



التاريخ : 16/10/2016

الرقم : REG-400-16

عطوفة رئيس مجلس المفوضين / الرئيس التنفيذي المحترم  
هيئة تنظيم قطاع الاتصالات

الموضوع: وثيقة الاستشارة العامة حول احتساب المتوسط  
المرجح لتكلفة رأس المال لمشغلي الاتصالات  
والمشغل الكفو

تحية طيبة وبعد،،،

بالإشارة الى كتابكم رقم ص/4/23/9/7986 تاريخ 2016/9/26 والمتعلق بالموضوع أعلاه نرفق  
طيه ملاحظات ورد شركة زين على وثيقة الاستشارة العامة حول احتساب المتوسط المرجح لتكلفة رأس  
المال لمشغلي الاتصالات والمشغل الكفو ضمن المدة المحددة راجين أخذها بعين الاعتبار.

وتفضلوا بقبول فائق الاحترام،

الشركة الأردنية لخدمات الهواتف المتنقلة ("زين")

الرئيس التنفيذي

أحمد الهنادة

## 1 Introduction and General Comments

Zain welcomes the TRC's consultation on the calculated Weighted Average Cost of Capital (WACC) applying to regulated licensees in Jordan. The WACC is an important component of cost models for, as the TRC rightly points out in the Notice Requesting Comments (the Notice):

"Investors typically use the WACC as a benchmark to assess a particular investment against other investments with equal risk. Unless a firm earns a return in excess of its cost of capital, it will not create economic profit."<sup>1</sup>

It is therefore imperative that the TRC does not set a regulated WACC that is lower than the true WACC faced by licensees, thereby preventing them from earning an economic return. The risk of doing so is that investors in the electronic communications sector will look to invest outside Jordan where their returns are not restricted. Reduced investment will ultimately harm consumers and the Jordanian economy.

Overall, we think that the TRC has produced a good document and many of the proposals strike the right balance between protecting consumers, by ensuring operators cannot set too high prices, whilst allowing licensees to earn a reasonable return.

We make specific comments in relation to the questions in Section 3 of this response. In particular, we set in answer to Question 5 our deep concern with the way in which the TRC has calculated the Country Risk Premium (CRP), which results in a significant under-estimate of the CRP. In Section 2 we make two general comments: (i) it is better for the TRC to set too high a WACC than one that is too low, and (ii) we are disappointed by the lack of transparency in certain key parts of

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<sup>1</sup> 'Notice Requesting Comments on the Calculated WACC' Section 2.1, Paragraph 3.

the document and request that the TRC provide more information before we can provide a considered response.

YD

## 2 General Comments

### 2.1 Setting a WACC that is Too High is better than Setting one Too Low

The implication of the extract from the Notice quoted above is that if the regulator sets the WACC too low, such that an investor is unable to return an economic profit, the investor is likely to choose an alternative investment. In setting the regulated WACC, therefore, the TRC needs to consider the possibility of making two errors: setting it too low such that an investor cannot earn a return equal to or in excess of its true WACC; or setting it too high such the firm earns a return greater than its true cost of capital (an economic profit).

McChesney<sup>2</sup> suggests that antitrust courts now recognise that their decisions can inflict harm if "misguided". He points out that decisions by antitrust courts (and, as recognised by BEREK, also sector regulators<sup>3</sup>) are subject to, what he refers to as Type I and Type II errors. He defines a Type I error as akin to finding an innocent party guilty and Type II error as finding a guilty party innocent. In the case of setting the WACC, a Type I error would be setting the regulated WACC below the true WACC and a Type II error would be setting the regulated WACC above the true WACC.

He then points out that in antitrust cases the harm caused by a Type II error would be low and a self-correcting problem provided that barriers to entry are low. Type I error, however, would not be subject to self-correction and only a judicial decision reversal can correct it.

The mobile communications market in Jordan is highly competitive and all operators are constantly engaged in price competition to protect market share. This intensity of competition pushes down prices towards marginal cost and so reduces earnings to the cost of capital. A Type II error would, therefore, be subject to the self-

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<sup>2</sup> McChesney, Fred S. "Talking 'Bout My Antitrust Generation: Competition for and in the Field of Competition Law." *Emory LJ* 52 (2003): 1401.

<sup>3</sup> They have also been discussed by BEREK in the context of market definition. See "BEREK Common Position on geographic aspects of market analysis", 5 June 2014, Section 7.2.

correcting mechanisms of the market as a firm would be likely to compete away any excess profits.

A Type I error, however, is not subject to self-correction and can only be reversed by a decision of the TRC or the courts to increase the level of the regulated WACC. By this time, it is possible that potential investments will have been made elsewhere, to the detriment of Jordanian consumers.


McChesney suggests that no decision can ever be made with certainty and there is always some possibility of making the wrong decision. It is likely, indeed probable therefore, that the TRC will make an error in setting the WACC. However, the cost of making a Type I error is likely to be greater in the long run than the cost of making a Type II error. Setting a regulated WACC too high may lead to higher prices in the short term, but the highly competitive Jordanian mobile market will ensure that any excess profits are competed away through lower prices.

In our view, therefore, the TRC should always take a cautious approach and be prepared to set a regulated WACC that is too high and allow the market to correct any error they may have made. In the worst case, a Type II error can be corrected at a later date by the TRC without irreparable damage having been done to licensees.

We have identified two specific areas where the WACC set by the TRC is likely to result in a Type I error: the calculation of CRP and using the mid-point between the upper and lower calculation of the WACC. A full explanation of our concerns on these two points is set out in answer to the relevant questions below.

## **2.2 Lack of Transparency**

The Notice is concisely written. However, in seeking to be concise the TRC has left out important information in several areas, which means that Zain is unable to provide a full response to some questions. We have raised the lack of transparency in our responses in Section 3 below. However, Table 1 below lists all the sections of the Notice where more information is needed.



**Table 1: Section of Notice lacking Transparency**

Section	Paragraph	Comment
5	21-23	The formulae shown in paragraph 21 do not appear in the referenced article and insufficient information is provided on why the "Miller" formula was chosen given the number of different theories of capital structure. The "Miller" formula also appears to contain an error in setting the denominator as $(1+D/E)$ rather than $(1-D/E)$ – more fully explained in our answer to Q6.
5	28	The TRC does not provide a list of the 13 European operators used to establish the two-year rolling average of 0.56. As this value is used for the upper bound, more information should be provided to Stakeholders.
5	29 – 31	The TRC provides no explanation in theory or precedent on why the Beta multiplier is appropriate. Also, no data are provided so stakeholders are unable to comment on the appropriateness of the formula.
6	12	No explanation is provided for the selection of a two-year moving average. Also, there is no sensitivity analysis to show effect of using a longer or shorter period.

This lack of transparency means that there are a number of questions that we cannot answer completely until further explanation is provided. We therefore reserve the right to make further comments once the TRC has provided additional information.



### 3 Answers to TRC Questions

*Q1: Do stakeholders agree with estimating the cost of debt based on the weighted average of embedded and new debt costs? Please justify your response.*

In principle, we agree with this approach by the TRC. However, the TRC should keep a careful watch on future interest rates and, in the event of a material change in the level of such rates, it should be prepared to adjust the rate applied to new debt before its next assessment of the WACC. In line with our comments in 2.1 above, this is particularly the case if rates increase. There is any number of economic and political uncertainties at present, both regionally and globally, that could result in an increase in the cost of debt in Jordan.

Two factors that increase the cost of future debt are the upward trajectory of interest rates set by the US Federal Reserve and continuing regional instability that could feed through to the CRP.

*Q2: Do stakeholders agree with adopting a long-run historical approach to estimating the TMR and risk-free rate?*

We have no objection to this proposal, which we believe to be standard practice.

*Q3: Do stakeholders agree with the adoption of the arithmetic mean to calculate the total market return and risk-free rate?*

We agree with the use of the arithmetic mean. The total market return and risk-free rate are calculated using long run data and so are unlikely to be affected by short-term fluctuations, in particular towards the end of the time series. The arithmetic mean is therefore unlikely to be distorted in any way.



*Q4: Do stakeholders agree about the use of CDS spreads to estimate the country risk premium?*

We accept the use of the CDS for calculating the CRP.

*Q5: Do stakeholders agree with taking a long-run average of CDS spreads to estimate the country risk premium?*

We do not agree with the methodology used by the TRC to calculate the average of CDS spreads, which significantly understates the actual country risk premium.

The TRC uses the arithmetic mean of a very short time series of just six periods over which there is a clear upwards trend, as illustrated in Figure 4.1 of the Notice. Using the arithmetic mean gives equal weight to each data point when calculating the average. As noted in our answer to Q3, this is the correct approach when using a time series with no discernable trend. However, when time-series data has a clear trend, such as that illustrated in Figure 4.1, more weight should be given to more recent time periods as these more accurately reflect the conditions today than the average across the six periods.

Instead of the arithmetic mean, therefore, Zain proposes that the TRC uses the exponential moving average. An exponential moving average (EMA) is similar to a simple moving average, except that more weight is given to the latest data. This type of moving average reacts faster to recent changes than a simple moving average. The EMA is used by investors when it is necessary to place more weight on recent valuations than it would be to place an equal valuation on all time periods. The methodology of calculating the EMA is set out in Annex 1.

By our calculation, the effect of the EMA would be to raise the Country Risk Premium from 3.6% to 4.6%. This would increase the calculated cost of equity by 1.0 percentage points and cost of debt by 1.1 percentage points.

*YD*



As we discussed in our opening comments, there is always a risk of error when a regulator sets the WACC, or indeed makes any other decision. However, the harm caused by setting a WACC that is too low is likely to be greater than the harm caused by setting it too high. In the latter case, the normal corrective processes of a competitive market are likely to reduce prices, whereas if the WACC is too low, such that investors cannot make an economic profit, it is possible that investment will be harmed.

We therefore strongly urge the TRC to adopt the exponential moving average as to calculate the CRP.

*Q6: Do stakeholders agree with the proposed estimation technique for the beta, particularly on data frequency, estimation window, reference index and levering?*

Zain has no objections to the Reference Index, the data frequency or the estimation window.

We are somewhat confused about the reference to the Miller and the Miller-Modigliani formulae in paragraphs 21 – 23 of Section 5. The article by Fernandez referenced in footnote 19 of the Notice makes no mention of a Miller formula and the Miller-Modigliani formula described in the article is very different to that presented by the TRC and is in fact the formula used by Hamada. Further, the “Miller” formula used by the TRC appears to contain an error in setting the denominator as  $(1+D/E)$ . Taking the “High” version of the Mobile WACC in Table 8.1 of the Notice and using the Miller formula as per the Notice yields:

$$\begin{aligned}\beta_e &= \beta_a / (1 + D/E) \\ \beta_e &= 0.89 / (1 + 0.32) \\ \beta_e &= 0.67\end{aligned}$$

However, by setting the denominator as (1-D/E) the formula yields

$$\beta_e = 0.89 / (1 - 0.32)$$

$$\beta_e = 1.31$$

Which is the same as the TRC has calculated.

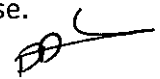
Would the TRC please provide more clarity on the levering formulae used and rejected?

*Q7: Do stakeholders agree with the view that the beta for fixed and mobile operators should be equal, with the exception of the revenue share impact? Please justify your response.*

The TRC states in Section 5.6, paragraph 28 that: "The average of the two-year rolling averages of the [Beta for the] set of 13 European comparators is 0.56". Unfortunately the TRC does not state which 13 firms are used as comparators, nor does it provide the source of the data that results in an average of 0.56. We find this lack of transparency disappointing, as it does not allow independent verification of the TRC's calculation. We therefore call on the TRC to publish the list of 13 firms and the data used to calculate this average.

That said, taking the Beta for the firms listed in Tables 6.1 and 6.2 shows no difference between the average Beta for the two sets of firms: 0.70 for the fixed operators and 0.68 for the mobile. These averages come with a strong "health warning" however as the samples are extremely small. There is also a strong degree of variation within each of the two tables: the standard deviation for the average of Table 6.1 is 0.33 and of 6.2 it is 0.23.

Based on this superficial analysis we would agree with the TRC that the Beta for fixed and mobile operators is the same, except for the revenue share. However, we call on the TRC to provide more robust evidence to demonstrate that is indeed the case.



*Q8: Do stakeholders agree with the proposed revenue share adjustment for mobile operators?*

Zain is unable either to agree or disagree with the proposed revenue share adjustment for mobile operators. The TRC provides no explanation and draws on neither precedent nor theory to justify the proposed equation shown in paragraph 29 is the appropriate formula. The TRC also does not provide any explanation as to how it expects to calculate the various components of the formula, nor does it provide any data for stakeholders to assess whether the multiplier used is correct. We therefore have no basis on which to make any comment on the multiplier of 1.6 reported by the TRC.

Zain wishes to express its very strong concern with the lack of transparency with regard to this very important component of the WACC calculation. We insist on reserving the right to comment on this adjustment until the TRC provides much more information. In particular, we need the TRC to explain the theoretical underpinning of the proposed formula and to provide the data used to calculate the uplift.

*Q9: Do stakeholders agree with the view that the beta for efficient operators should not be different from that of the actual Jordanian operators?*

Faced with both competitive product and financial markets, there is no reason to expect that the Jordanian operators are not efficient. Therefore, we agree that the Beta for efficient operators should not be different from that of actual Jordanian operators.

*Q10: Do stakeholders agree with the approach of estimating the efficient level of gearing based on the gearing of international comparators? Please justify your response.*



Zain accepts that it is necessary to set a level of gearing to establish the weights to be applied in the WACC. However, we do not accept that it is possible for the TRC, or indeed any other organization, to estimate an “efficient” level of gearing. There are a number of different theories concerning capital structure of firms, including:

- The irrelevance theory, espoused by Modigliani and Miller in which the capital structure is irrelevant to the value of the firm;
- The trade-off theory, in which the tax shield was added to the irrelevance theory leading to managers evaluating the costs and benefits of different forms of finance;
- The “Pecking Order” theory, which was based on observation that firms preferred to use internal finance (retained earnings) before any form of external finance (debt or equity); and
- The market timing theory, in which firms alter their capital structure to coincide with fluctuations in share prices – issuing new equity when shares are over-valued and buying back equity when share are under-valued.

The acceptance of any one of these theories could lead to a different “efficient” capital structure.

Therefore, rather than pretend that an efficient level of gearing exists, we believe it would be better for the TRC simply to accept that no such level can be found and therefore any level of gearing used to set a regulated WACC will be arbitrary.

Further, there are significant problems with the international comparisons made by the TRC. First and foremost, the samples used for fixed and, especially, for mobile operators are extremely small. Even if one assumes the distribution around the mean is normal, which is risky for such small samples, then the 95% confidence interval lies between 22% and 44% for fixed and 22% and 41% for mobile. In other words the 33% and 32% means of the samples could vary by as much as ten percentage points either side of the mean and still fall within the 95% confidence interval.

The vulnerability of the means to the sample can be illustrated by removing those operators with the highest and lowest gearing ratios from the samples. Thus, if

Telecom Italia is removed from the fixed sample, the mean two-year gearing falls to 29%, whilst if Iliad is removed it increases to 36%. Similarly, if KPN is removed from mobile sample, the mean falls to 28% and if Tele2 is removed it increases to 35%.

The variation in the samples also shows that it is incorrect for any regulator to set an "efficient" level of gearing. Is the TRC suggesting that Telecom Italia has twice as much debt than is "efficient"? Or that Iliad has only a third of the "efficient" level? With due respect to the TRC, it seems somewhat presumptuous to us for any regulatory authority to make such a judgment when it is not subject to the disciplining effects of product and financial markets.

Our second major concern is the designation of some of these companies as either fixed or mobile operators. For example, BT now owns EE and is the largest mobile operator in the UK. Telefonica, Deutsche Telekom, Belgacom, Telecom Italia, Orange and Swisscom are all active in mobile markets, both where they are the fixed line incumbent and elsewhere. In the "mobile" sample, Vodafone is the second largest fixed operator in Germany, whilst KPN, Telenor and Tele2 all have substantial fixed businesses. In fact very few of companies listed can be neatly designated as either fixed or mobile.

Finally, the relationship between the level of gearing of the companies in Tables 6.1 and 6.2 and their latest credit ratings is unclear and requires further explanation.

*Q11: Do stakeholders agree with adopting a 2-year average to estimate the gearing?  
Please justify your response.*

The TRC provides no justification for a two-year average so we have no basis on which to agree or disagree. The lack of justification is a further incidence of the lack of transparency in the consultation.



*Q12: Do stakeholders agree with the use of debt indices to calculate the efficient cost of debt instead of using the operators' actual debt costs? Please justify your response.*

As indicated in our response to Q10 above, the various different theories of capital structure suggest that there is no single "efficient" level. We are concerned therefore that the TRC suggests in paragraph 1 of Section 7 that it believes that it can incentivise operators to pursue an efficient level of debt. This is a matter for individual managers.

However, again, we agree that a common cost of debt has to be established for the TRC to calculate a WACC, and accept that the index used by the TRC is a valid index.

*Q13: Do stakeholders agree with the approach used in calculating the cost of embedded debt?*

In answer to Q5 above, we pointed out that the Country Risk Premium should have been calculated using an exponential moving average rather than a simple arithmetic mean to take account of the trend in the data. This same CRP should apply to the cost of debt.

On this basis, the cost of embedded debt should be 7.0%.

*Q14: Do stakeholders agree with the approach used in calculating the cost of new debt?*

In answer to Q5 above, we pointed out that the Country Risk Premium should have been calculated using an exponential moving average rather than a simple arithmetic mean to take account of the trend in the data. This same CRP should apply to the cost of debt.

On this basis, the cost of **new** debt should be 8.9%.



*Q15: Do stakeholders agree with calculation of the weights on the cost of new and embedded debt?*

We accept the methodology used for calculating the weights of embedded and new debt.

However, on the basis that a CRP of 4.6% rather than 3.6% should apply, we calculate the weighted cost of debt as 7.7%.

*Q16: Do stakeholders agree with the use of mid-point of the WACC range as the final estimate? Please justify your response.*

The mid-point is of course arbitrary and no more accurate than any other value within the estimated range of the WACC. In our introductory remarks we explained that the risk of estimating too high a value for the WACC is less than the risk of too low a value. This is because the normal competitive processes of the market will correct a Type II error, whereas only an authority can correct a Type I error. In our view, therefore, it would be better for the TRC to take the maximum value within the range of estimates and allow the market to correct any error it may have made.

## Annex 1: Calculation of the Exponential Moving Average

$$EMA = \sum(CDS_{y1-n})(NW_{y1-n})$$

Where CDS = Credit Default Swap Spread, NW = normalised weight

The following steps are used to calculate the EMA for n periods:

- 1) Calculate the Normalised Weight for each year (y). This is done by first calculating an unnormalised weight by raising 0.5 to the power y, where y is the sequence number of the year with 1 being the most recent, 2 the second most recent, etc. Then divide the unnormalised weight for each year by the sum of unnormalised weights for all years 1-n to obtain a normalised weight for each year. The sum of normalised weights should equal 1.
- 2) Multiply the CDS for each year by the normalised weight for the same year.
- 3) Sum the products of CDSxNW for each year.

Below we show our calculation of the EMA using our estimate of the values shown in Figure 4.

Year	2010	2011	2012	2013	2014	2015	Excel formula
Year sequence	6	5	4	3	2	1	
CDS	2%	2.80%	2.80%	4.70%	4.70%	4.99%	
Weight	0.015	0.031	0.062	0.125	0.25	0.5	=0.5 <sup>y</sup>
Normalised weights	0.0158	0.0317	0.0634	0.1269	0.2539	0.5079	=0.5 <sup>y</sup> /Σ0.5 <sup>y-n</sup>
Exponential average (6 years)	4.623%						=sumproduct (CDSy1-2)(NWy1-n)

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