’s initial estimates are that up to 17% of households may exhibit the lower levels of fixed telephone usage that makes them vulnerable to the increases in fixed charges over the whole of the rebalancing period, which may possibly result in a net increase in their overall telephone bill. These lower levels of usage may also be as a result of mobile substitution of fixed calls rather than any lack of affordability. In many cases, households may not have a telephone line or make limited use of the facility, because they do not value the service, as they may do other facilities, such as a TV.

8.2 Re-balancing and low income subscribers

The TRA is actively considering measures to protect the most vulnerable subscribers. At present, there are two main approaches to protecting disadvantaged households during and following a period of rates rebalancing:

1. To offer a standard service at reduced rates (especially for line rental) to those households who pass a means test, and
2. To use “self select” schemes, which offer access to a lower functionality service, the most common being low user schemes.

These two common approaches are discussed in turn below. The measures considered are closely associated with approaches that may be considered in the provision of Universal Service. Universal Service and related policy measures will be the subject of a forthcoming consultation.

8.2.1 Qualification through means testing

Households qualify for means tested discounts by having an income that is less than some threshold level. Sometimes means testing includes a requirement that applicants wealth as well as their income be tested. There are significant problems associated with means tested schemes:

- Unless they are appended to the qualification requirements for some existing means tested scheme, means testing involves high administrative cost, i.e. it requires a costly bureaucracy in order to carry out the evaluations and rechecking that is required in order to minimise abuse of the system,
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- Means testing is obtrusive and can be degrading for applicants, and many households that would meet the test may not in practice apply because of this.

- Means testing schemes creates poverty traps. When income surpasses the level set for qualification, subscribers drop out of the scheme and unless their income has jumped sharply upward, an increase in income that takes a household past the threshold for qualification can in actually make the household worse off as it now has to pay the full price for a telephone subscription.

For these reasons the TRA does not favour the use of means testing.

8.2.2 Self-select discount schemes

Self select discount schemes work by offering all subscribers two (or more) packages, typically a standard service offer, and a reduced service offer. These can be referred to as ‘service packages’ or just ‘packages’. Types of reduced service packages include ones structured around:

- an outgoing calls bared service,
- prepayment for outgoing calls, most probably priced significantly above the level for full fee paying subscribers, and
- a low user qualifying requirement.

In order for the scheme to work effectively, the relationship of the price difference between the packages and the differences in service attributes, need to be set so that the group who are prepared to pay for the standard service at a rebalanced price, should continue to choose the standard service after the reduced service package is offered.

There are advantages but also problems associated with self-select reduced service packages.

- The main advantage is their administrative efficiency. As customers self-select themselves there are few administrative costs.
- There are, however, two types of problem that may be encountered.
  
  (i) The service packages may require iterative adjustment to take account of new demand information provided to Batelco after the reduced service package is offered to subscribers. Indeed, some iterative adjustment may be necessary for the scheme to work cost effectively.

  (ii) A potential problem that Batelco will need to address in pursuing this pricing strategy is that cellular mobile services are likely to work as quite strong substitutes for fixed wire service for some households. The substitution with mobile could unexpectedly limit the service boundaries of packages offered by Batelco. Some existing fixed line subscribers may choose to unsubscribe from the fixed line service and take out a subscription to a GSM network operator, buy prepaid access, or rely on their existing means of connecting to the cellular network. This suggests that Batelco may...
Retail price controls

need to include demand information for mobile service as well as fixed service packages, when refining packages.

Both means tested and self-select reduced service packages are presently in use in other jurisdictions. The USA uses means testing for qualification for the LifeLine Assistance Program, while the UK has a low user scheme and more recently the Residential Limited Service Scheme the latter offering an incoming calls only service and a reduced line rental.

Experience from the UK suggests that low user schemes may be confusing to numbers of subscribers. It appears that significant numbers of households that would be prepared to pay for the standard service, have chosen the low user service. Where this occurs, it indicates that an adjustment to the package is required.

The TRA is considering requiring Batelco to develop proposals for these types of packages. Until the packages are developed, and considering the other changes in the Bahraini telecommunications market, including the establishment of a second mobile operator, it is not possible to predict accurately the level of adoption of such packages. The TRA, however, expects only a small proportion of those vulnerable households to need to opt for reduced service packages.

The TRA considers that the economic issues concerning optimal package design which minimises net universal service costs, and other issues relating to any net cost that may be incurred by Batelco as part of its universal service obligations (USO) are most appropriately addressed in a separate consultation that specifically addresses the USO. The TRA intends to issue a Consultation which addresses these issues before the end of 2003.

8.2.3 Related universal service measures

It is worth noting, at this stage, however, that there are other factors contributing to the issues of affordability of fixed telephone services and whether vulnerable households will subscribe or continue to subscribe.

Evidence from other jurisdictions which is likely to be relevant to Bahrain is that the perceived inability of low income households to control the amount of their phone bill is one of the main factors explaining their failure to subscribe.

There is also evidence that large up-front payments discourage a significant number of low income households from taking out a subscription. Such payments usually take the form of a connection fee, an installation fee, and in some jurisdictions may also include deposit requirements.

Another important factor explaining lack of phone subscription is that a significant proportion of phoneless households do not appear to value the telephone very highly.

Finally, the significant penetration of mobile phones within the population, the utility that mobile provide compared to fixed telephone lines and the wide availability of prepaid packages for mobiles, are all factors that are relevant in considering the impact that tariff rebalancing and affordability have on vulnerable households. These related issues and appropriate policy responses will also be discussed in the forthcoming Consultation on Universal Service referred to above.

Consultation:

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The TRA is interested in respondent views regarding the issues outlined in this section:

1. **Given rapid tariff rebalancing, what of the two main approaches would be most cost effective in Bahrain, means tested access to a reduced price standard service, or the use of self-select reduced service schemes.**

2. **If a self-select scheme was to be adopted in Bahrain, which of the criteria discussed would be most effective at separating genuinely needy households from other subscribers?**
   - Low-user scheme;
   - Prepayment (at high prices for units than for standard subscribers), and
   - Outgoing calls bared (except for emergency services, customer services and fault repair services).
9 Consultation

The TRA welcomes comments on issues and questions raised in this document.

Views submitted will be considered by the TRA in drawing up its final determination on retail price controls at the end of this consultation.

Responses may be sent in writing by post or e-mail to:

The Telecommunications Regulatory Authority
PO Box 10353
Manama
Bahrain

Email: consult@tra.org.bh

Submissions and comments may be published by the TRA on its web site, unless the respondent provides a justified request for confidentiality.

The closing date for comments is 56 days from the date of publication of this consultation paper, i.e. 4th October 2003.
A. Annex: The cost of market power

A firm that sells a product can be said to have market power if it faces a downward sloping demand curve. That is, if it raises its price the firm would lose some but not all sales. Those customers that it loses will either not buy that product at all, or will purchase instead from other firms (competitors) offering a similar (substitutable) product. Indeed, strictly speaking, firms that maximise their profits by pricing at more than their marginal cost can be said to have some market power, a situation that applies to most firms. The gap between price and marginal cost tends to be greater in markets where firms have to invest heavily in plant, R&D, or other costs which are largely sunk.

![Diagram of Economic Costs of Monopoly (Static)](image.png)

**Figure A1: The economic costs of Monopoly (static)**

Firms with greater market power face a more steeply sloped demand curve than firms with less market power. In order to show the main problems arising from market power we make use of a diagrammatic demonstration. In Figure A1 we show in comparison to perfect competition: (i) the welfare loss (called a dead-weight loss) and, (ii) the transfer of benefits from consumers to producers. The triangle B,C,D, indicates the dead-weight loss (i.e. the loss of potential ‘gains from trade’) as compared to what would occur if the market were perfectly competitive, in which case price would be $P_c$. Under a monopoly structure, price is higher at $P_m$ and output lower at $Q_m$. The rectangle $P_m$, B, E, $P_c$ represents the gains from trade that would have accrued to consumers under competition, which under monopoly are transferred from consumers to producers. There are thus two effects shown in this diagram: a transfer of value from consumers to producers, and another amount which represents a complete loss of value from the economic system.

There are other efficiency costs associated with monopoly which are not captured by this diagrammatic demonstration. Monopoly, or very significant market power, tends to make corporate governance more difficult and gives rise to inefficiencies which are internal to the firm, such that resources are not used efficiently. Where there is monopolisation, or competition is severely blunted, shareholders have less information...
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with which to judge whether management are performing their jobs well, and as a result it is typical for monopolies and sometimes also dominant firms, to suffer from a significant level of under-performance by management and other employees. These problems include failing to make proper investments (investing in bad projects and not investing in good ones), having excessive staff numbers, redundant units of activity, above market wages, lavish offices, etc. Many economists have argued that these costs are likely to be higher than those identified in Figure A1, i.e. the under-supply and excess pricing which is most typically associated with dominance.

Where there is substantial market power (such as occurs with monopoly, dominance or joint dominance), and it persists in the long term, we can say that dominance is enduring, i.e. there is enduring market failure, or excessive and persistent market power. As a general rule such a situation significantly detracts from the overall economic welfare of a country, and it is this that ex ante regulation is intended to address.
B. Annex The mechanics of price and revenue baskets

This annex provides further detail as to the composition and functioning of service and revenue baskets used in the context of a price cap, which is illustrated using an example.

If the basket was made up of residential access (service A) and a local call service (call this service B), with a 10 subscriber network each purchasing 1 unit of A and 3 units of B (see Figure B1 below) and prices were calculated taking incremental costs and adding equal proportionate mark-ups to cover common cost, then the value of the basket would be $490, as shown in Figure B1. Note that a fair return on capital employed is included in the cost figures. To the extent that actual revenues for the year diverge from what the TRA expected, adjustments can and usually would be made once the actual information becomes available.

1. Value of the basket

<table>
<thead>
<tr>
<th>No. of customers</th>
<th>Units per customer</th>
<th>Price per unit</th>
<th>Allocation ratio</th>
<th>Common costs</th>
<th>Total value</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>1</td>
<td>10</td>
<td>0.625</td>
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<td>175</td>
</tr>
<tr>
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<td>3</td>
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<td>315</td>
</tr>
<tr>
<td>Grand total</td>
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<td></td>
<td></td>
<td></td>
<td>490</td>
</tr>
</tbody>
</table>

2. Mid year adjustment; no inflation, no growth

<table>
<thead>
<tr>
<th>No. of customers</th>
<th>Units per customer</th>
<th>Price per unit</th>
<th>Allocation ratio</th>
<th>Common costs</th>
<th>Total value</th>
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</tr>
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<td>3</td>
<td>1.55</td>
<td>0.375</td>
<td>12</td>
<td>305</td>
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</tbody>
</table>

Amount of reduction (4%*490) = 19.58
New grand total = 469.92

3. Mid year adjustment; no inflation, 5% growth which is not subject to rev. reduction

<table>
<thead>
<tr>
<th>No. of customers</th>
<th>Units per customer</th>
<th>Price per unit</th>
<th>Allocation ratio</th>
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<td>0.375</td>
<td>12</td>
<td>331</td>
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</tbody>
</table>

Minus 4% = 19.58
Value of new basket = 492.92

Figure B1 Variations in the mechanics of price caps and their effects on ‘X’

If CPI=0 and X=0, and if the operator chose to increase the price of A from 10 to 11, it would have to reduce the price of B by the amount needed to maintain the value of the basket at 490. To do this B would need to fall from 6 to 5.65. Thus, no single service price is controlled, but rather a basket of values weighted by prices and quantities.
Normally, the value of the basket is subject to the annual real percentage reduction entailed in ‘X’, which is determined at the beginning of the price capped period. This is done allowing for a nominal change in the value of the basket from year to year, i.e. by subtracting from the index for price inflation (CPI) the amount the real value that the basket must change from one year to another. With the use of indices the level of prices would be set at year 0 to be equal to, say 100. If there is 10% inflation over the year and a 6% real decline is required by the basket, i.e. X = 6%, then the prices would need to be adjusted so that the value of the index rose by no more than 4%.

As price caps operate over a period of time, consideration normally needs to be given as to how changes in the level of sales over time will be factored into the calculations. More to the point, as we are addressing the mechanics of baskets, what is required in the way the basket operates, is a mechanism which does not enable the operator to effectuate a strategy which allows it to manipulate the price control formula to its own advantage.

For this reason it may be advisable to focus on the real value of revenue that the operator is being required to give away, rather than look at indices, percentages, or prices and quantities per se. For example, if the operator can increase the price of a service that has rapid sales growth, and has to reduce the price of a service that has little or no sales growth, using percentages of prices can provide the regulated firm with unintended leniency in the price cap.

We show in example 2 in Figure B1 the revenue “give away” needed based on a mid year price adjustment, no inflation and no growth. Example 3 in Figure B1 shows mid year adjustment; no inflation and 5% growth in both services, this growth not being subject to a regulated requirement governing revenue reduction.

In considering whether growth in sales is included in the calculation of the required revenue give-away, the TRA would want to consider the incentive effect this would have on the growth of the incumbent’s price capped services.

Note that the operation of the basket is least complicated by basing it on prior year revenue weightings, even though the financial modelling used to determine “X” normally takes account of forecasted price and volume changes of capped services.

In order to prevent the price capped operator from waiting for the end of a year and initiating the level of price changes needed to meet the cap, it may be desirable to require the price reductions to meet the annual reduction required by the ‘X’ value, to be made by certain times of the year - in proportion to the progression of the year. Thus, for example, if a 10% reduction in the value of the basket is required over the year, at least 2.5% could be required at or before the end of each quarter. This can be important where the 10% was determined using financial modelling that was not based on there being a once yearly price change occurring at the end of each year.
C. Annex: The common cost problem

Where there are common or joint costs it is useful to analyse the cost of providing specific services in terms of their *incremental* and *stand-alone costs*. If there are two services, $A$ and $B$, the Incremental cost of service $A$ would be the costs caused providing service $A$ given that service $B$ was already provided. The stand alone cost of providing service $A$ would be the cost involved in providing it where B was not provided. We show the situation Figure C-1.

If service $B$ is provided and $A$ not, the cost of providing $B$ is 18. If $B$ is already being provided, the provision of $A$ imposes an additional cost of 10. If only $A$ is provided the cost is 22. As a fair return on capital employed is implicit in the cost figures, it is clear that the price of $A$ could be between 10 and 22 and in either case could be said to cover its costs. Hence providing a further rationale for not seeking to price control individual services, but to control a basket of services. In the case outlined above, the operator would be allowed to choose prices for $A$ and $B$, and where both are provided, such that a total price of $A$ and $B$ together of 28 would be considered cost oriented, given that neither was priced at less than its incremental cost.

*Figure C-1:* Costs that are common to several services

- Incremental cost of service $A$ = 10
- Incremental cost of service $B$ = 6
- Cost of providing $A$ and $B$ together = 28
- Stand alone cost of providing $A$ = 22
- Stand alone cost of providing $B$ = 18
D. Tariff rebalancing and Access Deficit

D1 Rebalancing and Access Deficits defined

Tariff rebalancing is commonly understood to mean raising line rental where it is priced at less than the relevant incremental cost, and lowering international call prices so as to remove cross-subsidies between these different services. Where access charges (mainly line rental) do not generate sufficient revenue to cover access costs, an access deficit (AD) is said to exist. Where an AD exists a higher than normal return on capital (profit) needs to be earned on another service or services if the operator is to make an adequate return on capital overall. In other words, an AD implies the need for an internal cross-subsidy in order for the operator to continue carrying a fair value for the capital invested in the access network. Tariff Rebalancing can be thought of as the minimum price adjustments required in order to bring about an end to inter-service cross-subsidies to access.xv

The situation in Bahrain is also one shared by many operators in the liberalised countries: international prices are far in excess of incremental cost, and line rental prices are far below incremental cost. To be completely accurate we should say “access” rather than line rental. Access comprised line rental, connection and installation charges, although to the extent that the latter two are paid for by the subscriber in a one-off charge, focusing on line rental is appropriate.

In determining how far access prices need to rise to remove the need for this service to be cross-subsidised, all common costs which are associated with providing access and other services, need to be assigned to those other services. Only those costs which are incremental to providing the access service, given that all other services continue to be provided, are assigned to access. The incremental cost entailed in providing access to customers represents the minimum price that needs to be charged in order to remove the need for cross-subsidies. The cost of incremental capital must be included as an element in the incremental cost of access.

In practice, the time over which the cost assessment takes place also needs to be specified. For such things as individual calls, the assessment can be very short. However, where an entire service is involved it will necessarily be a very long time period – long enough so that all sunk assets that are incremental to the service are included in the analysis. This then is known as the long-run incremental cost (LRIC), and it is the basis by which the TRA intends to assess how much Batelco’s line rental prices may be permitted to rise in order for Batelco to cover the long-run average incremental cost of provision.

D2 Access deficit principles

An AD is said to arise when an operator’s average access charges are not set high enough to cover the long-run average incremental cost (LRAIC) of providing an access service. The largest part of these costs relate to the cost of the local loop, with operations and maintenance costs that are incremental to access also significant. The subscriber access network involves assets that are either dedicated to each subscriber (e.g. the final drop), or shared among a small group of subscribers (e.g. copper cabinet); or where there are shared assets in the feeder network like trenching and ducting, these costs can be divided among the particular subscribers sharing these assets, typically according to equal shares, although more complex alternatives are possible.
The distribution of access costs is shown in Figure D1. Looking at Figure D1, if the present value of the average access fees falls somewhere to the left of the average cost of access, then the subscription revenues are going to be insufficient to cover the operator's cost of providing the access service. In this case, the difference between the average rental fee and the average access cost represents the average access deficit (AD) per line. It is this figure times the total number of lines, that must be cross-subsidised by Batelco through it generating excess profits from other services - mainly international calls, although Batelco’s accounting data suggest it is also generating high rates of economic profit for leased lines and National calls.

![Figure D1: The access deficit and the distribution of access costs](image)

It is not necessary that Batelco incur any loss because of its access deficit while it retains its monopoly. This is because Batelco is supplying a range of services jointly, and Batelco is charging very high prices for other services that are jointly consumed alongside access. It is thus not correct to suggest that an access deficit necessarily entails a loss for Batelco.

Note, however, that pricing access at LRAIC is not optimal. One reason for this is that no telecoms operator can survive by pricing all its services at LRAIC. Prices of other services will need to be marked-up above their LRAIC if the operator is to cover all its costs. This is because there are large costs which will not be assigned to any service (e.g. head-office costs), and by pricing all services at LRAIC the operator will generate much less revenue than is needed to cover its costs. Because of this, mark-ups over LRAIC must occur, and in time access may bear a significant proportion of these costs. The TRA proposes to follow international practice and accept, in general, a system of equal proportionate mark-ups for cost allocation – this has been suggested in the accounting separation consultation document.

**D3 The economic effects of access deficits.**

There are two main problems that result from ADs:

1. ADs impose a serious restraint on the overall level of economic activity in the sector,
2. When liberalisation occurs an AD grossly distorts competition, competitively disadvantages the incumbent, and is ultimately unsustainable.
We discuss these in turn.

**Access deficits and their restraint on trade**

The analysis of the trade effects of an AD requires us to address the topic of the price elasticity of demand for access, and the price elasticity of demand for international calls. Each of these measures represents the sensitivity of demand to a change in price. When price goes up less is demanded, but the strength of response from customers as a whole will vary depending on the particular good or service in question. Empirical evidence shows that consumers are extremely demand insensitive to the price of telephone access, i.e. relative to a large price change there is very little effect on the level of demand for telephone network access. The price elasticity of international calls, on the other hand, is much higher in absolute terms (roughly 10 to 20 times higher).

A diagrammatic description of price elasticities for access and international calls is shown below, with the left side graph showing the demand for access to be very steep (price insensitive), as the evidence suggests. Let $P_b =$ price of access when prices are roughly balanced, i.e. roughly in line with long-run costs and $P_r =$ the present price of access in Bahrain. At this much lower price, there is very little increase in the demand for access, this being equal to $0Q_r - 0Q_b$. The loss of revenue due to the access price being less than a price that covers incremental cost (i.e. a balanced tariff) is shown by the area $P_b d'' d' P_r$. The right hand side of Figure C1 this is shown as an increase in the price of international calls from $P_b$ to $P_t$, where $P_t =$ the price after the mark-up (or tax) has been added to pay the cross-subsidy revenues to access. As above, the balanced tariff is indicated by $P_b$. In this case the reduction in the number of international services purchased due to the increase in price ($0Q_b - 0Q_t$) is relatively much larger than the increase in the purchase of access, this being due to the fact that international service is much more price sensitive than access (price elasticity

![Diagram of price elasticities for access and international calls](image-url)
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of demand for international calls). This means that in practice, the price of international services need to be increased by a great deal in order to provide cross-subsidy revenues.

The conclusion reached by regulatory economists is that cross-subsiding access with international calls profits, is especially cost ineffective - it has relatively little effect on penetration compared to the constraint on the level of trade overall.

**Competition distortions resulting from an Access Deficit**

Access network assets, and most costs associated with providing an access service, are not sensitive to the number of calls made or the duration of any call. Virtually all of these costs exist whether or not calls are made. The efficient way to recover such one-off costs is through one-off or periodic subscription charges, such as through connection and monthly line rental charges. To recover such costs through usage prices imposes an additional diversion of prices from marginal costs, which is known to distort investment and consumption in a way that reduces overall economic welfare.

Moreover, where there exists a significant access deficit and competition is permitted, such as through carrier selection or pre-selection for international calls, as is envisaged in Bahrain from July 2004, and Batelco is not permitted to rebalance its prices (e.g. recover one-off costs through one-off or periodic subscription charges), Batelco could be competitively disadvantaged in comparison with its rivals. This is because entrants will be able to enter into those markets where the incumbent may need to continue earning especially high profits in order to provide cross-subsidy revenues for access. As has been noted in Section 6, the TRA considered this to be less of a problem for Batelco over the next couple of years as other services Batelco provides, e.g. transiting, switching and terminating international incoming calls and the provision leased lines, are generating high profits which can also be used to pay cross-subsidies to Batelco’s access service.

Some time following liberalisation, If Batelco continues to fund a large AD through pricing international services at excessive levels, it may loose a large proportion of its international traffic to its competitors. This because new entrants do not need to contribute to Batelco’s AD, and could are thus easily under-cut Batelco’s international call prices and still make high profits.

There are two regulatory policy responses that could be made by the TRA in regard to this situation:

1. **Not to regulate Batelco’s prices so harshly that Batelco is forced to rely on high profits from outgoing international calls and at the same time faces competition for the provision of international services, i.e. to allow for rebalancing to occur in a timeframe that will prevent Batelco’s assets being stranded due to regulation, or**

2. **To implement an access deficit contribution (ADC) scheme and require rebalancing to occur more gradually over a longer period.**

In the absence of highly profitable ‘other’ services than international, the first approach would require line rentals to rise much of the way toward their long-run incremental cost by July 2004. The TRA’s analysis of Batelco’s profitability suggests that a managed period of rebalancing that finished in July 2005, will not prevent Batelco from being able to earn at least a fair rate of return on its efficient capital base.
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The rationale for the second approach is to slow down the rate of price increase in order to deal with the social issues that tend to result from the large price increases in line rental which the TRA proposes to permit over the next two years. In this regard, the TRA considers that its rebalancing proposal avoids the need for an ADC scheme to be implemented. Moreover, ADC schemes suffer from several severe problems, and these are addressed below.

D4 Access deficit contribution schemes

Access deficit contribution (ADC) schemes hold out the prospect that liberalisation and competition can proceed on the basis of a ‘level playing field’ while large cross-subsidies are maintained between Batelco’s international and access services.

ADC schemes would impose ADCs on all services sold by firms in direct competition with highly profitable services sold by Batelco that pay the cross-subsidy revenues to cover Batelco’s existing access deficit (AD). The form in which ADC liabilities would arise for new entrants would need to be the same for all firms, including Batelco. If, for example, Batelco was raising AD cross-subsidies from originating international calls, and did so by a mark-up on the per second/minute charge for such calls, then a similar (though probably not identical) mark-up would need to be required of other firms that provided international calls. ADCs will thus approximately represent the margin per call that the incumbent would have received to cross-subsidise its access deficit, had it carried the call rather than the interconnecting new entrant.

Implementation of the policy has typically been through mark-ups on interconnection charges. The mark-ups need to be different for different types of call (e.g. local calls and international calls) to reflect the fact that different levels of per-minute cross subsidy are presently paid by different services. An ADC scheme is thus rather similar to interconnection pricing based on discounted retail prices of Batelco. The rationale for an ADC requires that interconnection prices inclusive of ADCs are calculated from a starting point that is the opportunity cost of Batelco - i.e. its retail prices. In this regard, ADCs are said to avoid the need for tariff rebalancing.

In their design, it can be argued that the ADCs should not be payable on terminating interconnection, but only on originating interconnection. The reason is that new entrants (e.g. a second national operator) who hand calls over to the incumbent for termination and originated those calls on their own access network, should not be asked to also contribute Batelco's access costs. The suggestion here is that ADCs should only be paid on originating interconnection.

At variance with this argument, is the possible case that sometime in the future new access networks will be provided in areas in which access costs are relatively low and for subscribers with very high usage of international services. In such cases even when new access providers are required to pay ADCs to Batelco on both originating and terminating interconnection, they may be cream-skimming business from Batelco, depending on the level of pricing flexibility (e.g. tariff de-averaging) the TRA might permit Batelco in the future.

Arguably the main fault with using interconnection as the point at which AD liabilities arise is that it works as a tax on an input, which will cause substitution away from that input where this is possible, i.e. ADCs bias investment in favour of solutions such as private networks, and packet based networks. Because of this the mark-ups might better be placed on the relevant end services. This would mean, for example, that international outgoing and incoming calls would each pay contributions to subsidise
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residential access service, that approximate those which the incumbent would have provided itself (cross-subsidy) if it instead had provided the service. Competitors' liability to pay an ADC would arise when liable services are purchased by end-users. In this way the ADC mark-ups will be different for different types of call. So long as customers cannot substitute the marked-up services for any other service, e.g. self provision, or by using a different technology such as a cellular network, or an Internet call) the situation will be approximately equal for all competitors.

Furthermore, liberalisation tends to result in an increase in the growth rate of calls, and it is not clear how this should be dealt with in the design of an ADC scheme. Perhaps the ADC contribution per charge unit should be reduced below that indicated by current traffic levels and types, in accordance with forecasted traffic for the coming year.

Variations on these approaches have been used or proposed, but in the TRA’s view they all tend to suffer from a shift in focus from the AD as a price signalling problem, toward one where the problem is treated in terms of compensating the access provider. Among other things, treating the AD issue as a compensation issue rather than a price signalling problem will provide for a level of double collection by the incumbent where a level of ‘other’ subsidies are maintained, i.e. cases where interconnection prices are not cost-based, international and long distance sectors are not thoroughly competitive, or an official universal service fund operates.

Sustainability of ADC schemes

On the assumption that there is no substitute for termination and origination over Batelco’s access network, in order for long-distance and international competition to proceed on a fair basis, ADC schemes should be designed so as to correct for the price signal distortion that arises when only Batelco pays cross-subsidies to fund its AD which price controls are preventing it from rebalancing. Without an ADC scheme, if Batelco is not permitted to rebalance, a "price umbrella" is raised over new entrants, making it easy for them to enter and under-cut Batelco’s prices. This can happen because as well as purchasing access, subscribers jointly consume other services, mainly local and international calls. Each of these types of calls can typically be provided independently, such as through carrier (pre)selection. To correct the tilted playing field, competitors need to pay a similar amount per call type, as the incumbent must pay to itself less any efficiency adjustments that investigation shows are warranted. This is a simplified description of what is indeed a complex problem, and most ADC schemes have not been designed to operate this way. Rather, they have been, or are still, compensatory of the access operator. This has occurred in the USA, and France.

Arguably the main problem with ADC schemes is that they reward those who can avoid (which is legal) or evade (which is illegal) the pricing/payment rules that are the ADC scheme. In dynamic markets like telecommunications, characterised by rapid technological development and convergence, some types of by-pass of ADC regulations cannot be prevented. ADCs will encourage the use of technologies that do not have to pay ADCs or pay ADCs only on one part of the service, such as can occur when a mix of packet and switched technologies are used in the service. Such an example might be voice over IP networks. The use of very small aperture terminals (VSAT), private networks, call-back and possibly off-peak transmission over cellular and fibre infrastructure owned or leased by mobile operators, all offer examples of ways the rules can be and are avoided. Moreover, where ADC liabilities are incurred through interconnection with the incumbent, competitors would be overly rewarded by...
building access networks to those firms that have high usage of services that attract ADCs. If adopted for a long period in a liberalised industry, the TRA considers that even well designed and enforced ADC schemes will come at too high a cost to Bahrain for them to be seriously considered.

**ADCs and information problems.**

The expertise and information costs needed to operate an ADC scheme are very high. Where ADC liabilities are incurred through interconnection with Batelco, the TRA as the designer of the scheme would need to take Batelco’s prices, remove per minute (or per second) costs that are not associated with providing access, make any efficiency adjustment that are warranted, to arrive at what we might call ‘wholesale costs’, and set interconnection prices accordingly. These are difficult and resource intensive tasks to perform, and involve experience, economic skills, and accumulated institutional knowledge, in order to do them. No new regulatory authority could guarantee to be able to accomplish this type of task well in the first year or two of its existence. And due to the much less than perfect information held by a regulator, it is likely that some of the numbers will be fairly inaccurate. High information costs may also be incurred in an effort to minimise manipulation and miss-reporting.

If ADC liabilities are incurred at the point of consumption, i.e. when services are sold to end-users, the services provided to end-users will need to be effectively audited so as to prevent under-declarations, and to prevent one type of call being presented as another. Such auditing may be too expensive to be implemented.

Those who would advocate ADC schemes assume that the AD can be accurately measured in terms of its real economic cost. To a degree, this will be speculative as the TRA will be required to form a view as to when to shift to a new access technology where this sets the cost/efficiency standard. In forming this view the TRA would need to know the cost figures to apply where a new technology is the appropriate benchmark.

The TRA would also need to determine efficient operating costs for Batelco. These are all highly resource intensive exercises and few regulatory authorities in the World would presently be in a position to fulfil all of these requirements.

Even assuming that a operational ADC scheme could be designed, because of its unavoidable complexity the scheme would lack transparency to almost all but the experts who designed it. There are a range of regulatory problems associated with a lack of transparency which would potentially take hold in Bahrain if an ADC scheme was implemented.

In practice, therefore, ADC schemes are policies that can be developed on paper but come with an acute risk that they would not be operated as envisaged by theory, and would thus give rise to additional and potentially wide-scale economic distortion. In practice the TRA believes that no ADC schemes will be able to adequately prevent by-pass of the rules, and will give rise to inefficient by-pass of Batelco. For these reasons the TRA is opposed to adopting an ADC scheme in Bahrain.
End notes:

i. Many other countries of the World are currently facing the same problem.

ii. There is a high correlation between monopoly power and operational inefficiency.

iii. Evidence shows there to be some substitution on the margin between fixed and mobile networks, but even in countries with very high mobile penetration, substitution on the margin is not yet sufficient to put these services in the same relevant market.

iv. Batelco’s accounting profit on leased lines suggests that its economic profit on leased lines is well in excess of Batelco’s access deficit.

v. In the future the TRA may operate several baskets, and some of these may include wholesale and retail services. For this price capping period, however, the prices of wholesale services such as interconnection and access, are being addressed as part of separate Consultations.

vi. Normally, however, where common and joint costs are significantly shared between two services, both service would be in the price capped basket, or both services would be out of the basket.

vii. While there are thought to be fewer possibilities for efficiency savings regarding access than for many other service, modest annual efficiency saving in the provision of access are realistic, suggesting that in the medium term, the sub-cap on access may be negative.

viii. The average price per minute considerably above BD 0.007 is calculated in each 3 minute block by dividing the total revenue per period – say 1 year – by the sum of the actual time taken for each call.

ix. Information to this affect will be published shortly in a Consultation on a Reference Access Offer.

x. Although substitution on the margin exists, it will not be sufficient to put both services in the same relevant market.

xi. Oftel has in the past stated its wish to replace the low user scheme with a more restricted service.

xii. In the USA most phone less households are young, unemployed, minority households with children, in non-permanent living situations. Often the problem is friends and relatives who use the phone to make toll calls. Consistent with this finding is survey evidence from the UK obtained for Oftel, where respondents listed fear of debt associated with large bills as one of the main reasons they did not subscribe to the telephone.

xiii. In the UK, for example, only two thirds of household without a phone said they would like a phone in their home if it were available at a much reduced price. The other 450,000 presumably place relatively little value on the phone. In a US study involving a fairly poor area of New Jersey, 50 percent of those households that did not have a phone in their home had cable TV. Indeed, more households in the US and EU have a TV than have a telephone, and given the much higher up-front price of a TV, a reasonable conclusion to draw is that those households in this study value basic TV, and perhaps also premium TV (i.e. cable TV) more highly than the telephone.

xiv. \((10*1)*((10)+(0.625*12))\)

xv. The need to remove such cross-subsidies is addressed in Section 3.